

The Effectiveness of Motivational Interviewing Counseling for Mothers on the Digital Addiction Level of their Children

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Abstract:

Background: Children and adolescents' learning and daily lives are significantly affected by digital devices, which are a global concern, including their overuse or addiction. Therefore, digital addiction is recognized as a serious public health issue on a global level. So, it is crucial to apply preventative and intervention strategies that motivate individuals to exercise more control over the use of digital devices. Motivating interviewing is a counseling approach that involves enhancing a patient's motivation to change. **Aim:** The study's purpose was to assess the effectiveness of motivational interviewing counseling for mothers on the digital addiction level of their children. **Design:** quasi-experimental included study and control groups. **Setting:** The study was carried out at pediatric outpatient clinics of Benha University Hospital. **Sample:** Simple random sampling technique was used in this study. It includes 200 mothers (100 for control group and 100 for study group). **Tools:** two tools were utilized for data collection, **I:** pre-designed questionnaire, to assess the demographic of the selected mothers and the personal data of children and technology using frequency of the child. **II:** The digital addiction scale for children to assess the digital addiction level in children. **Results:** There were highly statistically significance difference between two studied groups regarding all items related to studied children's technology addiction score post motivational interviewing counselling implementation. **Conclusion:** Motivational interviewing counselling is effective in decreasing the level of children digital addiction. **Recommendations:** Training and counselling programs are important for all community especially children to equip them by essential knowledge and to increase their awareness regarding digital addiction.

Keywords: Digital addiction, Mothers and Motivational interviewing counseling

Introduction

The utilization of digital devices, including smartphones, laptops, and tablets, has significantly increased since the turn of the millennium, becoming a vital part of the daily lives of the majority of individuals worldwide. As a result of these developments, the debate regarding the addiction potential of digital devices, particularly among children who are at a higher risk of developing addictive behaviors, has attracted attention. Recently, there has been an increasing body of evidence demonstrating the adverse consequences of excessive digital device use, especially anxiety, sleep disturbance, and poor academic performance (Endert, 2021; Ali et al. 2015).

Everywhere, digital media is infinitely accessible and is no longer constrained by space or time. Children have the freedom to utilize them at their freedom to participate in social media, browse the Internet, and play video games, regardless of their location. Young children's early brain development makes them more susceptible to addiction, therefore playing video games, utilizing social media, and using cell phones are harmful for children with misuse. The phenomenon of digital addiction is a result of the premature and highly vulnerable nature of young minds, which are exposed to becoming addicted to mobile phones, video games, and social media channels (Khorsandi & Li, 2022).

The term "digital addiction" describes any "addictive behaviors" that are related to use of digital devices, particularly computers, the Internet, mobile phones, video games, and social media. It describes the excessive use of the internet leading to in mental, social, and physical disorders. In summary, the effects of digital addiction and playing video games on children's academic performance, sleep quality, social isolation, and neglect of essential responsibilities at home and school (**Canadian Pediatric Society, 2019; Baladehi et al., 2015**).

According to previous research (**Geng et al., 2021; Stanković et al., 2021**), cognitive absorption, attention deficit disorder, high levels of anxiety and depression, and low self-esteem are all associated with this addiction. The consequences of smartphone addiction are the same as those of drug and alcohol addiction (**Panova & Carbonell, 2018**).

It is essential that we, as parents, educators, and therapists, cooperate to alert society to the harmful effects of technology on children's physical, psychological, and mental health, in addition to their ability to establish and preserve familial and private relationships and acquire information. The advantages and disadvantages of technology can be assessed by parents in order to assist their children in enjoying life. Schools are also recognizing the adverse effects of excessive technology use and are removing children from the classroom to encourage their interaction with nature (**Woo et al., 2019**).

Mothers are the primary role models for their children, and the behavior and attitude of each mother will serve as an example for their children. Mothers are necessary in the prevention, nurturing, and education of children who are at risk of developing digital addiction. Therefore, the expectation is that mothers should have an adequate awareness of the proper use of digital devices (**Qi et al., 2022**).

Group Counseling was considered an effective to reduce internet usage behaviors. Group counseling is effective to cope with internet addiction problems. Therapists and addiction counselors can assist in achieving a

state of balance in internet usage and stopping the compulsive behaviors. It will identify more effective coping mechanisms to manage stress, anxiety, and depression. A skilled counselor can guide family members in developing healthier coping mechanisms, setting boundaries, and fostering a supportive environment that promotes recovery (**Jorgenson et al., 2016**).

