

Use of Electronic Media and its Association with Teenager's Behavior: An Analytical Cross-sectional Study in Community Clinics of Karachi

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ABSTRACT

OBJECTIVE: To estimate the proportion of electronic media usage among teenagers and identify the association between behavior and the use of electronic media.

METHODOLOGY: An analytical cross-sectional study conducted from December 2021 to February 2022. A sample of teenagers (n=340) were selected from primary care clinics of Chanesar Goth and Hijrat Colony, Karachi. Participants were questioned regarding their daily usage of media. Strengths and Difficulties Questionnaire was administered to assess the behavior. Data was analyzed using SPSS 23.

RESULTS: 350 teenagers were enrolled in the study, and the gender distribution was almost equal. Daily usage of media included Television(88.9%), videogames(47.4%), computer/laptop(79%), mobile phone (90.3%) and tablet(20.9%). The content viewed were movies (68.9%), Facebook (72%) and Chats/WhatsApp (76.6%). The mean of total difficulty score in our study population was 19.1 (SD: 4.8). On multivariate analysis, higher difficulty score was positively associated with increasing age (Beta: 0.428, 95% Cis: 0.070 -0.785, p-value: 0.019) and total screen time (Beta: 0.003, 95% Cis: 0.001 -0.005, p-value: 0.036) while difficulty score was negatively associated with male gender (Beta: -1.223, 95% Cis: -2.441 -- -0.005, p-value: 0.049).

CONCLUSION: Our population's media exposure and difficulty scores are higher than those of other populations. Media exposure needs to be reduced to control psychosocial problems.

KEYWORDS: Electronic media, Behavior, Teenagers, Association, Adolescents, Media usage.

INTRODUCTION

Electronic media plays an essential role in people's lives. The world has seen a dramatic rise in the use of technology in the last decade, significantly impacting people's lives and interactions with others. Moreover, it has also influenced our teenagers and become a powerful medium for communication and entertainment^{1,2}.

American Academy of Pediatrics and the Australian Government Department of Health recommend not more than 2 hours of television and videos daily^{2,7}. A current survey in the United States revealed that 73 % of teenagers (8 to 18 years) use social network websites and spend an average of 7 hours and 38 minutes on entertainment media daily compared to 4 hours and 25 minutes for Australian teenagers²⁻⁴.

A study conducted among 527 German children

showed daily usage of television among approximately 80% of children, with 58% watching for around 30 minutes and 20% watching for an hour every day⁴. Villanti AC et al.⁵ reported that 87% of young adults (18 to 24 years) have access to smartphones, with approximately 74% having a desktop or laptop, 41% a tablet, 29% a smart TV or video game, and only 11% have a cell phone without internet. A systematic review reported that increasing use of social media is associated with rising mental health problems among adolescents, including anxiety, stress and depression⁶. Destructive images, such as in film, on television, computer and video games, of more than and equal to 45 minutes have significant immediate effects on awakening emotions and thoughts, making them more vulnerable to fear and aggression and decreasing pro-social behavior in children, especially in boys⁷.

A considerable decrease in healthy activities like spending time with family and friends, reading and playing was observed in children spending more time on television and other entertainment media⁸. Social media usage day and night is associated with later bedtimes, poor sleep quality and decreased duration. A study among Canadian students showed a significant association between increasing social media use and reduced sleep duration^{9,10}. Indian research noticed that media has a global impact on a youth's mind by influencing their behaviors and

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beliefs, including aggression and social isolation, with increasing odds of depression with every additional hour of daily television. It also decreases the time they spend on sleeping and studying¹¹. A similar situation exists in Pakistan. Television is the most dominant communication medium, resulting in 76% of the total media use, with 10% to 28% of low socioeconomic class having access to cable and satellite, followed by internet use of approximately 7%¹². An increasing cell phone addiction was reported in a study conducted in Karachi, where 60% of the teenagers were using mobile phones for 1 to 2 hours, 31% for 3 to 5 hours and 29% for 5 to 7 hours daily¹³.

Several studies have been conducted on electronic media and its association with obesity, smoking and overall health outcomes. Still, its relationship with behavioral patterns, including hyperactivity, emotions, and peer and conduct problems, has not been studied in Pakistan. Hence, as a family practitioner, this study will help explore this aspect of teenagers and relate its possible association with media exposure to develop strategies to promote healthy and effective media use. This study's objectives were to estimate the proportion of electronic media usage among teenagers and identify the association between behavior and the use of electronic media among teenagers.

METHODOLOGY

An analytical cross-sectional study was conducted in Family Medicine clinics in Chanesar Goth and Hijrat Colony, Karachi, from December 2021 to February 2022. Inclusion criteria consist of male and female teenagers aged 12 – 19 years. Exclusion criteria include any child with a mental impairment, language barrier, acutely unwell or hemodynamically unstable, and those whom either parent does not accompany.

