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ORIGINAL ARTICLE

Parents, Screens and outdoor play: Unpacking beliefs and practices for preschoolers in Karachi.

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ABSTRACT… Objective: To explore parental beliefs and practices regarding the regulation of screen time and outdoor playtime among children aged 2-5 years in a densely populated urban setting in Pakistan. **Study Design:** Descriptive Cross-sectional study. **Setting:** In the Outpatient Clinics of (Secondary & Tertiary Care Setup) of a Private Hospital in Karachi. **Period:** July 2022 to December 2022. **Methods:** Interviews were conducted with 314 parents of children aged 2-5 years. Primary measures included parental practices and beliefs about screen time and outdoor playtime. Sociodemographic characteristics, parental practices, and beliefs were analyzed using frequencies and percentages; screen time durations were reported as means with standard deviations. Multivariate logistic regression was used to identify predictors of screen exposure. **Results:** A total of 69.4% of parents agreed that screen time for children under 5 years should be restricted to under 2 hours daily. Among participants, 60 parents (19.1%) reported no screen exposure for their children. Around two-third of parents (66.6%) used smart devices to occupy children during household tasks, and 68.2% believed these devices positively impacted learning, vocabulary, and responsiveness. More children had under 60 minutes of outdoor playtime on weekdays. **Conclusion:** This highlights a disconnect between parental awareness of screen time guidelines and actual practices, alongside limited outdoor play. Majority of the parents understood the need to regulate screen exposure, however Positive parental engagement to promote balanced screen use and increased physical activity is essential.

Key words: Early Childhood, Outdoor Playtime, Parental Beliefs, Pakistan, Screen Time.

INTRODUCTION

In today's digital era, exposure to smart devices has become increasingly prevalent, beginning early in children's lives. Devices such as televisions, laptops, smartphones, and tablets are now integral to daily routines, but their impact on young children is complex, with both beneficial and potentially harmful effects. Access to engaging games, videos, and interactive applications promotes screen-based activities, often at the cost of physical play, which is crucial during early childhood—a formative stage for cognitive and physical development. The increasing use of these technologies has seen a mixed response about their advantages and disadvantages. Despite being an invaluable educational resource their harmful impact on children at an early age of brain development cannot be overlooked.[1]

Evidence has shown that while smart devices can serve as valuable educational tools, providing opportunities for early learning and social engagement, they are also associated with negative outcomes. These include disturbed sleep, reduced concentration, diminished learning opportunities, mood disturbances, and physical health issues such as weight gain and obesity.[2] The link between sedentary behavior and rising obesity rates among preschool-aged children underscores the need to balance screen exposure with active, outdoor play to support healthy cognitive and physical development.[2,3] Healthcare providers are the main source for providing guidance and recommendations for a healthy lifestyle in young children during routine visits. The current recommendations by The American Academy of Pediatrics (AAP), prohibit the use of any electronic devices by children

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under 2 years of age. It also recommends that children who are older than 2 years of age should not be allowed to spend more than two hours per day using electronic devices.[4,5] It further restricts the presence of televisions inside children's rooms. Interactive activities that help in the proper development of the brain, like talking, playing, singing, and reading are recommended for this age group for enhanced development. The Australian Department of Health recommends that children aged between 2 to 5 years should be supervised and screen time use should be limited to a maximum of 1 hour per day.[6] Despite these guidelines, data from the International Children's Accelerometer suggests that two-thirds of children have failed to meet this criteria. Guidelines from the National Association for Sport and Physical Education 2002 also recommend increasing outdoor playtime for children aged 2-5 years to enhance their psychosocial development in early childhood.[7] Routine outdoor play which is any unorganized, outdoor physical activity is a significant factor that contributes to the physical and mental health of young children.[8,9]

Research indicates that screen time exposure that starts in infancy may be a predictor of screen time use as age increases.[17] In the unique socioeconomic and cultural context of LMICs, parental practices around screen time and outdoor play often differ from high-income countries, highlighting the need for localized research. This study addresses this gap by exploring screen exposure and parental regulation among children aged 2-5 years in Karachi, Pakistan. The findings provide insights into how socioeconomic and cultural factors shape early childhood screen habits, offering a foundation for policies and parental guidance strategies tailored to similar LMIC settings to promote healthier screen use and outdoor play.

