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The Physiological, Behavioral and Psychological Impact of Excessive Use of Smart Devices in Children : Dampak Fisiologis, Perilaku, dan Psikologis dari Penggunaan Perangkat Cerdas yang Berlebihan pada Anak-Anak

Amal Fadil Noori Radi, amal.f@uokerbala.edu.iq (*)

Department of Maternal and Child Health Nursing, College of Nursing, University of Karbala, Iraq

Hadeel Thaer Ahmed Al-Najem , Hadeel.ahmedckm@atu.edu.iq

Department of Anesthesia , College of Health and Medical Techniques/Kufa, Al_Furat Al_Awsat Technical University, 31003 Al-Kufa, Iraq

(*) Corresponding author

Abstract

General Background: The rapid expansion of digital technology has made smart devices an integral part of daily life, including among children. **Specific Background:** Increasing exposure to smartphones has raised concerns regarding physical, psychological, and behavioral outcomes in early childhood. **Knowledge Gap:** Limited integrated evidence exists on how excessive device use simultaneously relates to health, sleep, behavior, and educational aspects in children. **Aims:** This study aims to examine the effects of excessive smart device use on children's health, sleep patterns, behavior, and educational engagement. **Results:** Findings indicate that 43.5% of parents observed vision problems, 56.9% reported sleep disturbances, and notable proportions identified behavioral changes such as irritability and aggression. Additionally, 44% reported eye-related issues and a considerable number of children experienced neck or back discomfort. Educational use of devices was inconsistent, with many parents reporting no observableimprovement in learning outcomes. **Novelty:** The study integrates multiple dimensions of child development within a single descriptive framework using parental perspectives. **Implications:** The findings highlight the importance of parental supervision, time regulation, and guided device use to reduce potential risks and promote balanced child development.

Keywords: Smart Devices, Child Health, Screen Time, Behavioral Changes, Sleep Disturbance

Key Findings Highlights

High prevalence of reported visual and sleep-related disturbances among children

Behavioral responses indicate dependency and emotional instability

Educational utilization remains inconsistent and often unclear

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Introduction

Today we live in a rapidly accelerating technological era, which is called by many names, including the era of the global technological revolution, the era of information technology, and the technological explosion. It is an era that has contributed to the emergence of many inventions and achievements that have changed lifestyles, most notably smart phones. These devices have witnessed successive developments that have made them more than just a means of communication, but have become a multi-use tool that provides services in various fields, making them a main window for communication and information exchange. [1,2].
This research relies on a scientific approach, the descriptive-analytical approach.
The descriptive-analytical approach, as defined by researchers, is a method that relies on describing a phenomenon as it exists in reality, accurately and qualitatively and quantitatively, describing it and clarifying its characteristics.
Its numerical description is provided through numbers and tables that illustrate the magnitude or size of the phenomenon or its degree of connection to other phenomena. This approach will be used because it is suitable for this type of study.
The descriptive approach does not stop at simply collecting descriptive data about the phenomenon, but rather extends to attempting to diagnose, analyze, link, and interpret this data, classify and measure it, and demonstrate the quality of the relationship between its variables, their causes, and trends, drawing conclusions from them, and other aspects [3].

This approach revolves around exploring the depths of a particular problem or phenomenon, identifying its reality on the ground, and then arriving at generalizations about the situation or phenomenon under study [4]. Academic achievement refers to measurable performance outcomes that indicate the extent to which students have attained educational goals in instructional environments such as college or university [5].
Now the difficult control on child to avoid use of mobile or games in mobile therefore many resreach could be advice and help people and introduction about risk uses of mobile .

