



ORIGINAL ARTICLE

Screen-based Media Usage Among Children with Autism Spectrum Disorder and their Mothers

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Abstract

Background and Objectives: Screen-based media are becoming a popular tool for leisure and increasing productivity. Our objective was to compare the Screen-Based Media (SBM) usage between children with Autism Spectrum Disorders (ASD) and their mothers, in terms of the device type and duration of daily use.

Methods: Ninety-seven (n=97) mothers of children diagnosed with ASD and attending Center A and Center B constituted the study sample (cases). The control group comprised healthy children whose SBM usage had been measured previously in a similar study using similar methodology (N=75). A special data collection sheet was designed to collect information such as demographic data, type of SBM devices used, and duration of daily usage, using a structured questionnaire.

Results: Mothers used smartphones more frequently ($P=0.001$) whereas children with ASD used tablets ($P=0.001$). Both mothers and children with ASD used television at the same rate ($P=0.924$). Mothers' used SBM for >5 hours per day, which was similar to the screen time of children with ASD.

Conclusion: Mothers' SBM usage was high and was comparable to that of children with ASD. Clinical implications and future directions were discussed to modify such behaviors.

Keywords: Autism Spectrum Disorder; Bahrain; Children; Leisure activities; Mother

Introduction

Screen-based media (SBM) include electronic devices such as television (TV), electronic tablets, video games, and smartphones.¹ Globally, many children <10 years old exceed the two-hour screen time/day limit proposed by the American Academy of Pediatrics.²

The duration of SBM use by parents had an influence on the time spent by their children on SBM. Studies showed that children with a parent who watched ≥ 2 h of TV per day were >5 times likely to watch ≥ 2 h of TV per day.³ The time spent by women on household chores from 1965 to 2010 decreased by 25%, which could be attributed to

SBM usage.⁴ By monitoring the SDM use, parents can reduce the negative effects of media exposure on children.⁵ When parents limited their own screen time, it resulted in a reduction in the time spent by their children on SBM.² A study also revealed that educated parents used less screen time in front of their children compared to medium or less educated parents, thus reducing the screen time of their children.⁶ It has been demonstrated that there is a relationship between increased levels of SBM activity and obesity, and duration of sleep.⁷ However, professional and parental iPad use for children with autism spectrum disorder (ASD) was very useful and had positive outcomes.⁸ Studies in the Gulf Cooperation Council region are scarce. One of the studies in Bahrain revealed that children of employed mothers spent more time on screens than those of homemakers.⁹ Another study that compared SBM usage among children with ASD, attention-deficit/hyperactivity disorder (ADHD), and typically developed siblings showed more frequent pathological use of SBM among children with ADHD in comparison to children with ASD, defined as overuse of video games/smartphones and their reactions when devices were withheld.¹⁰

The definition of ASD used in this research is based on the diagnostic and statistical manual of mental disorders-5 (DSM-5),¹¹ which defines it as a developmental disorder that affects communication and behavior. Individuals with ASD have difficulty in communication and dealing with others; restricted interests; repetitive behaviors; and symptoms that impair their ability to function properly in various walks of life.

This study aimed to determine the association between parental behavior (specifically mothers' screen time) and the corresponding effects on their children's SDM usage. The study hypothesis was that mothers of children with ASD spend the same amount of or more screen time compared to their children.

Method

Design

A comparative, cross-sectional study.

Sample

Cases: Mothers of children aged 3-17 years, diagnosed with ASD, who attended Center A (n=65) and Center B (n=32). All children were diagnosed at the Child and Adolescence Unit, Psychiatric Hospital, Kingdom of Bahrain, based on DSM-5 criteria,¹¹ Child Autism Rating Scale, and Autism Diagnostic Observation Schedule as applicable.^{12,13} The study included a total of 97 cases that attended the autism centers.

Comparison group: Healthy children aged 3-17 years, enrolled in the same autism centers were also examined for the same study parameters (n=75).