METHODS

This descriptive study was conducted from July 2022 to December 2022 in the Department of Pediatrics at a private hospital in Karachi, after obtaining approval from the institutional ethics committee (2022-7311-22042-26/06/2022). The sample size was based on an Australian study that demonstrated that mothers' perceptions of the impact of screen time on social and cognitive well-being had a significant indirect effect on children's actual screen time through mothers' perception of the appropriate amount of screen time for their child.[10-12] We employed a non-probability convenience sampling technique to recruit apparently developmentally normal and healthy male and female children aged 2–5 years, who were visiting the designated hospital's outpatient departments (OPDs). Non-parent caregivers, children with co-morbidities (such as severe malnutrition, chronic neurological, gastrointestinal, hematological, and oncological illnesses), physical or mental disabilities, and parents with a language barrier were excluded. Enrolled parents were interviewed using a structured questionnaire on a one-to-one basis after obtaining informed consent. Information comprising sociodemographic characteristics, parental practices regarding children's screen time and outdoor playtime, and parental beliefs about screen time in children was obtained. Data collection was conducted in a designated area to ensure privacy and confidentiality.

Screen time was defined as the time spent using devices such as televisions, tablets, laptops, and smartphones for educational or leisure activities, or both.[4,13] Screen time was assessed separately for weekdays and weekends. Weekdays were defined as Monday to Friday, and weekends included Saturdays and Sundays. Outdoor playtime was considered as any time spent engaging in activities that amuse or occupy children in outdoor environments.[14] Parental perceptions of their child's screen time were also recorded. Responses regarding giving screens to children were graded on a 3-point Likert scale. Parental awareness of recommended screen time was also assessed. Additionally, parents were asked for their opinions on the various reasons for giving/showing screen-based devices to their children. Duration of screen time on weekends and weekdays was recorded separately in hours per day as open-ended responses. The amount of time children spent using smart devices for educational and leisure activities was also recorded separately in hours per day as open-

ended responses. Outdoor playtime of a child was categorized as being engaged in outdoor activities for less than or more than 60 minutes on weekdays and weekends, respectively. Responses for parental beliefs were recorded on a Likert scale with responses categorized as agree, neutral, and disagree.

Data analysis was conducted using SPSS version 21.0. Descriptive statistics were used to summarize sociodemographic characteristics, parental practices, beliefs about screen time exposure, and outdoor playtime in children. Frequencies and percentages were reported for categorical variables, while means and standard deviations were calculated for continuous variables, such as hours of screen time. To explore factors associated with screen use (dependent variable: screen use = 1, no screen use = 0), multivariate binary logistic regression analysis was performed. Independent variables included sociodemographic characteristics (e.g., number of siblings, family structure, and mother's education), parental practices, and parental beliefs. Adjusted odds ratios (OR) with 95% confidence intervals (CI) were reported to quantify associations between independent variables and screen exposure. P-values <0.05 were considered statistically significant.

RESULTS

We interviewed 314 parent-child pairs who had children aged between 2-5 years. Amongst the children surveyed, most were aged 3 years (115,36.6%) and were slightly more often female(160,51%). Children were generally from nuclear families (166,52.9%) with 1-2 siblings. Mothers tended to be homemakers with graduate-level education (152,48.4%) while fathers, also often educated to a graduate level, and mostly employed(303, 96.5%). Household income commonly fell between Rs. 50,000 to 100,000, this reflects a pattern of educated, predominantly nuclear families.

Smartphones were the most commonly used device (59.9%) and there is a high proportion of parents (82%) who believe children under 5 should not have smart devices, (Figure-1) reflecting strong parental caution around early device exposure. Additionally, many parents enforce this by using kid's mode (73.6%). This underscores a cautious approach by parents towards screen time and device access for young children. 77.7% of parents actively engage in physical activities with their children. Play often includes interaction with toys (51.9%) and peers or siblings (40.1%). However, outdoor play remains limited, as many children spend less than 60 minutes outdoors on both weekdays (48.1%) and weekends (43%). (Figure-3) Despite parental involvement, the combination of screen time exceeding 2 hours and limited physical activity indicates an imbalance, highlighting the need for more outdoor or active play opportunities. (Table-I)

On weekdays, children had an average of 2.17 hours (SD ±1.93) of screen time per day while weekends saw a slightly lower average screen time of 2.05 hours (SD ±1.97) per day. Average screen time for educational purposes per day was approximately 0.7 hours (SD ±1) and for leisure, it was an average of 2.1 hours (SD ±2.16) per day revealing a more substantial proportion of time spent on entertainment-related content. (Table-II)

While assessing parental beliefs about screen time use in children, a majority of the parents agreed that they used smart devices to distract children (72%) and to facilitate the completion of chores (66.6%). A significant proportion (72.6%) believed that children's early learning can be enhanced, and noted vocabulary improvement (74.5%) and increased responsiveness (64.3%) in their children. (Table-III)

The multivariate logistic regression analysis identified several significant predictors of screen exposure in children. The use of YouTube's kid mode was associated with lower odds of screen exposure (OR = 0.44, 95% CI = 0.20–0.96, p = 0.038). Similarly, children who were perceived to watch screens with less attention were significantly less likely to have screen exposure (OR = 0.19, 95% CI = 0.093–0.42, p < 0.001). Parental disagreement with the idea that screens enhance early learning also reduced the likelihood of screen exposure (OR = 0.26, 95%

CI = 0.10–0.67, p = 0.007). Additionally, parental practices, such as providing screens to occupy children, were associated with reduced screen exposure (OR = 0.36, 95% CI = 0.16–0.81, p = 0.01) (Table-IV).

