Impact of the iPad on Saudi Young Children in the Home Environment as Perceived by Their Mothers

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Abstract: The study investigated the effect of using the iPad at home by Saudi young children. Results showed that half of the children in the sample have their own iPad. 50% spend 1-2 hours a day using the iPad; 30% use it on holidays. 74% believe that nowadays use of the iPad has become a necessity. They like to introduce their children to latest technologies. The children can learn quickly and easily. The iPad also keeps the child calm and occupied while the mother is busy, having visitors, or running errands. However, the mothers reported that using the iPad by young children has several negative effects such as: distraction, social isolation; addiction to the iPad; losing their temper when the iPad is taken from them or when it is out of battery. The iPad's glare and staring at the iPad for a long time might affect children's eyesight. The children do not feel like moving or playing, socializing, or communicating with others while using the iPad. The mothers did not agree on the optimal age for using the iPad. The majority recommended setting a time limit for using the iPad under the parents' supervision. Results and recommendations are reported in detail.

Keywords: *iPads, mobile technology, mobile devices, young children, kindergarten, skill development, iPad use, iPad positive effects, iPad negative effects, home use.*

I. INTRODUCTION

Nowadays mobile technologies such as smart phones, iPads and Tablets are commonly used at home by children of all ages. In addition, a growing number of elementary schools, kindergartens, and childcare centers are embracing mobile technologies. At home, children spend a lot of time interacting with mobile devices and at school, teachers are integrating mobile technologies in classroom instruction in almost all subjects especially reading, writing, math, science, drawing and others. The extensive utilization of mobile technologies by students, especially young children, has created a need to examine the ways in which young children use mobile technologies in their thinking, learning, and playing. A literature review has shown a plethora of research studies that investigated the effects of mobile technology especially iPads on children of all ages. Numerous studies confirmed the positive effects of the iPad on children's learning such as the development of reading, literacy and phonological awareness (Fink 2018; Chai, 2017; Reeves, Gunter, and Lacey, 2017; Aliagas and Margallo, 2017; Dennis 2016); vocabulary (Vatalaro and others, 2018; Terantino, 2016); writing skills (Zhang and Quinn, 2020; Dunn and Sweeney, 2018); math and numeracy skills (Miller, 2018; Reeves, Gunter, and Lacey, 2017; Moyer-Packenham and others, 2016); observational skills in science (Wise, McGregor and Bird, 2015); drawing skills (Borg, Margareta, 2019); in addition to the benefits of story book, digital and animated eBook apps (Aliagas and Margallo, 2017; Eutsler, and Trotter, 2020; Sun, He, Jieying and Roberts, 2019). The iPad also helps children in connected learning, creating, sharing, and publishing their own insights (Vartiainen, Leinonen and Nissinen, 2019); and in playful explorations and creative play (Yelland and Gilbert, 2018; Arnott, Grogan and Duncan, 2016).

A second group of studies showed positive effects of the iPad on young children's social skills such as the development of the Theory of Mind attributes and incidents of prosocial behaviours (Ralph, 2017); cultivating a sense of community (Reynolds-Blankenship, 2013); social interaction and acquiring a variety of social behaviors from competitive to collaborative (Lawrence, 2018). Use of educational video games on the iPad helped underprivileged and hearing-impaired kindergarten children acquire social behavior as well (Al Saud, 2017; Bahatheg, 2015).

A third group of studies explored the negative effects of using the iPad in school. For example, Ackermann (2017) found that students regularly associate tablets with gaming and social media, making it difficult for them to use the iPad creatively. In another study, children's finger drawings on the iPad were slightly poorer than pen drawings on paper (Picard, Martin and Tsao, 2014). Similarly, tablet-based electronic games had no effect on 4- and 6-year-old children's self-concept (Moawad (2017).