Motivational interviewing is a client-centered counseling approach that is directive and aims to induce behavior change by assisting clients in examining and addressing ambivalence. It focuses on enhancing strengths through recognizing personal strengths. Motivational interviewing therapy can assist in self-empowerment, as it assumes that individuals possess the capability to resolve issues and reach objectives (**Afriwilda & Mulawarman, 2021**).

Community Health Nurses (CHNs) play an important role in informing the mothers regarding technology addiction and its related problems as anxiety and depression. CHNs as counselors should support mothers and their children through using motivational counselling intervention to change the behavior toward digital addiction to reduce its negative effects on children (**Ibrahim et al., 2018**).

Significance of the study:

Children's usage of digital devices and their access to the internet has been evolving. Younger and younger children are having access to the internet, and the majority of them have an online presence either through their parents or on their own. Teenagers are widely recognized for using technology, but younger children those under the age of nine do not share this knowledge. Little children's lack of agency and technical, critical, and social abilities may make it more difficult for them to grow up happily and responsibly in the digital era when they have access to the internet.

According to the statista report in 2023, about Egyptian use of internet, second in terms of its online population on the African continent is Egypt. As of January 2023, the country's digital population was nearly 80.8 million. In Africa, it is the third most populous

nation, following Ethiopia and Nigeria. Additionally, this included nearly 72% of the Egyptian people, a significant increase from 37% in 2017. The main goal of counseling is to guide individuals in either reducing or completely giving up their addiction, based on their unique needs, addiction level, and aims. Therefore, the purpose of this research is to evaluate the efficacy of motivational interviewing counseling in reducing the level of students' digital addiction.

Aim of the study:

This study aimed to assess the effectiveness of motivational interviewing counseling for mothers on the digital addiction level of their children through:

- 1- Assessing technology using frequency of the children
- 2- Assessing level of digital addiction in children
- 3- Designing, implementing and evaluating the effect of motivational interviewing counselling on children's digital addiction level.

Research hypothesis:

The subsequent research hypothesis was established to achieve the purposes of this study:

- Motivational interviewing counseling is an effective method in decreasing the level of children digital addiction.

Subject and Methods

Research design:

A quasi-experimental study design was applied in this investigation. This design comprised two groups: the control group and the study group, which were assessed using a pre-test and multiple post-tests. Counseling activities occurred in face-to-face.

Research Setting:

The research was conducted at the pediatric outpatient clinics of Benha University

Hospital. This hospital is one of the hospitals that serving Qalyubia Governorate and the surrounding areas and provide services for the women.

Sampling

Type:

A simple random Sample of the mothers attended to the previously mentioned setting with Inclusion Criteria: A mother who wants to participate in the study and has one or more children who use digital devices.

Size and technique:

The sample size was determined by the annular flow rate of mothers attended during year (2022) which was 408. The total number of the mothers were 200 mothers according to the statistical sample equation which used to determine the sample size (*Yamane, 1967*).

$$n = \frac{N}{1 + N(e)^2}$$

Where: e= margin error (0.05) N= population, n= sample size,

Technique:

The inclusion criteria are fulfilled by all mothers who attended Pediatric Outpatient Clinics at Benha University Hospital until the predetermined number is reached. The intervention group was collected then followed by the control group.

- Group I (intervention group) One hundred women who fulfilled the study's inclusion criteria.

- Group II (control group) One hundred women who matched the study's inclusion criteria.

Tools of data collection:

Two tools were used for data collection.

Tool I: The researchers pre-designed the questionnaire after reviewing the relevant literature and translating it into the Arabic language. **It is compromised of two parts:**
part I: It was performed to assess the demographic characteristics of the selected mothers and personal data of children. A total of (8) questions including (parents' educational level, working status, child level of education, type of school, If the school rely on the use of technology methods in its teaching, if the child own digital device or not, the time that the child spend using digital devices and the time spending with the family).

Part II: It was performed to assess technology using frequency of the child, it includes (3) questions (Finding that child keeps online longer than intended, child neglects household chores to spend more time online, and if child formed relationships with Internet users).

Tool II: The digital addiction scale for children (DASC scale)

- It was adapted from *Hawi et al. (2019)*, to assess the level of digital addiction in children. DASC contains 25 categories that are derived from Griffiths' six-core addiction criteria and 9 diagnostic DSM-5 Internet Game Addiction factors. As follows are the addiction criteria:

(1) **Preoccupation:** [when digital use becomes the primary activity in an individual's life and begins to influence their thoughts, emotions, and actions].

