Effect of Intervention Program for Secondary School Students toward Unhealthy Using of Mobil Phone

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Abstract

Background, Mobile phone is now an integral part of secondary school students ' daily life and for the majority, make student dependent on existing features and application for example students who are dependent on calculator application use their smartphone to get the answer. **The study aimed to**: evaluate the effect of an intervention program for secondary students toward unhealthy use of mobile phones. **Design**: A quasi-experimental study was applied to achieve the aim of the current study. **Setting**: This study was conducted at Ali Mubarak school in Beni - Suef city Subjects: Consisted of 136 female students. **Tools**: one tool used to collect the data consists of 4 parts, a socio-demographic questionnaire, a knowledge questionnaire, an effect questionnaire, and a practice questionnaire. **Results**: before the implementation of the program a very limited number of students (3.7%, %, 4.4%) had good knowledge about mobile phones and electromagnetic waves, while after implementation of the program the major number (80.9%, %,82.4%) of the sample become had good knowledge, the most of the total sample(44.1%, 66.2% and 69.1%) had the high effect of physical and psychosocial respectively. While after the implementation of the program become very limited number from the total sample (3.7%, 1.5%, and 2.2%) had a high effect, the major number (86.0% and 80.9%) of students had unsatisfactory reported practices when receiving calls and charging a mobile phone, respectively. After the intervention of the program, the most number (80.9% and 83.8%) of them had satisfactory reported practices for the same items respectively. **Conclusion**: There was a statistically significant improvement in students' knowledge, effect, and practice post-program. **Recommendations**: school can organize educational programs for refreshing and increasing knowledge and skills and practice for students about healthy use of mobile phones.

Keywords: Effect, Program, Secondary School, Student, Unhealthy, Mobile phone

Introduction

The secondary school stage is characterized by a rapid rate of growth and development. During this period the body develops in size, strength, and reproductive capabilities, and the mind becomes capable of more abstract thinking social relationships move from being centered on the family base to a wider horizon in which peers and other adults come to play significant roles in the adolescent's life. It is also a time when new skills and knowledge are acquired and new attitudes are formed. The following are important characteristics of this period ranging from 10 or 11 years to 18 years of age. (**Caskey & Anfa,2020**).

These new technologies have become a cornerstone for how people, particularly secondary students, communicate and are entertained. Technology gives adolescents many benefits; talking to people worldwide, easy and regular communication or contact with family and friends, and feeling easier to be accepted online. Besides, the easy accessibility of the internet through cell phones and wireless computer access provides adolescents with quick and easy to be knowledgeable about various topics **(Miakotko, 2019).**

The first cellular phone was invented and used by an associate of Motorola. Since 1973, cell phones have grown in their capabilities and features, and are now an essential item in the hands of almost every individual. Numerous smartphones can access applications that allow emailing, sending messages to other cell phone devices, accessing school and work websites, and connecting on various social media platforms that are popular today. In addition to that, cell phones have become the sole means of communication for individuals (**Gladden,2018**).

Smartphones have become a part of our daily life, and the number of students using smartphones continues to increase day after day. Easy internet access is the main advantage of smartphones in comparison to traditional mobile phones, so they are considered handheld convenient substitutes for computers. students use smartphones for many purposes such as entertainment, communication,

education, browsing for information, or business facilitation. the excessive use of smartphones makes people 'addicted' to that type of technology (**Zheng,2020**).

The capabilities of mobile phones encourage learning and engagement. This is evident in students' reports of using their mobile devices to access course content and use 'apps' to support their learning. Notably, these devices played a significant role in students' creation and utility of study materials. The touchscreen capabilities of mobile devices allow students to enlarge or rotate images with ease, thereby making learning more hands-on (**Guma, 2020**).

Today, it is estimated that more than 5 billion people have mobile devices, and 70% of secondary students use mobile phones. This is related to the mobile phone making our life smooth but it has many evil effects also. The mobile phone might be affecting one's thought process, behavior, and attitudes in a more negative and faster way. It does that so finely and secretly that it becomes difficult to identify and cope with (**Rameshva,2020**).

Furthermore, the study found that 32 percent of the students use less than one hour while 68% of the students use mobile phones for more than one hour. Out of the total respondents, 94 % keep the phone on vibration or mute during class and 62% during work. The use of the mobile phone is prohibited during driving in almost all countries of the world for life safety. Among the respondent students, 47% of students keep mobile phones on vibration or mute while driving and 64 % of students did so while sleeping. It was further revealed by the students that 91 % of the respondents' students keep their mobile phones on mute or vibration during prayer **(Khan, Malik, Amin, 2019)**.