A fourth group of studies focused on the use of the iPad in the home environment and how parents and teachers view iPad effects on young children. Neumann, Merchant, and Burnett (2020) indicated that parents and teachers of children aged 20-36 months had a positive attitude towards using the tablet and considered tablets a valuable educational tool. However, the researchers reported that they did not wish children to be left behind in learning about new technologies and emphasized a 'balanced' approach to tablets. They also had concerns about

the potential overuse and misuse of tablets at home suggesting the need for providing parents with more guidance in how to support their young children's experiences with tablets.

In Spain, Sweden, and England, Poveda, Matsumoto, Sundin, Sandberg, Aliagas and Gillen (2020) discovered richness, diversity, and agency in the practices of young children between 0-to-3 years old using technology in the home environment. The researchers proposed the concept of living-room assemblage as an analytical metaphor to understand the macrohabitats of young children's digital literacies and practices, which emerge as multi-layered, creative, and co-occurring with other family activities.

In the USA, parents employed cognitive, affective, and technical scaffolding strategies to support their 3-4 years old children's learning. The researcher found that cognitive scaffolding was parents most frequently used strategy and technical scaffolding was their least frequently used strategy. The families' socioeconomic status was not related to the number of tablets available at home. There was a negative association between technical scaffolding and child age which suggests that younger children require more scaffolding from their parents than older children. The researcher recommended training parents in the use of scaffolding strategies during joint-tablet activities to support children's early learning (Neumann, 2018). In another study that surveyed parents' reading practices at home found that children's attention, physical position to the reader, and discourse increased while reading digitally. None of the children requested to read additional print books whereas 50% of the children who read digitally requested more digital books (Eutsler, and Trotter, 2020).

, Pasnik &Llorente (2012) explored the CPB-PBS *"Ready To Learn"* initiative in the USA, which aimed at delivering early mathematics and literacy resources on digital platforms and creating learning experiences that exploit the unique capabilities of these technologies. Low-income families with children ages 2-8 were given a laptop or a tablet computer, and a guide directing them to the available tablet apps, online games, and T.V. programs. Results showed that low-income families are increasingly using new technologies, in addition to T.V. for communication, entertainment, and information-seeking. Children access the websites and apps associated with their favorite T.V. programs and characters. They usually use technology on their own, particularly when they have access to easy-to-use devices like iPads. Parents indicated that technology can be beneficial and educational for children, but they were concerned about its interference with children's active play outdoors.

Like other countries, mobile technologies such as smart phones, tablets and iPads are now widely available in Saudi Arabia and due to the increasing use of such technologies at Saudi homes and schools, it is important to consider parents' views of their use at school and at home. There is a dearth of studies in Saudi Arabia, that explore parents' views of young children's utilization of mobile technology at home. There is little (or no) prior empirical research on the usability of mobile technology in Saudi young children's learning, communication, entertainment, and information-seeking. Many parents have concerns over the undesired consequences of technological obsession on their young children's educational, physical, social, cognitive, emotional, and linguistic development. Therefore, this article aims to explore the effects of iPad use on Saudi young children as perceived by their mothers. It reports on a study that explores the perspectives of Saudi mothers of children ages 0-6 years old in using the iPad at home. It aims to answer the following questions: (i) how many iPads do Saudi households with young children have? (ii) Why do Saudi parent allow/do not allow their children to use the iPad? Do Saudi parents believe that using the iPad is/is not a necessity in our age? (iii) How much time do Saudi young children spend using the iPad? (iv) What types of English and Arabic apps do Saudi young children use? (v) What is the optimal age for children to start using an iPad as perceived by Saudi mothers? (vi) What are the positive and negative effects of the iPad on the physical, social, emotional, cognitive, linguistic, and religious development of Saudi young children as reported by their mothers?

In addition, the study aims to find out whether there is a correlation between mothers' educational level, area of specialization, and employment status on iPad ownership, duration of use, types of apps used, and benefits and negative effects of the iPad on their young children.