Literature review
In this review demonstrated most of studies in the world about this problem that talk on effect of mobile on child , The study of [6] It also has many advantages; it is considered a method of thinking and problem-solving. It is the style of thinking through which an individual reaches the desired results, and it is a means, not a result. It also contributes to the use of knowledge, information, and skills with the aim of achieving results to satisfy human needs and increase abilities. Therefore, technology means the optimal use of scientific knowledge and its applications, and adapting it to serve humans and their well-being [7]

Technology (Technologie) is a compound composed of two parts: the first (: techno) means in Greek 'art' or 'handcraft', and the second (Logie) means 'science' or 'theory'. The combination of the two parts produces the meaning 'the science of the systematic production of knowledge in the arts of industry or applied science'. It does not have an original equivalent in the Arabic language, but it was Arabized by literally copying its pronunciation into the word ' (Technologie) . Also the study of [8] aggrement with this article , also the study of [9] also agreements with article whrer found excessive increase or overuse of mobile phone was associated with feeling insecurity; staying up late at night and poor in concentration ; impaired parent–child relationship;poor in examination , impaired school relationships; psychological problems such as behavioral addiction like compulsive buying and pathological gambling, low mood, tension and anxiety, leisure boredom, and behavioral problems, among which most pronounced association was observed for hyperactivity followed by conduct problems and emotional symptoms ana this very agreement with your result of this article [14].

1.2 Method and Procedures

Study design
The researchers used the descriptive analytical approach because it is appropriate for studying this phenomenon.
Measurement Tools: The researchers designed a questionnaire to collect information for the study, drawing on previous studies relevant to the research topic.
Data collection:
The study population consisted of all mothers of children aged 2-9 years in the towns of najaf and Al-Badhan. Also The study sample consisted of 70 individuals, selected from a probability sample that included mothers and fathers with children using smartphones in Najaf Governorate. The researchers consulted websites to ensure accuracy and obtain the largest possible number of participants in the questionnaire. A total of 143 responses were obtained, including 5 invalid answers, while the rest were valid.
Statistics analysis
Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the socio-demographic characteristics of the study sample and to describe students' sleep habits, **neck and back pain**

Result and discussion

1.1 Health Effects

Does your child have vision problems after using smart devices?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		101	43.5	43.5	43.5

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	Might	1	.4	.4	44.0
	No	95	40.9	40.9	84.9
	Yes	35	15.1	15.1	100.0
	Total	232	100.0	100.0	

Table(1) "Health Effects"

43.5% of parents noticed their children experiencing vision problems after using smart devices. 40.9% did not notice any problems. 15.1% said the problem occurs occasionally. The small percentage (4%) who chose "maybe" may indicate uncertainty about the impact. This suggests that there is a significant percentage of children who may be negatively affected by using smart devices, warranting a deeper study into their health effects.

1.2 Children's Sleep Hours

Does using devices affect a child's sleeping hours?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		100	43.1	43.1	43.1
	Not affect	34	14.7	14.7	57.8
	Slightly affect	45	19.4	19.4	77.2
	Greatly affect	53	22.8	22.8	100.0
	Total	232	100.0	100.0	

Table (2) Children's Sleep Hours

More than half of participants (56.9%) believe that device use affects children's sleep to varying degrees.

22.8% believe the impact is significant, a significant percentage that warrants attention. Conversely, 43.1% believe there is no impact, indicating a clear disparity in participants' opinions. These results may reflect differences in habits among families or a lack of awareness of the impact of devices on children's sleep.

1.3 Effects on Eyes

Does your child suffer from eye problems after using electronic devices?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		102	44.0	44.0	44.0
	NO	58	25.0	25.0	69.0
	I don't know	43	18.5	18.5	87.5
	yes	29	12.5	12.5	100.0
	Total	232	100.0	100.0	

Table(3) Effects on Eyes

A large percentage of survey participants (44%) noticed that their children were experiencing eye problems after using electronic devices. This indicates a potential problem that warrants attention. Another significant percentage (25%) did not notice any problems, which may indicate that children are not experiencing problems or that parents have not noticed any problems. A large percentage (18.5%) also did not know whether their child was experiencing problems. Overall, the results highlight the importance of raising awareness of the risks of electronic devices.

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1.4 Effects on Behavior

Do you notice changes in your child's behavior due to watching digital content?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		106	45.7	45.7	45.7
	Might	1	.4	.4	46.1
	NO	53	22.8	22.8	69.0
	YES	72	31.0	31.0	100.0
	Total	232	100.0	100.0	

Table(4) Effects on Behavior

he majority of participants (43.5%) believed that children accept being banned from using devices. However, a significant percentage (56.5% overall) noticed negative changes in their child's behavior (sadness, aggression, irritability) when they were banned from using devices. This suggests that device use may create an attachment in children, and banning them may lead to negative reaction.