The impact of excessive use of cell phones on student health who are fascinated with new technologies. Generally, smartphone addiction consists of four main components: compulsive phone use: behaviors such as repeated checking for updates or messages, withdrawal: feelings of distress without the phone, tolerance: longer bouts of use, and functional impairment: interference with other life activities and social relationships. There are many psychological factors related to smartphone addiction such as anxiety, stress, poor social and family relationship, depression, loneliness, shyness, degree of self-esteem, and satisfaction with life**. (Bian& Leung,2020).**

Furthermore, People who talk on the phone for several hours a day are 50% more likely to develop brain cancer. The reason for this is the radio waves produced by mobile phones. It is calculated, that every minute the human brain receives about 220 electromagnetic impulses, which are not necessarily harmful but affect the brain in cases of prolonged impact. Recent studies report two types of brain cancer that may occur – gliom and acoustic neuroma. Apart from cancer risk, mobile phones influence our nervous system **(Misek,2021).**

Significance of the study

In the modern era, the use of mobile has become one of the basics of life and has become like water and air. In Egypt, the latest report has revealed that secondary school students have the highest levels of mobile phone ownership amongst all demographic groups and are prolific users of the technology. The number of mobile phone users is 92 million, with a prevalence rate of 113 %as they utilize more than one mobile phone and an annual increase of 27.8% (**Ministry of Communications and Information Technology, MCIT, 2019)**

According to a recent study, it was found that over the last five year, secondary school student has increased the amount of time they spend plugged into mobile multimedia to more than 7 hours a day. That secondary school students keep at it seven days a week so, more than 50 hours a week will be spent in front of a mobile phone affecting secondary school students to (cancer, sleep disturbance, depression, and isolation)The more time they spent in front of mobile phone, the more health effects they exposed (**Benaroch,2019).**

Aim of the study:

This study aimed to evaluate the effect of health education programs for secondary students toward unhealthy use of mobile phones through;

1- Assessing secondary school student's knowledge and practice toward the method of using the mobile phone.
2- Assessing secondary school student's knowledge and practice toward impact toward un health using of mobile phone.
3- Planning and implementing health education programs among secondary school students toward correct methods for using mobile phone.
4- Evaluating the effect of health education program outcomes on the correct method of using mobile phone among secondary school students.

Research hypothesis:

Health educational program will improve secondary students' knowledge and practice regarding mobile phone healthy.

Subjects and methods:

The subject and method used for this study were portrayed under four designs as the following:

- **Technical item.**
- **Operational item.**
- **Administrative item.**
- **Statistical item.**

Technical item:

The technical item includes (study design, setting, subject, and tools for data collection)

Research Design:

A quasi-experimental study was applied to achieve the aim of the current study.

Setting:

This study was conducted at Ali Mubarak in Beni - suef city; this school is located at Beni -Suef city salah salem street. the school had 2 buildings; the first build determine for the primary stage, (it consist of 5 floors that included 15 classes), (and the second build determine for the preparatory and secondary stages which included 10 classes for the preparatory stage and 6 classes for the second stage). the total number of secondary student stage range between 22- 23 students in each class.

Sampling:

Our study included 136 female students (girls), in Ali Mubarak secondary school, aged ranging from 16 to 18 years.

The investigator determines many criteria for this sample as the following

Incaution criteria:

- accept to participate in the study
- Have and use a mobile phone.
- Attending the study setting for education during the time of the study
- Alert, cooperative, and able to communicate
- mature and awareness
- present at school during study time (not absent)
- female and all in the secondary education stage (first – second third) stage

Tools for data collection:

Our study used one tool to collect the data, a structural interviewing questionnaire will be used in the study developed by the investigator after reviewing the national and international related literature, it contains 4 parts as the following:

First part: is concerned with personal and socio- socio-demographic status related to variables such as (age, sex, parent level of education and place of residence, also secondary student personal mobile phone-related data, etc)

Second part:

1- concerning the secondary students, knowledge about the mobile phone, definition, uses the mobile phone type of emitted from (this part will be used before and after the educational program to evaluate the effect of the program) ……..etc.

2- concerning the secondary student-related knowledge about electromagnetic waves; definition, type, classification of waves , sources ,……etc.

Scoring System: students regarding mobile phone and electromagnetic waves were classified as **correct** answer = scored **1** and **incorrect** answer = scored **zero**.