Findings of the current study will be based on questionnaire-surveys with a sample of Saudi mothers and their children under the age of 6. Results of the surveys will be reported quantitatively and qualitatively.
Since parents play a key role in supporting, encouraging, or discouraging young children's learning from and interactions with the iPad, there is a need to understand Saudi children's patterns of iPad use at home. The study will shed some light on the best practices for utilizing the iPad by Saudi young children in the home environment. It will raise parents' awareness of the benefits and potential dangers of iPad overuse by young children at home especially when parents are not around and will give some implications for parenting practice and further research in this area.

II. METHODOLOGY

2.1 Subjects

The study was conducted with 134 Saudi mothers with a total of 203 young children below the age of 6. Only households having children under the age of 6 and those owning at least one iPad were included in the study. Demographic data analysis showed that 6% of the mothers in the sample have a Ph.D.; 33% have an MA and 61% have a B.A. degree. %76 are working mothers and 24% are not working. Mothers in the sample are specialized in

translation, linguistics, English literature, IT, education, Islamic studies, social work, biology, law, business, library science, home economics, physical therapy, and pharmacy.

In addition, demographic data showed that 63% of the households in the sample have 1 child, 26% have 2 children and 11% have 3 children under the age of 6. %22 of the children's sample are 2 years and under, 36% are 3-4 years old and 42% are 5-6 years old. 13.5% of the households have older children, but those were not included in the study.

2.2 Data Collection

Data were collected using a questionnaire-survey which consisted of the following open-ended questions about the use of the iPad by young children in the home environment only:

1. Do your children share an iPad or does each child have his/her own iPad?
2. Why do you allow/do not allow your child(ren) to use the iPad? Do you think that using the iPad by young children is a necessity in our age? Why? Give at least 3 reasons.
3. How much time do your children spend using the iPad?
4. What kind of apps do your children use? Give at least 3 examples.
5. In your opinion, what is the optimal age for children to start using an iPad?
6. What are the positive and negative effects of the iPad on children (physically, socially, emotionally, cognitively, linguistically, Islamically… etc.)?

The questions were sent to the mothers via WhatsApp, Telegram, and Facebook Messenger.

2.3 Data Analysis

Mothers' responses were compiled and classified according to the questions asked. Percentages of mothers giving the same responses were computed. Mothers' points of view are reported qualitatively as well.

2.4 Reliability

The author tallied, classified, and quantified mothers' responses twice with a 2-week interval between them. Variations in analyses were corrected.

III. RESULTS AND DISCUSSION

3.1 iPad Ownership, Duration and Use

Data analysis showed that in 50% of the households in the sample, each child has his/her own iPad; in the other 50%, all the children in the family share one iPad whether the children are below or older than 6 years. Regarding the duration and frequency of iPad use by the children in the study, mothers' responses showed a wide range of answers: 43.75% indicated that their children use the iPad less than 2 hours a day; 12.5% use it 3-4 hours a day; 3.13% use it between 5-6 hours a day; 18.75% use it 3-4 hours a week; 9.38% use it less than 2 hours a week; 6.5% use it over holidays only; 3.12% use it most of the time and 3.12% use it while having meals (See Table 1).

Table 1: Duration and Frequency of Use of the iPad by Saudi children

Duration & Frequency of Use	% respondents
Less than 2 hrs a day	43.75%
3-4 hours a week	18.75%
3-4 hours a day	12.5%
Less than 2 hrs a week	9.38%
Over holidays	6.25%
5-6 hrs a day	3.13%
Most of the time	3.12%
While having meals	3.12%

As for the optimal age for using the iPad, Table 2 shows a wide range of responses between 2-20 years old: 21% of the mothers consider 5 years old as the optimal age for starting to use the iPad; 3 years old (17%); 7 years old (14%); 4 & 6 years (10% each); 9, 10, after 12, 15 and 20 years (18%). Few mothers said:

- *3 years old is the optimal age for using the iPad if parents would like their children to learn a foreign language through games and songs.*
- *School age is the best time.*
- *After 12.*
- *Whenever the child can use an iPad.*