Procedures

The data was collected by a member of the research team either by directly calling the mothers who were computer illiterate (n=5) or sending an online form to those who used computers (n=92), over a 1-month period between June 15, 2019 and July 15, 2019. The data collection sheet designed specifically for this study was in Arabic, and it focused on seeking information regarding the mothers' age, employment status, education level, and also contained seven questions related to their SBM use. Information regarding the type of electronic device they used (*viz.*, TV, tablet, smartphone, and/or video games) and the duration spent on each screen type in hours/day was recorded (Appendix-1). The form required 5 minutes for completion. Cronbach's alpha revealed an internal consistency of 0.74, which indicated a good/very good reliability. Face and content validity were examined by the authors who were experts in mental health. Cross-correlation was used to measure construct and criterion-validity. The mothers' results were compared with those of their ASD children who participated in the same study, using the same protocol for data collection. Ethical approval was obtained from the administrative council of the Bahraini Association of Intellectual Disability and Autism. All the cases read and understood the consent form and voluntarily agreed to participate in the study. It was made clear that taking part in the study would not have any consequences on the services provided to them or their children.

Data analysis

Data was analyzed using the statistical package for social science (SPSS) version 25. Descriptive statistics was summarized for the demographic characteristics and outcome measures. The mean and standard deviation (SD) was reported for continuous variables, and applicable counts and percentages were reported for categorical variables. Pearson's Chi-square or Fisher's Exact test and independent samples t-test were used to investigate the difference between groups. Odds ratio (OR) and 95% confidence interval (CI) were calculated. All tests were two-tailed. A *P* value <0.05 was considered as statistically significant.

Results

Table 1 shows the demographic characteristics of the mothers (cases). The mean age group of the cases was 34.3±4.6 years and the mean age of children with ASD was 7.18±2.3 years. Majority of the mothers were employed (46.4%) and had a secondary level of education (46.4%).

Table 1: Demographic characteristics of children and their mothers

| Mean age (years) | Mean ± SD |
|----------------------------|-----------|
| Children | 7.18±2.3 |
| Mothers | 34.3±4.6 |
| Mothers' Employment Status | n (%) |
| Homemakers | 28 (28.9) |
| Non-working | 15 (15.5) |
| Working | 45 (46.4) |
| Student | 1 (1) |
| Retired | 8(8.2) |
| Mothers' Education Level | n (%) |
| Able to read and write | 8 (8.2) |
| Elementary | 14 (14.4) |
| Secondary | 43 (44.3) |
| University and more | 32 (33) |

SD: Standard deviation

Table 2 presents the details related to SBM use by the children with ASD and their mothers. The mothers significantly used smartphones more than

their children (97% vs 74%; *P*=0.001). On the other hand, children with ASD significantly used tablet devices more than their mothers (67% vs 19%; *P*=0.001). There was no significant difference in the usage of TV in both groups.

Table 2: SBM use by mothers and children based on the device type

| SBM Device | Mothers Yes/No (%) | ASD children Yes/No (%) | <i>P</i> value |
|-------------|---------------------|-------------------------|----------------|
| Television | Yes=84 No=15 | Yes=84 No=13.3 | 0.924 |
| Tablet | Yes=18.6 No=81 | Yes=66.6 No=33.4 | 0.001* |
| Smart phone | Yes=96.9 No =3.1 | Yes=74.1 No =25.3 | 0.001* |

SBM: Screen-based media, ASD: Autism spectrum disorders;

*Significance level <0.05

Table 3 provides information on the viewing time per day for each type of screen used. Children with ASD spent significantly more time on tablets compared to the mothers (Odds Ratio [OR]=7.26, Confidence Interval [CI]=3.676-14.35, *P*=0.000), while mothers spent significantly more time on smartphones (OR)=0.083, (CI)=0.035-0.195, *P*=0.000). The TV screen time was more for mothers than their children (*P*=0.062) but was not statistically significant. Both mothers and children spent more than 2 hours/day on SBM.