After obtaining approval from the Institutional Review Board (IRB) of Dow University of Health Sciences and using the non-probability convenience sampling technique, the sample size was estimated using the WHO sample size calculator. Keeping the expected effect of electronic media on behavior to be 20%⁷, bound on the error as 5%, the significance level of 0.05, our sample size turned out to be 303. 10% was added for potential non-responders. Our final sample size was 350. Participants were selected from Family Medicine clinics in Chanesar Goth and Hijrat Colony, Karachi. The sample was then equally divided in both clinics, i.e., 170 children from each clinic. Among 170 children, 85 girls and 85 boys were from each clinic. A written informed consent providing the details of the study was taken from the parent of the child participating in our research. The confidentiality of the participants was assured by assigning study IDs, while no information about names or other identities was taken.

We used a structured Questionnaire for data collection. The Questionnaire consisted of three parts: The first part gathered information about teenagers' socio-demographic details. The second part gathered

information on the type of media equipment available for daily use (television/ radio/ videogame/ computer/ mobile phone), per day use of the electronic media in the last month, frequency and length of stay in internet café, and content of the programs watched. Total electronic media usage was classified as low (<2 hours), medium (2hrs - 3 hrs.), and high (> 3hrs). The third part used a validated tool to assess child behaviour, named the Strength and Difficulties Questionnaire (SDQ). SDQ is validated in our local population¹⁴. It gathered information on the child's behaviour in five aspects, i.e., emotional problem, conduct problem, peer problem, hyperactivity, and pro-social behavior. Each element has five questions; thus, there are 25 questions in this part. This tool has cut off for borderline categories at 16 for total difficulties, 6 for emotional problems, 4 for conduct problems, 6 for hyperactivity, 4 for peer problems, 5 for pro-social behavior and 1 for impact. Similarly, this tool has cut off for abnormal categories at 20 for total difficulty, 7 for emotional problems, 5 for conduct problems, 7 for hyperactivity, 6 for peer problems, 4 for pro-social behavior and 2 for impact. This part further gathered information about the effects of the behavior (of a child) on daily life with friends, home, school, and leisure activities.

Data was analyzed using SPSS version 23. Baseline information on socio-demographics was analyzed using descriptive statistics. For categorical variables, frequencies and percentages were reported. The outcome variables were electronic media exposure and the behavioral patterns of teenagers. The behavior was then classified into five categories: emotional, conduct, hyperactivity, peer problems and pro-social behavior. Multivariable logistic regression assessed the association between electronic media use and behaviour. Stratification was done based on age, gender, grade, school type, father's education, mother's education, father's occupation, mother's occupation, number of earning members, number of brothers and sisters, daily media usage, and media content. All analyses were two-tailed, and *p*-values of 0.05 or less were considered statistically significant.

RESULTS

A total of 350 students were included in our study, and the gender distribution was almost equal. Most of the mothers were housewives (89%), while among the fathers occupations, office work (39%) and own business (31%) were more common. Significant sources of media included mobile phones (90.3%), television (88.9%), computers/laptops (79%), and video games (47.4%). The typical content viewed was WhatsApp (76.6%), Facebook (72%) and movies (68.9%). Different proportions of our study population were found to be scoring in abnormal categories for emotional problems (20%), conduct problems (39%), hyperactivity (25%), peer problems (42%), pro-social (8%), total difficulties (48%) and impact (58%). The mean age of our study population was 14.86

years (SD: 1.6). On average, there were 1.8 (SD: 1.2) earning members in the family. Average screen time (mins in one month) for different sources was found to be 639 mins (SD: 259) for all sources, 141 (SD: 86) mins for social media, 132 (SD: 81) mins for mobile and 116 (SD: 79) mins for TV. Our mean strength and difficulties scores were 7.3 (SD: 2), 5.3 (SD: 1.7) and 5.2 (SD: 1.7) for pro-social behavior, peer problems, and conduct problems, respectively. The mean of internalizing, externalizing, total difficulties, and impact scores in our study population was 9.9 (SD: 3.1), 9.3 (SD: 2.8), 19.1 (SD: 4.8) and 3.3 (SD: 3.4), respectively. (Table I)

Total difficulties score was stratified according to various socio-demographic and media exposure factors. It was found that female gender (p-value: 0.006), increasing age (Correlation Coefficient: 0.134, p-value: 0.012), and drama content (p-value: 0.001) were significantly associated with total difficulties score. (Table II)

On multivariate analysis, higher difficulty score was positively associated with increasing age (Beta: 0.428, 95% Cis: 0.070 -0.785, p-value: 0.019) and total screen time (Beta: 0.003, 95% Cis: 0.001 -0.005, p-value: 0.036) while difficulty score was negatively associated with male gender (Beta: -1.223, 95% Cis: -2.441 -- -0.005, p-value: 0.049). It means with each unit increase in age, the total difficulty score increases by 0.42. Similarly, as we switch from female to male gender, the total difficulties score decreases 1.22 times. (Table III)