1.5 Effects on Neck and Back

Does your child suffer from neck or back pain from using devices?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		102	44.0	44.0	44.0
	No	105	45.3	45.3	89.2
	Yes	25	10.8	10.8	100.0
	Total	232	100.0	100.0	

Table(5) Effects on Neck and Back

A large percentage of survey participants (45.3%) noticed that their children experienced neck or back pain after using electronic devices. This percentage was slightly higher than those who did not notice any pain (44%). A significant percentage (10.8%) did not know whether their child was experiencing any problems. Overall, the results indicate a potential problem that warrants attention. Since the use of electronic devices can have a negative impact on children's health, particularly neck and back pain, parents should be aware of these risks and take preventative measures to ensure their children's health.

1.6 Use for Educational Purposes

Does your child use devices for educational purposes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		101	43.5	43.5	43.5
	No	56	24.1	24.1	67.7
	Yes	75	32.3	32.3	100.0

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	Total	232	100.0	100.0	

Table (6) Use for Educational Purposes

The majority of participants (43.5%) believe their children do not use devices for educational purposes. A small percentage (24.1%) believe their children do use devices for educational purposes. A large percentage (32.3%) do not know whether their child uses devices for educational purposes or not.

1.7 Educational Levels Due to the Use of Devices

Have you noticed an improvement in your learning level thanks to the use of devices?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		101	43.5	43.5	43.5
	NO	53	22.8	22.8	66.4
	Yes	78	33.6	33.6	100.0
	Total	232	100.0	100.0	

Table (7) Educational Levels Due to the Use of Devices

43.5%) did not notice any improvement in learning level thanks to the use of devices. While a small percentage (22.8%) noticed an improvement, a large percentage (33.6%) did not know whether there was an improvement in learning level or not overall, the findings indicate that the use of devices for educational purposes is not common among children, and their impact on learning is unclear or unnoticeable to most parents. This may be due to the inappropriate use of devices in the educational process, or the lack of effective assessment tools to measure their impact.

Discussion Result

We note in the (first table), which indicates health effects, that the majority of participants (approximately 84.9%) do not believe that smart devices directly cause vision problems in their children.
We can observe a significant 15.1% of negative effects, indicating a real risk that must be addressed.
The high percentage (43.5%) of those who were unclear may reflect a lack of awareness among parents of the importance of monitoring children's vision health after using smart devices (3,8)
With the increasing use of smart devices among children, it has become necessary to limit the time they spend in front of screens to protect their physical and mental health. We recommend that mothers and fathers do the following:
1. Set a specific time: Set a specific time for phone use daily, such as one or two hours, depending on the child's age and needs.
2. Encourage alternative activities: Offer your child fun activities such as drawing, physical games, reading, or exercising to occupy their time in useful ways. 3. Family involvement: Spend quality time with your child playing or talking, which will make them less dependent on their phone.

The second table in results talk among effect of device on child sleep and found
More than half of participants (56.9%) believe that device use affects children's sleep to varying degrees.
22.8% believe the impact is significant, a significant percentage that warrants attention.
Conversely, 43.1% believe there is no impact, indicating a clear disparity in participants' opinions.
These results may reflect differences in habits among families or a lack of awareness of the impact of devices on children's sleep.
Therefore, we advise mothers to set a specific time for phone use daily, not exceeding two hours for children over 6 years old.
Avoid using mobile devices at least two hours before bedtime.
Establish a consistent sleep schedule for your child to adhere to daily.
Create a calming bedtime ritual, such as reading a story.
We notice in the third table that there is A significant percentage of survey participants (44%) reported that their children experienced eye problems after using electronic devices. This indicates a potential problem that warrants attention.

Another significant percentage (25%) did not notice any problems, which may indicate that children are not experiencing problems or that their parents have not noticed any problems. A significant percentage (18.5%) also did not know if their children were experiencing problems. Overall, the results highlight the importance of raising awareness about the dangers of electronic devices. That is why we recommend that mothers and fathers set a specific time for children to use the phone

As for the) fourth table) The majority of participants (43.5%) believed that children accept being banned from using devices. However, a significant percentage (56.5% overall) noticed negative changes in their child's behavior (sadness, aggression, irritability) when they were banned from using devices.