Variables	Categories	N (%)
Type of gadget used most frequently	Not using any screen	60(19.1)
	Smart phone	188 (59.9)
	Tablet	24 (7.6)
	Television	42 (13.4)
Type of App used most frequently	None	60(19.1)
	Social Apps (Facebook,Instagram, Twitter)	9 (2.9)
	YouTube	137 (43.6)
	Gaming	108 (34.4)
Do you use kid's mode?	Yes	231 (73.6)
	No	83 (26.4)
Should children under 5 years of age be given a smart devices?	Yes	58 (18.5)
	No	256 (81.5)
Do other children at home have the same screen time as this child?	Yes	152 (48.4)
	No	162 (51.6)
Does your child use any smart device while eating meals?	Yes	186 (59.2)
	No	128 (40.8)
On weekdays where does your child spend time?	At home	253 (80.6)
	Daycare	13 (4.1)
	Preschool	48 (15.3)
On average how many hours of outdoor playtime does your child have in one day on weekdays?	< 60 minutes	151 (48.1)
	> 60 minutes	110 (35)
	None	53 (16.9)
On average how many hours of outdoor playtime does your child have in one day on weekends?	< 60 minutes	135 (43)
	>60 minutes	135 (43)
	None	44 (14)

Table-I. Parental practices related to screen time and physical activity in children (n=314)

Variables (Hours)	Mean (± SD)
Average screen time on a weekday	2.17 (1.93)
Average screen time on a week ends	2.05 (1.97)

Table-III. Average screen time (in hours) of children having screen exposure (n=254)

Variables	Agree n (%)	Neutral n (%)	Disagree n (%)
Do you think parents give smart devices to their children to distract them?	226 (72)	57 (18.2)	31 (9.9)
Do you think parents give smart devices to their children so that they can complete chores?	209 (66.6)	78 (24.8)	27 (8.6)
Can you easily complete your chores after giving a smart device to your child?	192 (61.1)	79 (25.2)	43 (13.7)
Do you think using smart devices can enhance early learning?	228 (72.6)	50 (15.9)	36 (11.5)
Do you think your child's learning has been enhanced by using smart devices?	214 (68.2)	69 (22)	31 (9.9)
Do you think your child's vocabulary has improved from watching programs on smart devices?	234 (74.5)	58 (18.5)	22 (7)
Do you think your child responds more smartly as compared to those children in family who do not use smart devices?	202 (64.3)	86 (27.4)	26 (8.3)
Is your child more attentive while using a smart device?	186 (59.2)	81 (25.8)	47 (15)
Do you think keeping a child occupied with smart devices at home is safer than sending the child outdoors?	163 (51.9)	99 (31.5)	52 (16.6)

Table-II. Parental beliefs about screen exposure in children (n=314)

Variables	Adjusted OR (95%CI)	P-Value
Use of kid's mode in You tube		
Yes	Reference	
No	OR=0.44(95% CI:0.20,0.96)	0.038
Does your Child watches screen with more attention?		
Yes	Reference	
No	OR=0.19 (95% CI:0.093,0.42)	0.00
Do you think screen use is related to enhance early learning?		
Agree	Reference	
Neutral	OR=0.37 (95% CI:0.16,0.85)	0.019
Disagree	OR=0.26 (95% CI:0.10,0.67)	0.05
Do you think parents give screen to their children to distract them?		
Agree	Reference	
Neutral	OR=1.27 (95% CI:0.51,3.16)	0.59
Disagree	OR=0.21 (95% CI:0.06 ,0.80)	0.02
Do you think parents give screen to their children to keep them occupied?		
Agree	Reference	
Neutral	OR=0.36 (95% CI:0.16,0.81)	0.01
Disagree	OR=9.03 (95% CI:1.04 ,78.0)	0.04
Do you think your child respond smartly as compared to other children who do not have screen exposure?		
Agree	Reference	
Neutral	OR=0.56 (95% CI:0.27,1.17)	0.12
Disagree	OR=4.24 (95% CI:0.73,24.6)	0.10