(2) **Tolerance:** [when it is necessary to provide an increasing quantity of time to a specific activity]

(3) **Withdrawal** [It is indicative of the disagreeable physical effects or emotional states that arise when digital use is eliminated or minimized]

(4) **Mood modification** [it indicates the utilization of the specific activity to relieve or avoid a negative mood]

(5) **Conflict** [It discovers the conflicts between the addict and those in their immediate surroundings or within the individual themselves that are related to digital use];

(6) **Relapse** [It is suggestive of the ineffective efforts to regulate digital usage or the tendency for returning to previous digital usage patterns on a recurring basis]

(7) **Problems** [It refers to suffering challenges with academic success, time management, or sleep]

(8) **Deception** [it indicates that family members, therapists, or other individuals have been deceived about their level of digital use]

(9) **Displacement** [It assesses a decrease in demand for entertainment and activities, with the exception of digital use].

Scoring system:

The mothers responds by indicating the extent to which each statement pertains to them, grading on a scale of 1 to 5; 1 means never, 2 represents rarely, 3 means sometimes, 4 demonstrates often, and 5 represents always. The item-by-item scores were added to determine the total elements score and mean score. The total score of ranged from (25 to 125); and the higher score indicates more addicted the child.

-Total score o DASC was categorized into:

- High level at: ($\geq 75\%$).
- Moderate level at: ($50 - < 75\%$).
- Low level at: ($< 50\%$).

Tools Validity and reliability:

The content of the tools was revised by a panel of five experts in the field of Community Health Nursing at Benha University to ensure their relevance, applicability, and comprehensiveness. The tools were originally developed in the Arabic language. Sentences necessitated only minor changes. Tools were considered proper and valid by the experts. The Cronbach's Alpha test was employed to assess the

reliability of the instrument. The tool's moderate to high reliability was indicative of the relatively homogeneity of its elements, as indicated by the results. The reliability of the DASC tool was 0.95.

Ethical considerations:

The research was initiated with the ethical approval of the Scientific Research Ethical Committee in the Faculty of Nursing at Benha University. The study also complied with standard ethical guidelines for clinical research and posed no risk to the study's participants. All of the rights of the mother were respected. The expected outcomes of the research were available to each mother. They were assured that all data would be carefully evaluated and that the information would be used solely for the research purpose and for their benefit. Additionally, each study subject was provided with sufficient time throughout the study. Additionally, they were aware of their rights to leave at any moment without providing an explanation.

Pilot study:

It carried out prior to the beginning of data collection. The instruments' clarity and applicability were assessed by twenty participants, each of whom was randomly selected from 10% of the study sample. Additionally, it was important in determining the time necessary to complete the questionnaire; the form necessitated 10-15 minutes to complete. All pilot subjects were removed from the primary study sample.

Field work:

Ethical approval for the research was obtained from the Faculty of Nursing at Benha University and the Directors of Outpatient Clinics of Benha University Hospital after an explanation of the study's purpose and the instrument used. Subsequently, structured interviews were conducted with mothers who were eligible for the study (i.e., matched the inclusion and exclusion criteria) to assure

confidentiality, obtain informed oral consent, and provide an explanation of the study's purpose. From June 2023 to December 2023, data collection was conducted over a six-month period. The Motivational Interviewing Counseling program comprised the following steps:

Firstly, the researchers gave a pretest to determine the level of digital addiction of children before the intervention in both studied groups (study group and control group). **Secondly**, giving three sessions of motivational interviewing counseling interventions. Three days per week (Saturday, Monday, and Wednesday) from 9:00 a.m. to 12:00 p.m. The selected sample size was collected by researchers who visited the mentioned setting. The mothers were interviewed in small groups by the researchers to implement the Motivational Interviewing Counseling program regarding digital addiction, the time was 30-45 minutes for each session for the mothers (study group). **Thirdly**, the administration of a posttest to evaluate the subject's digital addiction level two weeks following the intervention. The motivational counseling intervention's preparatory, planning, implementation, and evaluation phases were all implemented.

