

A Study of Knowledge, Attitude and Practice of Children in the Elementary School about Using Smart Devices in Majmaah, KSA

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ABSTRACT

Introduction: Smart devices usage has increased among children recently. Young children are using smart devices anytime and anywhere, especially with the invention of smart phones and the replacement of desktop computers with digital tablets. With the rapid improvement advancement in smart devices, there is an explosion of electronic media games/education packages directed at preschool children in many societies.

Methodology: This cross-sectional study dealing with the knowledge, attitude, and practices of children in elementary school about using smart devices was conducted in Majmaah city, Saudi Arabia. The data was collected from 231 participants aged between 7-12 years using a close ended self-administered questionnaire.

Results: Majority of the participants 176 (76.2%) were using smart devices for playing but very few 10 (4.3%) were using them to help studying. Majority of the parents strongly agree that using the devices have a negative effect on studying, sleeping, behavior (aggressiveness) and physical activities of their children. Only 52 (22.5%) of the parents are aware about risks of the smart devices. Children who playing game are not aware of its risks $p=0.012$. Children's attention significantly reduced after using of smart devices for two hours or more $p=0.041$.

Conclusion: Smart devices are widely available and regularly accessed by families and their elementary school children as an accepted part of daily life. This raises the need for parents to monitor their children's smart devices use to minimize potential health and development. Many issues were identified within this study including the negative impact of smart devices and the link between children's behavior and smart devices.

Key words: Smart devices, Elementary school, Knowledge, Attitude, Practice

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INTRODUCTION

Smart devices are interactive electronic gadgets that understand simple commands sent by users and help in daily activities. Some of the most used smart devices are smartphones, tablets, and other personal electronics. While many smart devices are small, portable personal electronics, they are in fact defined by their ability to connect to a network to share and interact remotely. Many TV sets are also therefore considered smart devices [1]. Smart devices usage has increased among children recently. Young children are

using smart devices anytime and anywhere, especially with the invention of smart phones and the replacement of desktop computers with digital tablets. With the rapid improvement advancement in smart devices, there is an explosion of electronic media games/education packages directed at preschool children in many societies [2,3]. A study in China reported that almost all families had at least one computer at home. Around half (54.5%) of the had computers located in their living room, with the next highest number (40.1%) located in other rooms. More than half of the parents (64.4%) spent less than one hour per day together with their children [2]. Many of the previous articles have promoted the concept of the usage of smart devices among children since they are using smart devices anytime and anywhere with an increasing array

of entertainment technologies have become available [3].

Recently, it has been noticed that with this rapid advancement in smart devices that Nine-month-olds spend about an hour a day watching television, 5-year-olds are begging to play with their parents' iPhones, and 7-year-olds are sitting down in front of a computer almost daily to play video games or check out how their avatars are doing in their favorite social media [4]. A study done by GSM Association about Children use of mobile phones in 2014 provides a detailed comparison of children's mobile phone and internet usage in seven European countries-Belgium, Denmark, Ireland, Italy, Portugal, Romania and the United Kingdom-with that of children in Japan shows that two in three children who use a mobile phone have a smartphone. 34 per cent of children surveyed use a tablet. 71 per cent of all children surveyed who use mobile phones access the internet on their device [5].

A study published by the American Academy of Pediatrics (AAP) stated that on a typical day, 75% of the children watched television and 32% watched videos/DVDs, for approximately 1 hour and 20 minutes. Twenty-seven (27%) of children within 5-6 year used a computer for 50 minutes on average/day. Majority of the children aged 3-6 years fell within the AAP guidelines, but 70% of them aged between 0-2 years did not [6].

A search of previous published studies related to smart devices and its utilization by children is almost non-existent in Saudi Arabia. To initiate a revolutionary step in creating an environment of future applications in the present day use particularly in the children environment, it was felt that a study of the knowledge, attitude and practice is a necessary step to establish the groundwork for further benefits in the future of smart devices and its application in Saudi Arabia.

MATERIAL AND METHODS

This cross-sectional study was conducted among male children in elementary schools of Majmaah city which is located 180 km from the capital city of Saudi Arabia (Riyadh). It has a population of 60,000 of which 31.6% comprise of <15 years

population. Simple random sampling technique was used to select the 4 representative elementary schools in Majmaah city. The level of precision formula was used to calculate the sample size using $p=0.50$, $1-p=0.50$, $z=1.96$ and $d=0.05$. Inclusion criteria were, children between 7-12 years studying in the elementary schools in Majmaah city, whereas children younger than 7 years, more than 12 years, having disability and with chronic diseases were excluded from the study. The data was collected using the questionnaire. The first part contains demographic information; the rest of the parts contain information about the knowledge, attitude, and practice. The questionnaire was also translated into local language for easy understanding. All the data were entered and analyzed using IBM SPSS 23. Frequencies and percentages were calculated for qualitative variables. Associations between the categorical variables were seen using the Pearson's chi-square and Fisher Exact tests. A 95% degree of freedom with p-value of <0.05 was considered as statistically significant. Ethical approval was obtained from Ethics Committee of Health and Basic Medical & Health Research Center (BMHRC), Majmaah University. Respondents participated in the study on a voluntary basis. Confidentiality and anonymity of the subject was maintained throughout the study. All data were amalgamated to further reduce the potential for identification of participants.