Table-IV. Multivariate logistic regression analysis including all variables with screen exposure (Screen Use vs. No Screen)

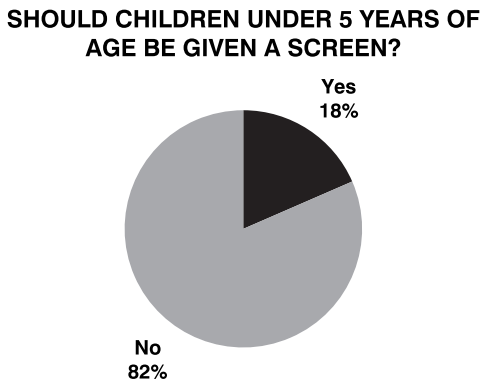

Figure-1. Parental awareness about screen use

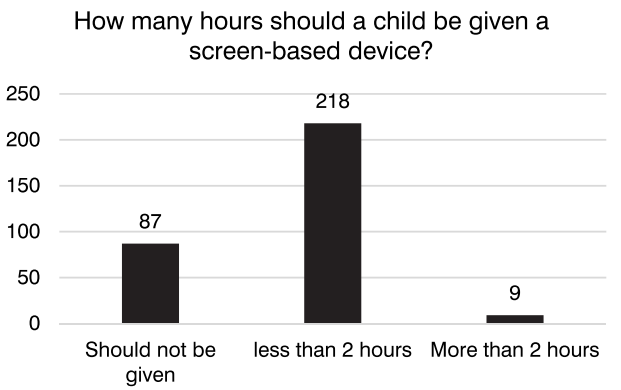

Figure-2. Parental belief about using screen use

DISCUSSION

This study highlights a discrepancy between parents' awareness of screen time recommendations and their actual practices, emphasizing the influence of convenience and perceived educational benefits on early device introduction during a crucial developmental period Study from India reported that 99.7% Indian children are exposed to screen till 18 months of age and exposure started as early as 2 months of age.[15,16] A similar study on children's use of media in Korea found that smart devices were introduced to children as early as 12-24 months of age.

Screen exposure was not a primary outcome, but several factors were assessed affecting screen exposure in children.

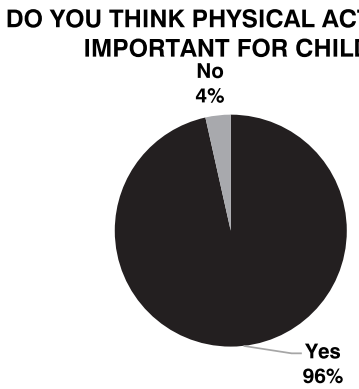

Figure-3. Belief about Physical activity in children

The definition of excessive screen time should be considered carefully when comparing studies, as well as when evaluating their generalizability and reproducibility. As it varies significantly across literature. For instance, one study[17] defined it as more than 4 hours per day, while another classified it as over 3 hours.[18] The Indian Academy of Pediatrics sets the threshold at 2 hours.[13] In contrast, the American Academy of Pediatrics recommends no screen time for children under 2 years of age and limits of 1 hour per day for children aged 2–5 years[19]

The average screen time for weekdays and weekends are in opposition with the beliefs of the parents most of whom believed (69.4%) that the recommended daily screen time in children should be less than 2 hours**.** Consistent engagement with smart devices coupled with low levels of physical activity can have implications for the psychosocial development of children in early childhood. Pediatric guidelines, from the American Academy of Child and Adolescent Psychiatry (AACAP) suggest limiting non-educational screen time to about 1 hour on weekdays and 3 hours on weekend days in children aged 2-5 years and guidelines from Indian Psychiatry Society suggests no screen use under 24 months.[20,21] The average screen times from our study however are consistent with screen time patterns in children from around the world with a meta-analysis revealing the prevalence of adherence to screen time guidelines being only 36.5% in children aged 2-5 years.[22] A study from India reported a mean screen time of 2.02 hours per day on weekdays, and 1.8 and hours per day on the weekends which is consistent with the findings of our study.[23] A comparative study from the USA found that the average screen time in children aged less than 2 years was 3 hours per day, which doubled from 1997 to 2014 in the same group.[24]