Table 2: Optimal Ages for using the iPad as Perceived by the Mothers

Optimal Age	%	Optimal Age	%
3 years	17%	6 years	10%
4 years	10%	7 years	14%
5 years	21%	8 to 20	18%

The above findings are consistent with findings of a study of 226 UK parents of children aged 0-3 years by O'Connor and Fotakopoulou (2016), who noted a rise in personal ownership of touch-screen technology such as iPads and smartphones in the UK in recent years and which in turn led to the increasing use of touch screens by babies and very young children. They reported that a high rate of children under 3 in middle-class homes in the UK and four European countries use a smartphone or iPad (66%). Similar increase in the use of mobile technologies was found in the USA by low-income families, in addition to television, for communication, entertainment, and information-seeking (Pasnik and Llorente, 2012).

3.2 Types of Apps Used

Mothers' responses revealed that 75% of the children use Arabic game apps; 37.5% use educational apps that teach names of fruits and vegetables, home decoration, photography skills, self-care, memory training, pottery-making, city design, how to cook, artwork, and finding differences between shapes. 21.88% use apps for learning the Arabic Alphabet; 15.6% use apps to learn the Quran; 12.5% use apps to learn numeracy and arithmetic; and another 12.5% use animal apps (See Table 3 below).

The mothers mentioned that the most popular entertainment apps used by their children are: drawing apps (25%), cartoon apps (21.88%), songs and nursery rhymes (15.6%), and car racing (15.6%) (See the Appendix). Mothers wrote:

- *My daughter uses cooking, fashion, taking care of patients and Smart Bee apps.*
- *My 6-year-old son uses city building and design apps and my 3-year-old son uses Star Wars, Car Racing and Super Marion Apps.*
- *My son uses Zombie, Kids Learn, watches Tuyoor Al-Jannah and Bara'em channel on YouTube.*
- *I love art and handicrafts and I encourage my children to use art and handicrafts apps on their iPad.*
- *My daughter loves doll colouring and make-over.*

In addition, mothers' responses showed that 30% of the children use the iPad to learn English, play English games and use English entertainment apps such as: *Abc Song; Lego building; Animal Videos; Words-Drawing Book, Yummy Burger; Cake Making; Cookie Maker; Ice Cream Maker; Professions; Shape Puzzles; Measure; Counting Fun; Kids Preschool; Agintus; Angry Birds; Bebop Box; Candy Crush; Clumsy Ninja; Dragon Vale; Egg Baby; Flash Card; Highway Rider; Kik; Mickey Mouse; My Craft; Club House; Nighty Night; sonic; Spy Mouse; Subway Surfer; SvZ Defense.*

Table 3: Arabic Apps Used by Children in the Sample

Games	75%
Educational apps	37.5%
Learning English	30%
Drawing	25%
Alphabet	21.88%
Cartoons	21.88%
Nursery rhymes	15.6%
Car racing	15,6%
Quran	15.6%
Animals	12.5%
Numeracy and arithmetic	12.5

These results are consistent with findings of prior studies in the literature such as Ackermann (2017) who found that children regularly associate tablets with gaming and social media. O'Connor & Fotakopoulou (2016) also reported that a high rate of children under 3 in middle-class homes in the UK and four European countries play games on touch screen devices. Likewise, a high percentage of Saudi children in the present study use the iPad for gaming, because iPads, tablets and smart phones are easy to use, and the Google Play and Apple Stores have so many free game apps which are tailored to babies and toddlers (See Appendix). Very small children can use these independently and easily.