Table I: Descriptive of socio-demographic characteristics, media exposure and SDQ scores (n=350)

Characteristics	Mean	SD	Minimum	Maximum
Socio-demographic				
Age	14.86	1.624	11	19
No. of family members	6.86	2.63	1	24
No. Of earning members	1.8	1.153	1	8
No. Of brothers	2.07	1.393	0	9
No. Of sisters	2.01	1.603	0	8
Screen time (mins in 1 month)				
TV	116.1	78.6	45	240
Radio	58	36.8	45	240
Videogame	92.6	70	45	240
Computer/laptop	98.7	67.7	45	240
Mobile Phone	132.3	80.6	45	240
Social Media	141.2	86.3	45	240
Total Screen Time	638.8	259.5	270	1350
Strengths & difficulties score				
Emotional problems	4.6	2.2	0	10
Conduct problems	4	1.9	0	10

Hyperactivity	5.2	1.7	0	10
Peer problems	5.3	1.7	0	10
Pro-social	7.3	2	1	10
Internalizing score	9.9	3.1	1	17
Externalizing score	9.3	2.8	1	19
Total Difficulties	19.1	4.8	6	35
Impact - self-reported questions	3.3	3.4	0	10

Table II: Stratification of total difficulties score according to various socio-demographic and media exposure characteristics (n=350)

Characteristics	Total difficulties score		*p-value
	Mean	SD	
Gender			
Female	19.81	4.66	0.006
Male	18.38	4.94	
School type			
Public	19.53	4.53	0.114
Private	18.7	5.13	
Grade			
8th grade	19.38	5.85	0.753
9th grade	19.08	4	
10th grade	18.91	4.51	
Father's education			
Primary (1-5)	19.9	4.46	0.057
Secondary (6-10)	19.64	4.62	
Intermediate (11-12)	17.87	5.07	
Higher education	18.77	5.05	
Mother's education			
Primary(1-5)	19.73	4.24	0.192
Secondary(6-10)	18.91	4.79	
Intermediate(11-12)	19.3	5.31	
Higher education	18.05	5.35	
Father's occupation			
Office work	19.17	4.99	0.732
Manual work	19.54	3.87	
Own business	18.9	5.17	
Un-employed	18.44	7.68	
Retired	16.75	5.06	
Mother Occupation			
Housewife	19.16	4.85	0.512
Office work	18.56	5.35	
Age	0.134**		0.012
No. Of earning members	0.008**		0.884
No. Of brothers	0.019**		0.722
No. Of sisters	0.09**		0.092

Daily use of media sources				
TV				
No	18.62	4.52	0.49	
Yes	19.18	4.88		
Radio				
No	19.2	4.68	0.665	
Yes	18.95	5.2		
Videogame				
No	19.24	4.62	0.614	
Yes	18.98	5.09		
Computer				
No	19.58	4.8	0.088	
Yes	18.69	4.87		
Laptop				
No	19.35	4.8	0.14	
Yes	18.49	4.92		
Mobile phone				
No	19.71	5.05	0.459	
Yes	19.06	4.82		
Tablet				
No	19.19	4.74	0.573	
Yes	18.83	5.23		
Content of media				
Violence				
No	19.2	4.82	0.155	
Yes	17.44	5.15		
Drama				
No	18.01	4.39	0.001	
Yes	19.74	4.98		
News				
No	19.06	5.03	0.758	
Yes	19.23	4.5		
Educational				
No	19.2	4.9	0.644	
Yes	18.95	4.74		
Movies				
No	19.56	4.47	0.252	
Yes	18.92	5.01		
Facebook				
No	19.02	4.69	0.81	
Yes	19.16	4.91		
WhatsApp				
No	19.65	4.79	0.261	
Yes	18.96	4.86		
Twitter				
No	19.1	4.81	0.868	
Yes	19.27	5.37		
Total screen time	0.096**		0.073	

* *p*-value shows results after applying *t*-test, ANOVA and Pearson correlation coefficient in appropriate situations

** Results show the Pearson correlation coefficient and its corresponding *p*-value

Table III: Multivariate analysis of various characteristics for total DSQ score (n=350)