A-Preparatory phase:

This phase was conducted by the researchers through an examination of international literature that was associated with the research problem for various aspects. In this phase, the researchers acquired an understanding of the severity of the problem. To assess the appropriateness, comprehensiveness, clarity, relevance, and applicability, the tool were distributed to five experts in the field of Community Health Nursing, Faculty of Nursing, Benha University. The jury's results were done.

B- Interviewing and assessment phase:

During this phase, the researcher conducted interviews with the mothers in the studied groups to obtain baseline data (pre-test). At the onset of the interview, the researchers gave a warm welcome to the mothers who were

participating, provided a detailed explanation of the research's purpose, duration, and activities, and obtained their permission in writing to participate in the study. A total of four to six mothers were interviewed on every day. In order to evaluate the efficacy of the counseling intervention, the baseline data accumulated during this phase was utilized as a starting point for subsequent comparisons.

C- Planning phase:

Determined by the findings of the studied groups during the assessment phase. The researchers established the counselling instructions in order to increase mothers' strengths and power as well as their awareness of the negative behavioral effects of digital addiction on their children, helps them to change behaviour through detection and resolution and make controlling and reducing internet use for their children.

D- Implementation of the counseling intervention phase.

The counselling provided for the study group through three different sessions. They were assembled in the reception area of the Outpatient Clinics at Benha University Hospital. The motivational counseling intervention was administered to the mothers in study group during scheduled sessions. Each session lasted approximately 30-45 minutes.

E- Evaluation phase:

The studied groups' subjects were assessed two weeks after the implementation of this phase using the same format of instruments that were used to assess the level of digital and technology addiction in children.

Statistical Design:

SPSS software (version 25) was used for managing the data analysis. The mean, SD, and range were the units of numerical data. Qualitative data were represented using frequency and percentage. The chi-square tests were applied to analyze the nominal variables in the two groups. When the frequency count was less than 5 for more than 20% of the cells in a reduced sample size, As an alternative to the chi-square test, Fisher's exact

test was used. The two groups' mean scores were compared using independent t-tests. The dependent factor of technology addiction score was analyzed using linear regression in multivariate analyses. Significant was defined as a p-value of less than 0.05, while highly significant was defined as a p-value of less than 0.001.

Results:

Table (1): Shows that 25% of the mothers in study group had Bachelor's degree compared to 18% of the mothers in the control group. 58% of the mothers in study group were not working and 46% of the mothers not working in control group. **For children**, 52% & 50% of children their schools relied on the use of technology methods in its teaching in both study and control groups respectively, 45% & 51% of children had means of modern technology in both study group and control group respectively. In addition, 47% and 50% of the children in the research and control groups, respectively, spent more than 6 hours using technology.

Table (2): indicates that 36% & 39% of the children in both studied subjects in both study and control group respectively were frequently kept online longer than intended and 39% & 28% of the children in both study and control group neglected the household chores to spend more time online respectively.

Table (3): demonstrates that there was statistically insignificant difference between the two groups under investigation in terms of all items associated with the technology addiction score of children prior to the implementation of motivational interviewing counseling. However, the two groups were found to have a highly significant difference in all items related to the technology addiction score of the children following the implementation of motivational interviewing counseling ($p \leq 0.001$).

Figure (1): finds that Motivational interviewing counseling was used and a highly statistically significant difference was detected between the control group and the study group ($p \leq 0.001$).

Table (4): reveals that technology addiction score post program implementation

among studied children was best predicted among study group by working status of parents ($p=0.002^*$), accounting for 39.7 % of the variance of technology addiction score. As regards control

group, it was best predicted by parents' educational level ($p=0.001^{**}$), accounting for 38.7 % of the variance of technology addiction score.

Table 1. Distribution of both studied groups according to their demographic characteristics, study group (n=100), and control group (n= 100).