3.3 Why Children Are Allowed to Use the iPad? Is It a Necessity?

Data analysis revealed that 74% of the mothers in the sample believe that use of the iPad by children under the age of 6 is a necessity because the children live in the age of technology and they need to keep up with new technologies around them, need to learn how to use new forms of technologies and take advantage of their benefits. Mothers wrote:

- *The iPad has a variety of useful apps that children can easily access, download, and use to develop certain skills and gain knowledge in a fun way.*
- *Children need to learn how to search for information on the iPad.*
- *Later in school, children will be using the iPad in learning and doing homework, so they'd better get used to it now.*

- *My children feel happy and excited when they use the iPad.*
- *My children's playmates and relatives have an iPad and they insisted to have it. I do not want them to feel deprived.*
- *Because nowadays technology is part of our life. We almost use it in everything.*

Those who reported that using the iPad is not a necessity for young children think that the iPad has many harmful effects on young children's health, eyesight, addiction, social isolation, inadequate physical activity, and obesity. For this reason, 12.5% of the mothers reported that their children use the iPad under their supervision.

3.3 Positive Effects of the iPad on Young Children

Saudi mother's responses showed numerous benefits of using the iPad for young children. The iPad makes it easy for children to use technology. They can keep up with what is around them. When they use the iPad, they will understand better and learn faster. They can locate information in a quick, easy, and enjoyable way. The iPad entertains the child when the mother is busy, or away from home, running errands, having a doctor's appointment, at the airport or on the plane. There are lots of useful apps that equip the child with new skills, help the child to memorize suras from the Holy Quran easily, and learn English easily. They can learn the alphabet, new vocabulary, arithmetic, names of animals, shapes, and colors and artwork. They can develop cognitive skills such as classification and sorting. The iPad motivates them to think through jigsaw puzzles and assembling things by watching YouTube videos. They develop some psychomotor and perceptual skills. They learn how to help their mother with the house chores. They learn to focus on what is required. They develop accuracy, speed, and learn how to manage their time. Mothers reported:

- *I noticed a difference in my 3-and 5-year-old children's Arabic and English languages before and after using the iPad. Their Arabic and English languages have improved a lot.*
- *Now my son knows the names of all animals because of the iPad apps.*
- *There are lots of educational apps that broaden children's horizon, teach them some hobbies in a smooth and fun way. Apps sharpen their skills and add to their knowledge.*
- *The Pad helps children to keep up with what is new around the world, i.e., it develops the children's knowledge of what is around them.*
- *I can find any type of information on the iPad, which presents it to my child effortlessly using images, sound, text, and motion.*
- *The iPad familiarizes children with other cultures. The children can view programs on YouTube from different countries.*
- *Nowadays, the iPad replaces books. Children can access new information in a variety of domains especially those of interest to them.*
- *Children live in the age of technology and they should learn how to use technology at an early age because later they will be using it at school, and they will be required to do homework online.*
- *Children learn how to search for and download the apps that they like such as the Quran, songs, and cartoons.*
- *The iPad is both a learning and an entertainment too especially during holidays and whenever the children have free time.*
- *My children use the iPad to communicate and keep in touch with their grandparents and relatives who do not live in the same town and do not see very often. They can talk to them in audio and video via Tango and Viber, or Skype.*

The kinds of apps used, and kinds of skills developed by Saudi young children in the current study as a result of using the iPad at home are consistent with results of prior studies on the kinds of apps used and skills developed by children at school, kindergartens and daycare centers as a result of using mobile technologies such as improved phonological awareness and mathematics skills, drawing apps (Chai, 2017; Reeves, Gunter, and Lacey, 2017; Borg, Margareta, 2019). O'Connor & Fotakopoulou (2016) reported similar advantages of using the iPad by 3-year-old children. European parents mentioned using touch screens/tablets when on the plane, at medical appointments, and in waiting rooms to keep the child quiet, occupied and under control. They reported learning new skills, educational advantages; family contact; self-actualisation; technological capital; and early investment in learning how to use technology which will be beneficial to their children in the future. The children learn literacy and numeracy skills and pursue knowledge. They explore the world and express themselves freely. They can communicate and connect with absent family members.