RESULTS

The data was collected from 231 respondents, although the calculated sample size was 384 of which only 231 responded to the questionnaires. The response rate was 60.1%. From the collected data 131 (56.7%) respondents were of the age between 6-8 years, while 89 (38.5%) were between 9-10 years and only 11 (4.8%) had age of between 11-12 years. Tablets were the most frequent devices that was being used by majority of the respondents 78 (33.8%), followed by PlayStation 55 (23.8%), smartphones 43 (18.6%), laptops 15 (6.5%) and 4 (1.7%) were using other smart devices. Slightly more than one-third of the families had a monthly income of 5000 SAR, while 85 (36.8%) had an income between 5000-10000 SAR and 63 (27.3%) had a decent income of more than 10,000 SR. Majority of the families 195 (84.4%) allowed their children to use the

smart devices, whereas the rest 36 (15.6%) said they do not allow the children to use the smart devices. Around 66 (28.6%) of the children were using the smart devices for almost an hour daily, 71 (30.7%) were using two-hour average daily, while 22 (9.5%) were using it for three hours, 24 (10.4%) were using it for four hours per day and 12 (5.2%) were using for more than 4 hours per day. Most of the children 176 (76.2%) were using the smart devices for playing games, 10 (4.3%) used for studying, 4 (1.7%) for watching videos and 5 (2.2%) for social media surfing. Results are presented in table 1.

Regarding the negative effects of smart devices on studying, 107 (46.3%) of the parents strongly agreed to the statement, 71 (30.7%) parents agreed to it, whereas 31 (13.4%) of the parents were neutral in opinion, 11 (4.8%) disagreed and strongly disagreed about the negative impact, respectively. Most of the parents 103 (44.6%) strongly agreed that these devices affected their children's sleeping, 70 (30.3%) agreed to it, 23 (10%) were neutral, disagree 20 (8.7%) and strongly disagree 15 (6.5%). Some families have experienced some sort of deficiency in their relationship that is caused by these smart devices. The parents who strongly agree on that were 91 (39.4%) and 69 (29.9%) also agreed to it, in-contrast 29 (12.6%) disagreed and 15 (6.5%) parents strongly disagreed. Majority of the parents 175 (75.7%) strongly agreed-agreed that the smart devices affected their children behavior. Whereas 26 (11.3%) were

neutral in opinion, 17 (7.4%) disagreed and 13 (5.6%) strongly disagreed with the statement. Again, bulk of parents 187 (80.95%) strongly agreed-agreed that their children are not physically active because of using the smart devices, 22 (9.5%) were neutral in opinion and 22 (9.5%) disagreed-strongly disagreed that their children were as active as if there were no smart devices. Results are presented in table 2.

A significant association was observed between the purpose of using smart devices and awareness of risks of smart devices ($p=0.012$), results showed that children who were using smart devices for playing were the least aware of its risks. Similarly, a significant association was observed between the duration of smart device use and children's attention ($p=0.041$), showing that those who were using the smart devices for two hours a day were more vulnerable to have less attention than the rest of the children who were using for less than two hours. Again, a significant association was observed between the purpose of using smart device and duration of its use ($p<0.001$), showing that children most commonly were using the smart devices for playing games 2 hours a day. The association between the purpose of using smart devices and aggressiveness was statistically significant ($p=0.010$), showing that the aggressiveness was prevalent most among children who were using their smart devices for playing. Results are presented in table 3 and 4.

Table 1: Demographics, type and purpose of using smart devices.

Parameters	n = 231	%
Age		
6-8	131	56.7
9-10	89	38.5
11-12	11	4.8
Type of Smart Device		
Tablet	78	33.8
Laptop	15	6.5
PlayStation	55	23.8
Smart phone	43	18.6
Other	4	1.7
NA	36	15.6
Purpose of Using the Smart Devices		
Playing	176	76.2
Studying	10	4.3
Watching videos	4	1.7
Social media	5	2.2
NA	36	15.6

Table 2: Demographics, type and purpose of using smart devices.