The score result among this knowledge was determined as the following

- Poor = < 50 %
- mild average =from 50% to < 75 %.
- Good= ≥75% **.**

The third part: is concerned with the physical and psychosocial effects of mobile phones on secondary school students, it consists of 3 parts:

1- Assess the physical effect of mobile phone use on secondary school students, as the following whether they feel headache, chronic pain, eye fatigue, joint, and muscle weakness after, elevation of body temperature, memory loss disrupt attention &cause insomnia,…….etc.

2- Assess the social effect of mobile phone on secondary school students, such as the following, communication and relationships with family, family estrangement, poverty of feelings and emotional exploitation,…….etc.

3- Assess the psychological effect of mobile phone on secondary school students, As the following stress, isolation,…….. etc.

Scoring System: the question were coded as the following:

Low effect = 3 point
Moderate effect= 2 point
High effect = 1 point**.**

Total effect scores were classified as follows.

High exposure = > 65%.
Low exposure = < 65%.

3- Assess the total times for using a mobile phone every day, the number of hours when using the mobile phone…… etc.

NB (this part will be done before and after the educational program to evaluate the effect of our program).

Fourth part: school students reported their practices regarding mobile phone healthy use; the method of sending and receiving call use related practices and the method of carrying and keeping mobile phone

NB (This part will be done before and after the educational program to evaluate the effect of the program).

Scoring System: the question were coded as the following:

always = 1 point

Sometime = 2 point

Never = 3 point

Total effect scores were classified as follows.

Satisfactory reported practice scored = > 50 %

Unsatisfactory reported practice scored = < 50 %

Validity:

The validity of the tool was tested through a panel of five experts from Community Health Nursing Staff from the faculty of nursing at Beni-Suef University and El - Fayoum University to review the relevance of the tools for comprehensive, understanding and applicability.

Reliability

The reliability of the tool was tested to determine the extent to which the questionnaire items related to each other. Answers from the repeated testing were compared (Test –re-test reliability for knowledge was 0.831) reliability for effect was 0.862 and Alpha Cronbach's for reported practices reliability was 0.815.

II-Operational items:

This design comprises a detailed description of the study preparatory phase, Pilot study, and fieldwork

Preparatory phase:

It was including reviewing past, current, national, and international related literature and theoretical knowledge of various aspects of the study, using the available books, articles, internet, periodicals, and magazines to develop tools for data collection.

Pilot study:

The pilot study has been conducted to test the clarity, applicability, and underst and ability of the tool, It has been conducted on 10% of the total sample = (13) of secondary school students. The results of the pilot helped in refining the interview questionnaire and to schedule the time framework. The participants of the pilot were included in our study sample as found no change in the result.

Fieldwork:

Before conducting the study, essential permission was obtained from the directors of the school. The investigator met the students and the aim of the study was explained to them, Their informed oral consent took before collecting the data.

The investigator collected data during 2 days/week (Sunday and Monday) she visited the previously mentioned setting from 9 Am:12 pm. the questionnaire was distributed by the investigator and completed by the student. Each session lasted from 35-45 minutes. the investigator prepare Suitable teaching methods (lecture, role play, discussion) and prepared suitable assistance aids (booklet, PowerPoint, posters), especially for each session of the program.

The investigator met students at Ali Mubarak Secondary School, Every Sunday and Monday. The program was implemented in the six-group discussion.

The investigator then explained the data of the questionnaire to every student and needed time to fill this questionnaire.

The investigator explained the same information in all classes.

The researcher promised to director of the school and students that no cause harm or risk occurs to them, and the program will be implemented during the periods of empty classes so that the progress of the learning process in the school will not stop.

The program was implemented indoors in the classroom during the learning times hours at the schools with 136 students divided into 6 groups each group of 22 to 23 students. The program contains 9 sessions that were explained to each group over two days and implemented from 35 to 45 minutes. Every day was explained in 4 to 5 sessions, accordingly, the program was completed for all students in only 6 weeks.

Preparatory phase, First, preparatory phase: tools of data collection development: A review of the past & current related literature covering; various aspects of mobile phone healthy use was done, using available books periodical articles, and magazines. The aim is acquainted with the research problem to develop the study tools.

The fieldwork needed 6 months to complete the program and evaluate the result (preparing the tool need 4 months and

collecting data need 1 month and carrying out and evaluating the result need 1 month). The study was conducted through four phases' assessment, planning, implementation, and evaluation.