Similar to Spanish, Swedish and British children in Poveda, Matsumoto, Sundin, Sandberg, Aliagas and Gillen's (2020) study, findings of the present study showed richness, diversity and agency in Saudi young children's practices with the iPad.

As in the present study which revealed that 30% of Saudi children in the current study use the iPad to learn English as a foreign, Sun & Charles, (2019) found that 4-to-5-year-old preschoolers in Singapore use animated ebooks to learn Germanic languages.

Unlike Aliagas and Margallo's (2017) study which reported that family shared-book reading increased Spanish children's engagement with storybook apps, mothers in the present study do not read stories with their children on the iPad.

Furthermore, use of the iPad by children in the present study did not seem to encourage playful explorations for investigating, reflecting, making meaning, knowledge building, and communicating ideas to a shared audience like 4- and 5-years kindergarten children in Australia Yelland and Gilbert (2018). They do not use the iPad for creative play like three-to-five-year-old children in Arnott, Grogan and Duncan's (2016) study. It seems that the presence of a child in a group helps him/her develop skills that he/she would not be able to develop when the child uses the iPad alone at home. Unlike O'Connor & Fotakopoulou's (2016) study, Saudi mothers did not mention the iPad's role in enabling their young children to express their creativity and explore their own identity.

3.4 Negative Effect of the iPad on Children
3.4.1 Physical and Health Problems
Questionnaire-survey results showed that 90% of the mothers believe that using the iPad for a long time might cause physical and health problems in children. 37.50% indicated that staring at the iPad for a long time affects children's eyesight. Mothers' believe that exposure to iPade's glare is harmful to children's eyesight. 34.38% mentioned lack of physical mobility, laziness, and obesity. Children do not develop physical skills because they do not play outdoors. Some suffer from a stiff neck because of poor posture while using the iPad, occasional headaches, and staying up late. Others lose appetite because they do not want to leave the iPad to eat, or refuse to eat unless they watch their favorite videos or cartoons on the iPad. Mothers said:

- *I worry about my son's exposure to the wireless and iPad's glare.*
- *My child is addicted to mobile technology and I am afraid he might develop short-sightedness at an early age. But when I take the iPad from him, he bursts into tears.*
- *My child suffers from headaches and a stiff neck because of his improper holding of the iPad and improper posture while using the iPad.*
- *My daughter uses the iPad for long hours, she stays up late and refuses to go to bed early.*
- *Children do not develop psychomotor skills such as playing outdoors and assembling toys, Lego models and structures, and construction toys.*

As in the present study, O'Connor & Fotakopoulou's (2016) indicated that European parents were worried about the negative impact of touchscreen use on their children's cognitive, social and physical development. 26% of the parents expressed fears of children's over-reliance on, or addiction to their mobile devices. Parents were worried about unknown unpleasant physical consequences of touch-screen use, negative physical effects, and developmental delay. Similarly, parents in Pasnik &Llorente's (2012) indicated that they were concerned with technology's interference with children's active play outdoor. For that reason, parents try to impose limits and remain aware of what their children are doing when they are using technology. But their busy life and the ease of using tablets and smartphones away from parents' presence and supervision make it difficult for them to keep up with what their children are doing with their tablets and smartphones.

Other physical effect of the iPad on children were reported in a study by Picard, Martin and Tsao (2014) which indicated that finger drawings by children who use the iPad for writing and drawing were slightly poorer than pen drawings on paper due to the shift from distal to more proximal control of the drawing movements. No similar views on writing and drawing movements were reported by Saudi mothers.

3.4.2 Social Problems
35% of the mothers mentioned some social problems associated with the use of the iPad such as children's desire to be alone rather than mingling and playing with others. They do not seem to be willing to participate and play with other children because they identify with the iPad. They stay away from the family and rarely talk or communicate with their parents or siblings. Some become aggressive if they play violent games on the iPad. Since some children are fully engaged in the iPad, they do not develop social skills. Some mothers noted:

- *My children have one iPad, and they fight over it as each of them wants to access the apps that he likes.*
- *When some children use the iPad for a long time, they identify with it and no longer enjoy playing with someone else.*
- *My child likes to be alone and rarely talks with other members of the family. He does not even respond when someone talks to him.*

The negative social effect of the iPad on young children reported by Saudi mothers are consistent with prior studies. O'Connor & Fotakopoulou (2016) indicated that touch-screen use is replacing traditional play and learning.