Characteristics	Unstandardized Beta	95% cis for Beta	P-value
Gender			
Female	Ref.		
Male	-1.223	-2.441 -0.005	0.049
Age	0.428	0.07 0.785	0.019
Total screen time	0.003	0 0.005	0.036
Sources of media used daily			
Radio	Ref.		
TV	0.897	-1.002 2.796	0.353
Videogame	0.323	-0.915 1.56	0.608
Computer	-0.873	-2.02 0.274	0.135
Laptop	-0.719	-1.977 0.538	0.261
Mobile phone	-0.468	-2.42 1.483	0.637
Tablet	0.419	-0.947 1.785	0.547
Nature of programs viewed			
Twitter	Ref.		
Violence	-1.456	-3.91 0.998	0.244
Drama	1.192	-0.033 2.417	0.057
News	-0.105	-1.273 1.062	0.859
Educational	0.065	-1.102 1.232	0.913
Movies	-0.509	-1.794 0.777	0.437
Facebook	0.765	-0.639 2.17	0.284
WhatsApp	-1.298	-2.796 0.2	0.089

DISCUSSION

The current study assessed media exposure and psychometric properties in our study population. To the authors' knowledge, no study has been conducted in our local setup except for the validation study¹⁴. Our study reported high media exposure times for social media, mobile use and TV. In our study, the average screen time for TV is reported as 116 mins / 1.93 hrs (SD: 78 mins). Similar findings are also reported in other studies^{15,16}. However, some studies have reported much lower averages^{17,18}, while others have reported much higher averages (19). In our study, the average screen time for mobile is reported as 132 mins / 2.2 hrs (SD: 81 mins). Other studies have reported much lower averages¹⁶⁻¹⁸. In our study, the average screen time for a computer or laptop is reported as 99 mins / 1.65 hrs (SD: 68 mins). Similar findings are also reported in other studies¹⁹. Some studies have reported much lower averages^{16,17}. Our

study reported that the average video game screen time is 93 mins / 1.55 hrs (SD: 70 mins). Other studies have reported much lower averages^{16,17,19}.

Our study's average total difficulties score was 19.1 (18.38 for males and 19.81 for females). It means that, on average, our population is on the upper limit of the borderline category for total difficulties score. This score is very high compared to other studies^{20,24}. In only one of the categories (Portuguese males) in a study by Marzocchi et al.²¹, total difficulties score is found in borderline categories. In our study, the average score for emotional problems is 4.6 (SD: 2.2), which lies in the upper limit of the normal category. Similar findings are also reported in other studies²⁰⁻²⁴. Our study's average conduct problem score is 4.0 (SD: 1.9). It lies in the borderline category. This score is higher than those reported in other studies (20-24). Our study average score for peer problems is reported as 5.3 (SD: 1.7). It is in the borderline category. This score is higher than those reported in other studies^{20,21,23,24}. In our study, the average score for hyperactivity is reported as 5.2 (SD: 1.7). It lies in the normal category. Similar findings are also reported in other studies²⁰⁻²⁴. Our study's average pro-social behaviour score is 7.3 (SD: 2.0). It lies in the normal category. Similar findings are also reported in other studies²¹⁻²⁴. Our study's average score for impact is reported as 3.3 (SD: 3.4). It lies in the abnormal category. Studies have reported lower scores in this category^{22,24}. In our study, odd categories are reported as 20%, 39%, 25%, 42%, 8%, 48% and 58% for emotional problems, conduct problems, hyperactivity, peer problems, pro-social behavior, total difficulties and impact. Similar figures are reported in all the categories except for total and impact categories in other studies^{23,25}. Few studies have reported much lower figures in all these categories except for the pro-social score^{22,24}. There could be many reasons for this difference. First, the study population in other studies is relatively younger^{20,21}. Another possible reason could be ethnicity, i.e., the Asian population compared to a reasonably European population^{20,21}. Ethnicity is also found to be associated with total difficulties score²⁰.

Our regression analysis showed a positive association between age and total difficulties score. A similar association was also reported in other studies²⁵. In our study, we found that males have relatively lower scores on SDQ than females. This finding contrasts with that reported in other studies, where higher scores are reported for males^{20,21,25}. In this study, we did not find any association between the total difficulty score and that of the father's education and the mother's occupation. This is in contrast with other studies²⁵.

There are some limitations of our study which need to be mentioned. One of the most important limitations is the ongoing COVID-19 pandemic, which significantly impacts media usage. The other significant limitation

is the recall nature of exposure to different media sources. Although this standard method is used in the literature, it has many limitations. Future studies are required in a broader population of teenagers from schools, colleges, and universities further to assess the relationship between electronic media usage and behavior.

CONCLUSION

Media exposure in our teenagers is higher as compared to other populations. The difficulty score in our population is higher in almost all the categories. Therefore, a higher frequency of psychosocial problems is expected in our population; media exposure must be reduced to control these problems.

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AUTHOR CONTRIBUTION

Anjarwala ZM: Concept, study design, drafting, data analysis and interpretation, final approval

Beg AA: Concept, literature search, study design, final approval.

Ali Y: Data analysis, data interpretation, critical revision, final approval

Karmani VK: Concept, drafting, critical revision, final approval

Ali S: Literature search, study design, drafting

Kanwal S: Literature search, study design, drafting

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