The observation that children spend more time on leisure-oriented screen activities compared to educational ones aligns with previous research, highlighting the need for balanced screen time guidelines that promote both learning and entertainment.[20] Additionally, the popularity of "YouTube" and "gaming apps" highlights the appeal of visually engaging content found in these applications. The development of visually appealing and engaging educational digital content can help overcome this issue and enhance children's educational digital experiences. Parental beliefs and practices regarding screen exposure exhibit a range of perspectives, showcasing the complexity of attitudes toward screen time. However, one prevailing parental practice stood out which is the use of smart devices to distract children. This mirrors findings from a study conducted on low-income Mexican mothers which found that parents who work from home or need to do household chores have a greater reliance on screen media to entertain their children.[25] A greater reliance on smart devices for managing children's behavior and daily routines; specifically in lower-income households where parents may not be able to devote time and monetary resources was also found in other similar studies.[26,27] Moreover, 59.2% of children were having screen use during meal times which could be an obesogenic factor for children. This is consistent with findings from a study from Lithuania where a majority of children (55.7%) aged 2-5 years old were using a smart device during meal times.[28] These findings highlight the established association between increased screen time use and the risk of negative emotional and behavioral problems, childhood obesity, and low school performance.[29,30] However, a large body of research also suggests that educational screen time has a positive impact on cognitive development, vocabulary, literacy, social behavior,

and academic knowledge. Thus, promoting awareness among parents about how to optimize screen time use for education and leisure can contribute to a more balanced approach toward the use of technology which may have benefits for early childhood development.[31,32]

These associations highlight the influence of parental attitudes and practices on young children's screen exposure, suggesting that both parental intentions and specific screen-management practices play a role in screen time behavior. The scoping review revealed that parents who perceived themselves as more self-efficacious in managing screen time-related tasks tended to have children with reduced screen viewing.[33] Parental self-efficacy refers to a parent's belief in their own ability to effectively manage and influence their child's behavior and development. The findings related to physical activity reveal high levels of parental engagement in playtime by the parents. This emphasizes the recognition of its importance by parents which is reflected in their efforts to engage in active play with their children.[34] Parental involvement or supervision during physical activity may play a crucial role in maximizing physical activity in children, especially for outdoor activities in urban areas.[35,36] A considerable proportion of parents in our study perceive smart devices as safer alternatives to outdoor play. This may be a contributing factor to the high proportion of parents giving smart devices to their children. A Canadian study identified 82% of parents as having concerns about their children's safety during outdoor playtime.[37] Furthermore, an Australian longitudinal study saw parents' concerns about outdoor safety rise notably from 26% to 42%, between the years 2007 to 2013.[38] The concerns about outdoor safety highlight the importance of the provision of safe play areas and interventions for a safe outdoor environment for children. This may be of help in limiting the use of smart devices as an alternative to physical playtime. The findings emphasize the need for culturally sensitive educational initiatives to raise parental awareness about balancing screen time for educational and leisure purposes. Policymakers should consider diverse parental beliefs, economic realities, and safety concerns when formulating guidelines and interventions. Additionally, promoting parental engagement in outdoor activities and creating accessible, safe play environments could help reduce excessive reliance on digital devices.

This study has several notable strengths. It provides a detailed exploration of parental practices and beliefs regarding screen time and physical activity in a low- and middle-income country context, a setting where such research is limited. The use of a large and demographically diverse sample enhances the generalizability of the findings within urban populations. Additionally, the integration of both quantitative measures (e.g., screen time patterns, physical activity) and qualitative insights (e.g., parental beliefs and attitudes) provides a comprehensive understanding of the topic. The use of multivariate logistic regression to identify predictors of screen exposure adds analytical rigor and highlights actionable factors for interventions.

LIMITATIONS

Reliance on parent-reported data for screen time use and outdoor playtime can be prone to potential recall and social desirability bias and may overstate or underestimate the actual exposure.[39] The questionnaire used in this study was piloted to assess its clarity, relevance, and appropriateness, thereby ensuring face validity. However, additional validation steps, such as construct validity or reliability testing, were not conducted. This may limit the robustness of the tool in accurately measuring the intended constructs. Future research conducted in this area can employ more reliable measures, such as diary methods for screen time use along with objectively measured outdoor playtime.

CONCLUSION

Our Findings highlight a disconnect between parental awareness of screen time guidelines and actual practices, alongside limited outdoor play. Majority of the parents understood the need to regulate screen exposure, however Positive parental engagement to promote balanced screen use and increased physical activity

is essential. Parents reliance on technology as a convenient tool for managing children's behavior was identified, highlighting the need for culturally sensitive educational initiatives and policies for safe outdoor play to support healthier developmental outcomes for children.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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2	**Ibtisam Qazi:** Data analysis, Proposal writing and Manuscript review.
3	**Danish Abdul Aziz:** Manuscript review and Finalization.
4	**Farah Naz Qamar:** Supervisor, Conceptualized the idea and final manuscript review.