Unlike the current study which revealed negative effects of iPad use in the home environment on children's social skill development, communication and interaction with others, Reynolds-Blankenship (2013), Ralph (2017) and Lawrence (2018) found positive effects of the iPad on young children's social skills and prosocial behaviours when used at school. Mobile technologies at school and kindergarten cultivated a sense of community, social interactions, and a range of social behaviors from competitive to collaborative among young

children. The iPad cultivated a sense of community in children during free play in the kindergarten classroom. The inclusion of the iPad initiated a child-centered system of rules for turn taking which allowed the children to mediate social interactions among the groups (Reynolds-Blankenship, 2013). Likewise, Al Saud (2017) and Bahatheg (2015) pointed out that Saudi underprivileged and hearing-impaired kindergarten children became more sociable, saying *thank you, goodbye, sorry, excuse me,* when apologising to others, following rules, waiting for their turn and appreciating each other as a result of using educational video games on the iPad in school compared to children who did not have access to iPads.

3.4.4 Emotional problems

Emotionally, 30% of the mothers pointed out that some children become impatient, tense, and short-tempered. They lose their temper and are tense while playing games that require concentration and speed. They become so much attached to the iPad and show addiction to games. Some demonstrate selfish behavior. They only care about what they want and how to get it. Some become insensitive and indifferent. Some mothers noted:

- *My child turns into a fit if the iPad is taken from him.*
- *Some children get furious when the battery is low, or the game time is over.*
- *My child is so much attached to the iPad. He insists on having it all the time especially before bedtime and while having meals.*

3.4.5 Cognitive Problems

25% of the mothers indicated that use of the iPad by young children causes distraction, lack of concentration on what is around them because of their deep engagement with games. They respond slowly and do not pay attention to other things. Some iPad apps drain their brain as they take a long time to finish. Children do not acquire some cognitive skills as when they play outdoors and manually assemble toys, Lego, and jigsaw puzzles. Mothers declared:

- *Children lose interest in solving math problems even if they are presented on the iPad.*
- *My daughter is always distracted and cannot concentrate because she plays too much on the iPad.*
- *I do not feel that the iPad helps develop children's intelligence and cognitive skills.*

The negative cognitive effects of the iPad on children who use it at home are inconsistent with findings of a study by Vartiainen, Leinonen and Nissinen (2019) which found that children, participating in a kindergarten community of adults and children, were actively naming, classifying, and categorizing the trail camera data, and were also searching, evaluating, and applying new information. The children also drew on a unique mix of meaning-making resources and media tools. Saudi young children using the iPad in the home environment developed some naming, classification, and categorizing skills of animals, plants, and shapes to a limited degree as 10% of the mothers mentioned those skills.

As in the current study, European parents in O'Connor & Fotakopoulou (2016) had fears related to the ways in which touch-screen use may have a negative impact on their children's cognitive skills. Ackermann (2017) asserted that children regularly associate tablets with gaming and social media, making it difficult for them to use the device creatively.

3.4.3 Linguistic problems

Some Saudi mothers believe that the iPad delays language development in some children. Silence, isolation, and inadequate communication with others affect children's linguistic development. The children rarely talk when using the iPad because they are so much absorbed in it and are focused on the game they are playing and the noise and loud music. Some movies, cartoons and games use inappropriate words and bad language which the child might pick up and use without knowing their exact meanings such as *"Damn it, idiot."*

Like Saudi mothers in the present study, European parents in O'Connor & Fotakopoulou's (2016) study expressed concerns over children's discourse and use of improper language.