Demographic characteristics	Variables	Study group (N=100)		Control group (N=100)		χ^2	P value
		No.	%	No.	%		
Parents' educational level	Illiterate	6	6.0	3	3.0	4.859	0.302 n.s
	Read and write	38	38.0	36	36.0		
	Technical institute	27	27.0	40	40.0		
	Bachelor's degree	25	25.0	18	18.0		
	Postgraduate studies	4	4.0	3	3.0		
Working status	Working	42	42.0	54	54.0	2.885	FEp 0.119 n.s
	Not working	58	58.0	46	46.0		
Child's education level	Primary	66	66.0	75	75.0	1.947	FEp 0.215 n.s
	Preparatory	34	34.0	25	25.0		
Type of school	Government	62	62.0	55	55.0	1.009	FEp 0.389 n.s
	Private	38	38.0	45	45.0		
If the school rely on the use of technology methods in its teaching	Yes	53	53.0	50	50.0	0.180	0.914 n.s
	No	30	30.0	32	32.0		
	To some extent	17	17.0	18	18.0		
If the child have any means of modern technology in particular	Yes	45	45.0	51	51.0	0.769	0.681 n.s
	No	28	28.0	26	26.0		
	Shared by several people	27	27.0	23	23.0		
If yes, which of the following devices does the child own #	iPad/tablet	51	51.0	62	62.0	3.234	0.199 n.s
	Mobile	37	37.0	46	46.0		
	Computer	90	90.0	91	91.0		
	Smart watch	87	87.0	82	82.0		
Hours that the child spends using technology	< 4 hours	8	8.0	2	2.0	4.133	0.127 n.s
	4- 6 hours	16	16.0	14	14.0		
	>6 hours	76	76.0	84	84.0		

Hours that the child spends with family	< 4 hours	19	19.0	18	18.0	0.180	0.914 n.s
	4- 6 hours	34	34.0	32	32.0		
	>6 hours	47	47.0	50	50.0		

(n.s) Not Significant ($P>0.05$)

#not mutually conclusive

FEp: p value for Fisher exact for chi square

Table 2. Distribution of both studied groups according to their technology using frequency, study group (n=100), and control group (n= 100).

Technology using	Frequency	Study group n=100		Control group n=100		X ²	P value
		No.	%	No.	%		
Finding that child keeps Online longer than intended	Rarely	20	20.0	22	22.0	5.676	0.128 ^{n.s}
	Sometimes	22	22.0	29	29.0		
	Frequently	36	36.0	39	39.0		
	Often	22	22.0	10	10.0		
Child neglects household chores to spend more time online	Rarely	24	24.0	38	38.0	5.097	0.165 ^{n.s}
	Sometimes	27	27.0	25	25.0		
	Frequently	39	39.0	28	28.0		
	Often	10	10.0	9	9.0		
Child relationships formed with Internet users	Rarely	70	70.0	55	55.0	4.976	0.174 ^{n.s}
	Sometimes	16	16.0	25	25.0		
	Frequently	12	12.0	18	18.0		
	Often	2	2.0	2	2.0		

(n.s) Not Significant ($P>0.05$)

Table (3): Comparison of technology addiction score among the studied children pre, and post program implementation, study group (n=100), and control group (n= 100).

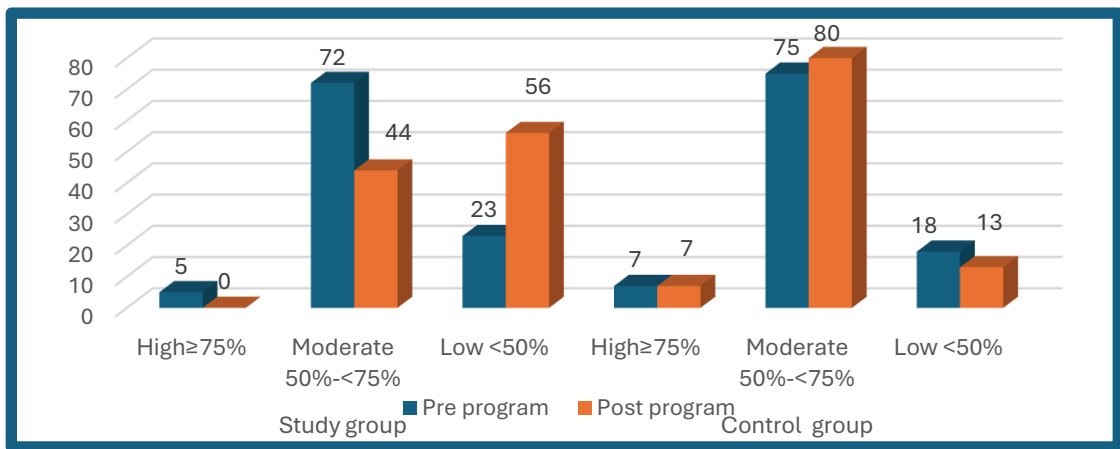
DASC	Study group (n=100)		% of mean post program implementation	Control group (n=100)		% of mean post program implementation	t- test P value (1)	t- test P value (2)
	Pre Program	post program		Pre Program	post program			
	X ⁻ ± SD	X ⁻ ± SD		X ⁻ ± SD	X ⁻ ± SD			
Preoccupation	4.33± 1.37	3.62± 0.92	45.2 %	4.59± 1.50	4.59± 1.50	57.3 %	-1.274 0.204 n.s	-5.484 <0.001**
Mood modification	8.34± 2.04	6.58± 1.37	54.8%	8.70± 1.85	8.54± 1.95	71.1%	-1.305 0.193 n.s	-8.189 <0.001**
Tolerance	4.31± 1.23	4.00± 0.77	50.0 %	4.56± 1.32	5.35± 1.47	66.8%	-1.407 0.161 ^{n.s}	-8.074 <0.001**
Withdrawal Problems	9.69± 2.23	8.51± 1.45	53.1 %	9.61± 2.06	9.64± 2.04	60.2 %	-0.242 0.809 n.s	-4.494 <0.001**
Conflict	5.40± 1.49	4.27± 0.89	53.3%	5.44± 1.45	5.44± 1.45	68.0%	-0.192 0.848 n.s	-6.832 <0.001**
Relapse	5.52± 1.90	4.36± 1.11	54.5%	5.57± 1.74	5.57± 1.74	69.6%	-0.193 0.847 n.s	-5.850 <0.001**
Problems	9.84± 2.38	8.52± 1.85	53.2%	10.15± 2.13	10.13± 2.12	63.3%	-0.968 0.334 n.s	-5.713 <0.001**
Deception	3.83± 1.15	3.53± 0.84	44.1%	3.95± 1.16	3.99± 1.16	49.8%	-0.787 0.432 n.s	-3.190 0.002*
Displacement	7.00± 1.95	6.23± 1.71	51.9%	7.32± 1.94	7.37± 1.96	61.4%	-1.161 0.247 n.s	-4.372 <0.001**