Assessment phase, before starting the designed intervention program, the study tools were applied to assess secondary school student awareness toward using mobile phone (knowledge and reported practices)

NB; the data obtained during this phase were considered the basics for the content of the intervention program.

In the planning phase, after identifying the needs of secondary school students from the assessment phase, the investigator identifies the needs of the sample and also starts to develop the program items(session times, course outline, course content, prepare the method of teaching and education, design the program, booklet, prepare the pre and the post-test.

In the implementation phase, the intervention program was applied and carried out (appendix 3).

Use the booklet(appendix 4). before applying for the teaching program the investigator assesses student awareness by using a pre-test (appendix.after5) after finishing and completing the teaching program the investigator evaluates the effect of the program on student knowledge and concerns with the use of mobile phone(appendix 6).

Program evaluation, after implementation of the program, the investigator done post–tests to evaluate the level of improvement in student's knowledge and reported practices. The post-test was done immediately at the end of the sessions of the intervention program using the same tools of pretest evaluation.

III-Administrative Items:

A written approval letter was obtained from the dean of the faculty of nursing Beni - Suef University to take acceptance of manager of Ali Mubarak secondary school in Beni- Suef to practice the study. A written letter sent to the manager including the aim of the study(protocol, tool, booklet) by using the Arabic language

Ethical considerations

Data was collected after taking ethical approval from the scientific research ethical committee Faculty of Medicine Beni -Suef University students in the study were voluntary and were given complete full information about the study and their role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, staining the possibility to withdraw at any time, and confidentiality of the information were guaranteed. Ethics, values, culture, and beliefs are respected.

IV-Statistical design:

The statistical analysis of data was done by using the computer software of Microsoft Excel Program and Statistical Package for Social Science (SPSS) version 25. Data were presented using descriptive statistics in the form of frequencies and percentages for categorical data, the arithmetic mean (X), and standard deviation (SD) for quantitative data. Qualitative variables were compared using the chi-square test (X^2). Differences between the group during the two visits were assessed by paired t-test. In addition, R- tests were used to identify the correlation between the study variables and measure the statistical significance of the study.

Degrees of the significance of results were considered as follows:

- P-value > 0.05 Not significant (NS)
- P-value ≤ 0.05 Significant (S)
- P-value ≤ 0.01 Highly Significant (HS).

Results

Table (1): shows that; the majority (95.6%) number of students were aged <16 - <18 years old, and the mean SD age was (17.32 ± 0.81). more than one quarter (28.7%,33.1%) of students whose fathers and mothers have university education respectively. And (74.3% and,43.4%) have a job respectively, while their mother was a housewife. Most of them (40.4%,56.6%, and 37.5%) say had three rooms, 2-4 family members, and had a proportionate crowding rate in the home respectively. According to budget income, a major number (86.0%) of them depend on their family, and all others (14.0%) depend on themselves. (50.0%) of them their family's monthly income meets all the requirements and needs of daily life.

Table (2) demonstrates that; a very limited number of students (3.7%, %,4.4%) had **good** knowledge about mobile phones and electromagnetic waves respectively, but the majority number had **fair** and **poor** knowledge, while after implementation of the program the major number (80.9%, %,82.4%) of the sample become had **good** knowledge according to the same items respectively.

Table (3: clarifies that; a limited number (22.1%, 22.1%,) of the sample say **always** feel a Change in-ear hearing, affecting the elbow nerves which extend across the arm respectively. With other items after the

implementation of the program, the majority number of the sample become had a physical effect **sometimes**.

- our study found a **higher statistically significant** study as p-value = 0.000.

Table (4): shows that; a limited number (22.1%, 26.5%) of students had **always** effects according to illegal dating between the sexes which leads to pornography by sending and receiving everything that is forbidden respectively, while the other items major number of the sample had **always** social effect. After post-intervention, the majority number of the sample say **some time** and **never** present .social effect items

-our study found a **higher statistically significant** study as p-value = 0.000

Table (5): illustrates that; a limited number (22.1%) from the total sample say **always present** psychological effects from using mobile phone according feel depressed and attempt suicide, while three-quarters or more of them say **always** effect by other items. After post-intervention, only one-third of the sample had **some time** Feeling depressed and attempting suicide, and with another psychological effect, the **major** number from the sample say **some time** presented negative effects.