3.4.6 Effects on Children's Islamic Beliefs

Being Muslim, Saudi mothers indicated that some cartoons and games have a negative effect on the children's Islamic faith as they contain amulets and offerings, bowing to statues and asking nature such as stars, instead of God, for help. Some involve gambling concepts.

3.4.7 Other Negative Effects

Saudi mothers pointed out that it is difficult for parents to control what young children are watching online. They are always worried about their children's accessing undesirable content such as sextual videos and images, nudity, aggression, and bullying. Owning an iPad has become fashionable and many families around them own an iPad. Since kids like to imitate each other, they insist on having iPad. They insist on using it all the time, especially before bedtime. Some kids refuse to play non-electronic games. Others are addicted to some wrestling videos and violent video games that are unsuitable for their age and affect their behavior and language. They acquire aggressive behavior because they imitate what they in the wrestling videos and other violent scenes or games.

As in the present study, European parents worry about their children's accessing inappropriate content (O'Connor & Fotakopoulou, 2016).

3.5 Correlation Between Mothers' Demographics and iPad Ownership, Use, and Effects

Results of the data analysis showed no significant differences in ownership of the iPad, types of apps used, purposes of using an iPad, views of the benefits and negative effects of iPad on young Saudi children in terms of the mothers' educational level, employment status and area of specialty. More or less, Saudi mothers' in the present study share similar views as other mothers in their society regardless of their college degree, employment status or area of specialty.

IV. RECOMMENDATIONS AND CONCLUSION

Saudi mothers' responses to the interview-questionnaire revealed numerous benefits and disadvantages of using the iPad in the home environment by children under the age of 6. Parents can benefit from the many types of skills that can be developed through the iPad, types and examples of apps that are beneficial for young children and use those as a guide.

The iPad presents parents and children with new learning and entertainment opportunities but new dilemma of parenting in circumstances which have significantly changed since parents themselves were children and were not using mobile technologies. Technology may negatively impact young children's perceptions and behaviours as they are are still impressionable and easily influenced.

The adoption of mobile technology such as iPads, tablets, and smart phones, without properly understanding the nuances and complexities of the local Saudi context may possibly put young children in a vulnerable situation and expose them to many unintended and undesired consequences. There is a need for more guidance for parents to support their young children's experiences with the iPad. For those reasons, mothers in the present study gave some recommendations for combating the negative effects of the iPad on young children which are given below.

The mothers surveyed indicated that parents at home should encourage their children to use the iPad in certain circumstances and in certain ways. They should control the use of the iPad by setting a schedule and a time limit. Children may use of the iPad on holidays and weekends only. They should not focus on game apps only. In Europe, 85% of the parents in O'Connor & Fotakopoulou's (2016) study reported putting limitations on the use of touch screens (20 to 30 minutes a day). Due to the relative immaturity of young children, Ismail and Cashin (1017) advised that children be not left alone to make their own technological choices. Parents should supervise what their children are watching on and are doing with the iPad. They can direct their children to some educational apps but check the educational and game apps before their children use them. With some time management, busy mothers can find some time for that.

The negative effects of the iPad on young children's linguistic and social development highlight the importance of talking to children since they are babies and encouraging social interaction with them to ensure children's healthy emotional and social development. Parents should also read with their children to instill the habit of reading print books in them and to save their eyesight. They can also encourage their children to color, draw and paint on paper using crayons and watercolors and post their children's drawings in their room or around the house.

Finally, more research is needed with a wider sample of children of all ages in order to explore how mobile technologies can be used in ways that are most beneficial for children's physical, cognitive, social, emotional and linguistic development and well-being, so that advice and guidelines for families can be produced that take into consideration parents' needs to protect their children and to prepare them for their future in a world permeated with technology.

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APPENDIX

Cartoon, Songs, Animals, Fruits & Vegetables, Stories, Alphabet, Numbers, Educational Games, Drawing and Quran Apps