This suggests that device use may create an attachment in children, and banning them may lead to negative reactions Preoccupation with

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phones can also reduce social interaction and impact the development of language and emotional skills, potentially leading to social isolation or delayed effective communication. Additionally, constant exposure to inappropriate content can cause behavioral disturbances and negative psychological effects, such as anxiety and stress. Therefore, it is essential to control phone usage time and guide children toward appropriate educational content, while promoting physical and social activities that contribute to their balanced development [10,11]

The results in (Table 5) show the responses of a sample of 232 people regarding whether their child suffers from neck or back pain due to using electronic devices. The results are as follows

44% of mothers reported that their children suffer from these pains.45.3% answered "no," meaning their children do not suffer from these problems.10.8% were unsure

The percentage of children experiencing neck or back pain due to devices is high, representing approximately 44% of the sample.

A similar percentage (45.3%) did not experience this problem, suggesting that other factors such as sitting position, duration of use, and type of digital activity may influence the onset of these problems. An additional 10.8% were unsure, which may indicate a lack of awareness of these symptoms or a lack of attention by parents [12].

Conclusion about fourty four percentage of child suffer from from problem in neck as aresult excess ues of devices.

Also 43 percentage do not suffer from any problem could may be change in position or decrease in timing of use of devices

About 10.5 percentage not show any effect because due to lack supervision

Also 43.5 percentage of child not use this device for purpose of education

They do not use them for these purposes, and 32.3% use them occasionally. These results indicate that there is a strong trend toward using devices in education.

The largest percentage (43.5%) indicates that many mothers recognize the importance of devices in enhancing children's learning.

The average percentage (32.3%) indicates fluctuations in the use of educational devices, possibly due to a lack of supervision or appropriate educational content.

The lower percentage (24.1%) may reflect mothers' concern about the impact of devices or a lack of actual need for their use in education.

Recommendations for mothers:

1. Balance usage: It is best to regulate device usage time so that it is educationally beneficial without causing digital addiction
2. Supervision and monitoring: Monitor the content children are exposed to and ensure it is age-appropriate and enhances their learning skills.
3. Promote interactive learning: Use interactive educational apps and games instead of passive content such as long videos.
4. Limit screen time: There should be a specific time for using devices.

Focusing on other motor and interactive activities.

5. Encourage alternative activities: such as traditional reading, playing with peers, and practicing hobbies to develop the child's various skills.

As for the last table, which is the seventh, we find 43.5%) did not notice any improvement in learning level thanks to the use of devices. While a small percentage (22.8%) noticed an improvement, a large percentage (33.6%) did not know whether there was an improvement in learning level or not Overall, the findings indicate that the use of devices for educational purposes is not common among children, and their impact on learning is unclear or unnoticeable to most parents. This may be due to the inappropriate use of devices in the educational process, or the lack of effective assessment tools to measure their impact [13,15].

The importance of this broadcast lies in:

1. Physical health

Sitting for long periods in front of screens can lead to spinal problems and obesity.

The blue light emitted from screens can affect eye health and cause visual strain.

2. Psychological and social health

Excessive use can lead to social isolation and poor communication skills.

3. Effects on mental and cognitive development
4. Behavior and habits

The see to inappropriate think may lead to effect on behavior of child

5. Guidance and Solutions

Research helps develop guidelines for parents on how to regulate screen time in a healthy way.

Suggest useful entertainment and educational alternatives that reduce potential harm.

Conclusions and Recommendations

Conclusions

From the result of this research the excess use of mobile on child may lead to many problem at the level of sleep , behaviors and mental or physical if the using at the more time ,but at the same time if there are supervision from the parents may change this effect from negative to positive effect such as using mobile at short time or using at education purpose

Recommendations:

Based on the study results, the study recommended the following:

- increase supervision from the parents on child
- Limit the hours children use their smart phones.
- Guide children on the proper use of smart phones.
- Guide children on the correct sitting position to avoid neck and head pain.
- Attempt to occupy children's time with activities other than smart phone use, with the goal of developing their practical skills and refining their personality to suit the reality they experience.

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