Total	58.26±12.01	49.62± 8.78	-	59.81±10.73	60.62± 9.91	-	-0.964 0.336 n.s	-8.305 <0.001**
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Not significant ($p > 0.05$)** Highly significant ($p \leq 0.001$)

- (1) control group (pre program) vs study group (pre program)
- (2) control groups (post program) vs study groups (post program)

Figure 1. Comparison of total technology addiction among the studied children pre, and post program implementation, study group (n=100), and control group (n= 100).



Not significant ($p > 0.05$)

** Highly significant ($p \leq 0.001$)

- (1) control group (pre program) vs study group (pre program)
- (2) control groups (post program) vs study groups (post program)

Table (4): Multiple linear regression analysis for predictor variables of technology addiction among children post program implementation, study (n=100), and control group (n= 100).

Technology addiction	Study group (n=100)					Control group (n=100)				
	Standardized Coefficients	Unstandardized Coefficients		t	Sig.	Standardized Coefficients	Unstandardized Coefficients		t	Sig.
	Beta	B	Std. Error			Beta	B	Std. Error		
(Constant)		37.694	5.863	6.430	.000		68.938	9.894	6.968	.000
Parent's educational level	-	-	-	-	-	-4.132	1.186	-.362	-3.483	.001**
Working status of parents	5.499	1.751	.318	3.141	.002*	1.732	2.278	.087	.760	.449
Child's education level	-2.015	1.986	-.113	-1.015	.313	.541	2.491	.024	.217	.829
If the school rely on the use of technology methods in its teaching	2.222	1.143	.197	1.943	.055	-1.742	1.313	-.134	-1.326	.188
Having any means of modern technology in particular	-.170	1.132	-.017	-.150	.881	-2.052	1.271	-.169	-1.614	.110
Devices that the child own	3.763	3.066	.123	1.227	.223	.584	2.057	.029	.284	.777
Hours that the child spends using technology	-.587	1.383	-.043	-.424	.672	-.554	2.307	-.024	-.240	.811
Hours that the child spends with family	1.590	1.143	.143	1.391	.168	.690	1.292	.053	.534	.595
Adjusted R ² = 0.397 P = 0.031*						Adjusted R ² = 0.387 P = 0.050*				

(B) Beta Co-Efficient

(SEB) Standard Error

* Statistically significant $p \leq 0.05$

Discussion:

One of the most major challenges that counselors find is assisting individuals in modifying long-standing behaviors that pose significant health risks. The counsellor may characterize the individual as "unmotivated" or