Table 3: SBM use by daily duration and electronic device type

| Device type | Mothers (Mean±SD) | ASD children (Mean±SD) | Odds Ratio | Confidence interval (95% CI) | <i>P</i> value |
|-------------|-------------------|------------------------|------------|------------------------------|----------------|
| TV | 1.9±1.2 | 1.5±1.6 | - | - | 0.062 |
| Tablet | 0.5±0.9 | 1.8±1.6 | 7.26 | 3.676-14.35 | 0.0001* |
| Smart phone | 1.2±1.5 | 0.5±0.5 | 0.083 | 0.035-0.195 | 0.0001* |

ASD: Autism spectrum disorders, CI: Confidence interval, SD: Standard deviation; *Significance level ≤0.05

Discussion

The results of this study support the initial study hypothesis that the SBM usage by mothers of children with ASD is high and matches that of their children. Mothers used smartphones much more than their children as most mothers have this device, but it is uncommon for very young children to have smartphones. Children used iPad frequently for entertainment and playing games, and to a lesser extent for education; hence, they were using it more than their mothers.¹⁰ The situation was very different when it came to viewing TV. It is likely that children watch TV with their parents in their free time. Furthermore, mothers who were unemployed or homemakers used the TV viewing time as an opportunity for interacting with their children who equally enjoy it. Nevertheless, working mothers used personal computer devices for performing tasks related to homework and obtaining educational materials.⁹ The finding that mothers of children with ASD used SBM for more than 5 hrs per day adds to the existing knowledge regarding the relationship between the mothers' and their children's SBM use.^{1,3} The public should be made aware of this finding to avoid the detrimental effects of SBM overuse on their health.

One might raise the question as to why it is important to evaluate mothers' SBM usage and its impact on children's mental health. It is agreed upon by many researchers that SBM use by children is directly proportional to that of their parents, both in terms of frequency and duration. Parents decide when and to what extent their children can use electronic devices.⁶ However, there is uncertainty regarding the link between smartphone use and clinical manifestations of poor mental health among users. Research outcomes in this matter were inconclusive and showed mixed results.^{14,15} Recently, many studies raised the issue of problematic cellular phone usage and the possibility that people could become addicted to smartphones.¹⁶⁻¹⁸ A recent systematic review based on a meta-analysis and the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) framework concluded that problematic mobile phone usage was found in one out of every four children, and young individuals

were at an increased risk of poor mental health.¹⁸ Parents of youth with ASD might benefit from the several recommendations and resources provided by the American Academy of Pediatrics and the American Academy of Child and Adolescent Psychiatry.¹⁹ Education on the use of SBM needs to be comprehensive and should incorporate all the members of any given family.²⁰

Study limitations

This was a cross-sectional study that depended completely on the mothers' retrospective recollection of events. Other types of reliable data collection methods such as prospective continuous recording using a diary of SBM use over a period of time were not used. Furthermore, the SBM use by fathers was not included in the study protocol.

Clinical implications

SBM use among children and young people is becoming a public health problem. All efforts should be directed at determining the relationship between SBM use and mental health. Pathological use of smartphones is widespread among children and adults. This phenomenon has not been adequately researched, especially its effects on the general functioning and well-being of its users.

Conclusion

This study revealed that mothers' SBM use was high and matched, if not exceeded, that of their children with ASD. The mothers used smartphones more than their children, while the children used tablets more frequently. Both the mothers and their children watched TV frequently but had similar screen time. The new trend of pathological use of smartphones and video gaming by mothers and their children in the ASD population is alarming and merits further examination.

Conflicts of interest

None.

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Appendix- 1

Kindly answer all the questions

- 1) Mother's age: 20-30 31-60 above 60.
- 2) Child's age: Year Months
- 3) Mother's education:
- A. Read and write.
 - B. Primary education.
 - C. Secondary education.
 - D. College education.
 - E. Above college education.
- 4) Mother's employment
- A. Working.
 - B. Unemployed.
 - C. Retired.
 - D. Student.
 - E. Home maker.
- 5) Do you use any of these screens?
- | | | |
|----------------|-----|----|
| A. Television. | Yes | No |
| B. I-Pad. | Yes | No |
| C. Videogames | Yes | No |
| D. Smartphone | Yes | No |
- 6) How many hours per day do you spend watching the following?
- | | | | | | |
|----------------|---|---|---|---|-----------|
| A. Television. | 1 | 2 | 3 | 4 | 5 or more |
| B. I-Pad. | 1 | 2 | 3 | 4 | 5 or more |
| C. Videogames | 1 | 2 | 3 | 4 | 5 or more |
| D. Smartphone. | 1 | 2 | 3 | 4 | 5 or more |
- 7) How do you regulate the screen time for your child?
- A. No regulations.
 - B. Watching screen is not allowed.
 - C. Only on weekends.
 - D. Can watch screen daily but with time limit (mention).