Statements	Strongly Agree	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
Smart devices use has a negative impact on children	107 (46.3)	71 (30.7)	31 (13.4)	11 (4.8)	11 (4.8)
Smart devices use affect children sleep	103 (44.6)	70 (30.03)	23 (10.0)	20 (8.7)	15 (6.5)
Smart devices use affect children's behavior	92 (39.8)	83 (35.9)	26 (11.3)	17 (7.4)	13 (5.6)
Smart devices use reduces physical activity	123 (53.2)	64 (27.7)	22 (9.5)	8 (3.5)	14 (6.1)

Table 3: Association between purpose of using the smart devices with awareness and Aggressiveness due to smart device usage.

	Purpose of Using Smart Devices					p-value
	Playing	Studying	Watching Videos	Social Media	NA	
Awareness about the risk of smart devices						
Yes	42 (18.2)	5 (2.2)	2 (0.9)	0 (0.0)	3 (1.3)	0.012*
No	122 (52.8)	5 (2.2)	2 (0.9)	3 (1.3)	28 (12.1)	
I don't know	12 (5.2)	0 (0.0)	0 (0.0)	2 (0.9)	5 (2.2)	
Do children become aggressive when smart devices are taken						
Yes	124 (53.7)	3 (1.3)	3 (1.3)	2 (0.9)	21 (9.1)	0.010*
No	44 (19.0)	4 (1.7)	1 (0.4)	2 (0.9)	8 (3.5)	
I don't know	8 (3.5)	3 (1.3)	0 (0.0)	1 (0.4)	7 (3.0)	
Duration of using Smart Devices						
1 Hour	46 (19.9)	1 (0.4)	2 (0.9)	1 (0.4)	7 (3.0)	<0.001*
2 Hours	55 (23.8)	8 (3.5)	1 (0.4)	2 (0.9)	3 (1.3)	
3 Hours	24 (10.4)	1 (0.4)	1 (0.4)	1 (0.4)	2 (0.9)	
4 Hours	31 (13.4)	0 (0.0)	0 (0.0)	0 (0.0)	5 (2.2)	
Others	11 (4.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
NA	9 (3.9)	0 (0.0)	0 (0.0)	1 (0.4)	19 (8.2)	

Table 4: Association of hours of using the smart devices with impact on children attention.

Hours of using Smart Devices	Impact of Using Smart Devices on Children Attention					p-value
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1 Hour	20 (8.7)	19 (8.2)	12 (5.2)	5 (2.2)	1 (0.4)	0.041*
2 Hours	34 (14.7)	20 (8.7)	9 (3.9)	5 (2.2)	1 (0.4)	
3 Hours	11 (4.8)	7 (3.0)	4 (1.7)	4 (1.7)	3 (1.3)	
4 Hours	12 (5.2)	13 (5.6)	4 (1.7)	3 (1.3)	4 (1.7)	
Others	4 (1.7)	5 (2.2)	2 (0.9)	0 (0.0)	0 (0.0)	
NA	6 (2.6)	11 (4.8)	2 (0.9)	9 (3.9)	1 (0.4)	

DISCUSSION

Multiple studies worldwide have shown a positive correlation of children with usage of the smart devices and the negative impact of them, and the link between children's behavior and smart devices [2,4,5,7-9] Our study has tried to analyze the knowledge, attitude, and practice of the children in elementary school about using smart devices and their effect on them. In this study the results of frequency of media use were consistent with the findings of a study conducted in North American by Rideout et al. [4] who identified that the time spent on a computer each day is mostly spent on playing games, followed by watching videos, educational purposes and doing homework. Parents play a crucial role in promoting and maximizing their elementary school children's healthy smart devices use. As children will try various ways to explore their world [10] to maximize crucial experiences, a

balance is necessary between smart devices use and other daily activities. Many issues were identified within this study including the link between children's behavior and smart devices use were consistent with the findings of study conducted in a Chinese community by Wu et al. [2] As easier access to smart devices have become a norm, it is not surprising that nearly all families studied have a smart device [2,4]. This indicated that Majmaah elementary school children are likely to be regularly exposed to smart devices.

This was a self-administered questionnaire-based study and the presence of respondent bias cannot be ruled out. This could impact the result of the study in some way. Furthermore, due to time constraint a greater number of participants could not be included in the study sample. Since this was an attempt to establish a baseline study in Majmaah on a very trending

topic worldwide, efforts should be made to overcome these limitations in future studies. However, the recommendations from the study are that primarily the gap need to be filled like increasing awareness about the risks of using smart devices. The parents must monitor their children's smart devices usage to minimize the potential health and development. A health education and awareness campaign by the central government to the general population are important to minimize the risks of using the smart devices.

CONCLUSION

Smart devices are widely available and regularly accessed by families and their elementary school children as an accepted part of daily life. This raises the need for parents to monitor their children's smart devices use to minimize potential health and development. Parents play a crucial role in promoting and maximizing their elementary school children's healthy smart devices use.

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