"lacking insight," which can be bewildering and annoying when the advice is ignored or contested. An effective approach to motivational interviewing counseling is the resolve of ambivalence, which in turn enhances motivation. Motivational interviewing is founded on a set of principles that emphasize a collaborative

therapeutic relationship where the therapist respects the patient's autonomy and elicits the patient's intrinsic resource for change. It additionally stresses the importance of identifying one's own strengths in order to develop them. Motivational interviewing is a form of directive counseling that employs an evidence-based approach to assist individuals in altering their behavior by identifying and resolving uncertainty. The combined Cognitive Behavioral Treatment and Motivational Interviewing counseling, known as "Lifestyle Training," is reported by therapists to be a suitable solution for the problem of internet addiction (*Afriwilda & Mulawarman, 2021*).

The aim of the current investigation was to evaluate the effectiveness of motivational interviewing counseling on mothers of children with digital addiction. It was expected that this method would be effective in regulating and reducing internet usage. This involved the reframing of beliefs, the constructive utilization of free time, the reestablishment of a proper daily routine, and the expansion of real-world social connections. The results of this research substantially supported the research hypotheses, highlighting the importance of including Motivational Interviewing counseling to enhance the awareness of mothers regarding digital addiction and its use, as well as to prevent issues associated with digital addiction.

Demographic characteristics of the mothers and personal data of the children, the awareness toward digital addiction and how to prevent its problem are primarily influenced by the data of the studied mothers as level of education, as well as, working status and number of hours that the child spend using technology. Therefore, it is imperative to ascertain these variables for the mothers and children under the study. The present research demonstrated that one-quarter of the mothers in the study group had a Bachelor's degree, while less than one-fifth of the mothers in the control group had such a degree. Additionally, in the control group, over half of the mothers were working, while approximately three-fifths of the mothers in the study group were not.

For children, 50% of the students in both the control and study groups were instructed using technology. In both categories, the majority of the children had access to computers, and approximately 50% of the children had access to modern technology. Also, more than three quarters of the children in both groups were spend more than 6 hours using technology.

This study findings were confirmed by *Wu et al, (2024)*, conducted a study on the "Parenting strategies and the utilization of digital technologies by preschool-aged children in a Chinese community" and Who exhibited that the 58% approximately three fifths of the children used means of technology for completing school assignments, 54.5% more than half of the children had computers in their homes. Also, two or more hours of screen time per day were accounted for by 57.8% of the children, and approximately three-fifths of the children included in this category were the hours spent viewing videos, using a computer, or playing computer games.

Conversely, this outcome was inconsistent with the findings of *Theopilus et al., (2024)*, who demonstrated a qualitative study on "Digital Interventions for Combating Internet Addiction in Young Children: Perspectives of Therapists and Parents." The research disclosed that (55% of the mothers) had Bachelor's degree and (41% approximately two fifths of the mothers) were stay at home parents. Concerning devices used by the child, (27% more than quarter of the children) had laptop or computers. Also, the findings of this research were in direct opposition to *Oktay & Ozturk, (2024)*, who studied "Digital Addiction in Children and Affecting Factors" illustrated that (72.6% less than three quarters of the children) had their own cell phone and means of technology. Also, (37.19% less than two fifths of children) spent two hours on the cell phones.

By looking to studied children' **technology using frequency**, the current study's findings indicated that there is no statistical significance difference in all items between the two studied groups ($P > 0.05$). Approximately two fifths of the children in both studied subjects in both groups were frequently kept online longer

than intended and one quarter of the children in both study and control group neglected the household chores to spend more time online. This might be related to children's having means of modern technology.

Our research findings were corroborated by *Pawlowska et al., (2015)*, conducted study on the "The risk of developing addiction and the prevalence of internet addiction as demonstrated by a group of Polish adolescents from rural and urban areas" illustrated that, The results of the internet addiction test conducted on adolescents from urban areas suggest that they spend a significantly greater amount of time online, neglect household chores, and lose sleep due to late-night log-ins than their peers from rural areas. Additionally, they spend a greater amount of time using other forms of entertainment.

In the same harmony, *Onguner et al., (2024)*, who conducted a study on the "Effects of Daily Habits on the Internet Addiction of School-Age Children" " Who found that approximately one quarter of the children formed relationships and chatting with the internet users using whatsapp and messenger and had a personal social media account, Additionally, the results of this study suggested that children encountered challenges with their family members or other individuals in their surroundings and postponed daily activities as a result of prolonged internet use at high levels. This infinite cycle will continue indefinitely as long as internet usage is continued.

Concerning **the technology addiction score among the studied children pre, and post program implementation in study group and control group**; there was insignificance difference between two studied groups in all items related to children's technology addiction score pre motivational interviewing counselling implementation while, there were highly statistically significance difference between two studied groups in all items related to studied children's technology addiction score post motivational interviewing counselling implementation ($p \leq 0.001$). This might be due to motivational interviewing counseling that helping in decreasing the children's digital

addiction level after the mothers receiving this intervention than those who did not receive it.

This result was in align with the results of *Theopilus et al., (2024)* who observed that preventive measures that improve children's competencies in proper online behavior and literacy are more likely to be effective than interventions which require children limit their screen time. The use of internet addiction scales in measurement demonstrated that preventive interventions could prevent addictive behavior, reduce engagement with the internet, and redirect children's attention from online activities to real-world activities $P < .001$.

Additionally, the findings of the present research aligned with those of *Afriwilda & Mulawarman, (2021)*, who conducted study on the "The efficacy of motivational interviewing counseling in enhancing the psychological well-being of students who exhibit a tendency for online game addiction. The experimental and control groups significantly differed ($t = -9.234$, $p > .05$) during the T1 vs T2 period as a consequence of the motivational interviewing intervention. Meanwhile, the control group also demonstrated a significant difference ($t = -5.795$, $p > .05$). However, the motivational interviewing intervention had a more significant impact on the psychological well-being of the study group than the control group intervention, including the reduction of signs of anxiety, depression, and anger.

A highly statistically significant difference was detected between the study and control groups in the case of the effect of motivational interviewing counseling on the digital and technology addiction of mothers and their children ($p \leq 0.001$). More than half of the studied subject in the study group had low technology addiction score compared with the minority of the control group's subject. This could be related to the motivational interviewing counseling that has been successful in raising the awareness of the study group about the risks of technology addiction and its adverse impacts on physical, mental, and social health of their children. Furthermore, it has been able to guide mothers on how to prevent issues related to

digital addiction that frequently affect their children.

These findings agreed with **Yanik & Arslan, (2023)**, who conducted study on The researchers who conducted the study " Randomized controlled experimental investigation on the efficacy of technology addiction awareness training for high school students " found that the posttest average score of young internet addiction test participants in the study group decreased in comparison to the pretest point average (p-value 0.05). Additionally, the findings of the present research corresponded with those of **Afriwilda & Mulawarman, (2021)**, who noticed that the students' psychological well-being significantly improved following counseling with motivational interviewing and the ability to recognize their internal thoughts and resolve their ambivalence.

The present study revealed that; there was multivariate linear regression model reveals that technology addiction score post program implementation among studied children was best predicted among study group by working status of parents ($p= 0.002$), accounting for 39.7 % of the variance of technology addiction score. As regards control group, it was best predicted by parents' educational level ($p= 0.001$), accounting for 38.7 % of the variance of technology addiction score. This might be due to the working mothers being outside the home more and lack of the supervision that help child tend to digital addiction more non-working mothers. Also, mothers with high education being more attentive and learned about negative effects of digital addiction than non-educated mothers.

The study results were consistent with **Bilge et al, (2022)**, who conducted study on "Examining the Relationship Between Parental Attitudes and Adolescent Internet Addiction" revealed that the education level of the parent was a significant indicator of the development of internet addiction.

Conclusion:

This research concluded that the Motivational interviewing counseling is effective in decreasing the level of children digital addiction, it illustrates the pressing necessity for awareness and counseling programs targeting children and community members in order to effectively address the prevalence of digital addiction in our society.

Recommendation:

Based on the findings of the current research, the following recommendations were suggested:

- Training and counselling programs are important for all community especially children to equip them by essential knowledge and to increase their awareness regarding digital addiction.
- An additional area for investigation is the level of awareness among parents regarding digital addiction and the methods for combating this type of addiction.
- Additional investigations and researches are required in this topic.
- The media should effectively communicate an educational message to community members regarding digital addiction and the value of maintaining a balance between the positive and negative effects of technology.

Limitation of the Research

The current research investigation is subject to the following limitations: There was some noise and interruptions during the sessions but it did not affect the program negatively, it only prolonged the duration of the session a little and the researchers organize the groups and the sessions.

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