- our study found a **higher statistically** significant study as p-value = 0.000

Table (6): demonstrates that; the major number (86.0% and 80.9%) of students had **unsatisfactory** reported practices when receiving calls and charging a mobile phone, respectively. After the intervention of the program, the most number (80.9% and 83.8%) of them had **satisfactory** reported practices for the same items respectively.

Part I: Socio-demographic data of the studied secondary school students.

Table (1): studied secondary school students according to their socio-demographic data **(n=136). setting =** Ali Mubarak Secondary School

Socio-demographic data	No.	%
1- Age (years)		
<16 - <18	**130**	**95.6**
18±	6	4.4
Mean ± SD **17.32 ± 0.81**		
2- Father's level of education		
Illiterate	21	15.4
Read and write	23	16.9
Basic education (beginning / preparatory)	33	24.3
Secondary or intermediate education	20	14.7
University education	**39**	**28.7**
3- Mother's level of education		
Illiterate	14	10.3
Read and write	17	12.5
Primary education	20	14.7
Preparatory education	20	14.7
Secondary or intermediate education	20	14.7
University education	**45**	**33.1**
4- Father's job		
Working	**101**	**74.3**
Not working	35	25.7
5- Mother's job		
Working	**59**	**43.4**
Not working	**77**	56.6
6- Number of rooms in the house		
One room	2	1.5
Two rooms	42	30.9
Three rooms	**55**	**40.4**
More than four rooms	37	27.2
7- Number of family members		
Two person - four persons	**77**	**56.6**
More than four persons	59	43.4
8- Crowding rate		
Too crowded	27	19.9
Crowded	24	17.6
Not crowded	34	25.0

Proportionate	**51**	**37.5**
9- Source of income		
Family	**117**	**86.0**
Work	**19**	**14.0**
10- Monthly family income		
Satisfies all the requirements and needs of daily life	**68**	**50.0**
It suffices only the necessities	45	33.1
Not enough	23	16.9

Part II: Secondary school students' knowledge about mobile phones.

Table (2): Comparison between total secondary school students' knowledge using mobile phone (pre and post-implementation of intervention program). (n=136). setting = Ali Mubarak Secondary School

Knowledge subscales	Pre-intervention						Post-intervention						X^2	p-value
	Good		Fair		Poor		Good		Fair		Poor			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
1-Mobile phones	5	3.7	20	14.7	111	81.6	110	80.9	20	14.7	6	4.4	31.69	0.000**
2-Electromagnetic waves	6	4.4	24	17.6	106	77.9	112	82.4	20	14.7	4	2.9	37.04	0.000**
Total knowledge score	5	3.7	20	14.7	111	81.6	114	83.8	16	11.8	6	4.4	35.10	0.000**
Mean ± SD	4.43 ± 1.15						12.04 ± 0.98						t=21.05	0.000**

X^2: Chi-Square Test t= Paired test. (**) highly Statistically significant at p <0.001.

Part III: Evaluation of the effect of the mobile phone on the physical and psychosocial condition.

Table (3): Comparison between secondary school students regarding the physical effect of the mobile phone (pre and post-implementation of intervention program). (n=136). setting = Ali Mubarak Secondary School

Statements	Pre-intervention						Post-intervention						X^2	P-value
	Always		Sometimes		Never		Always		Sometimes		Never			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
1-Feel a headache when you use a mobile for a long time	117	86.0	12	8.8	7	5.2	6	4.4	**115**	**84.6**	15	11.0	**21.33**	**0.000****
2-Feel a migraine when you use it for a long time	126	92.6	7	5.1	3	2.2	5	3.7	**121**	**89.0**	10	7.3	**19.14**	**0.000****
3-Change in-ear hearing.	**30**	**22.1**	27	19.8	79	58.1	0	0.0	**126**	**92.6**	10	7.4	**14.37**	**0.000****
4-Pain in the hand and fingers	90	66.2	30	22.0	16	11.8	6	4.4	**119**	**87.5**	11	8.1	**11.33**	**0.000****
5-Affect the elbow nerves, which extend across the arm	**30**	**22.1**	55	36.8	51	37.5	5	3.7	**122**	**89.7**	9	6.6	**15.17**	**0.000****
6-Back pain	47	34.5	70	51.5	19	14.0	7	5.2	**117**	**86.0**	12	8.8	**11.40**	**0.000****
7-Pain in the shoulder and neck	80	58.8	30	22.1	26	19.1	5	3.7	**121**	**89.0**	10	7.3	**13.49**	**0.000****
8-Sleep disturbances	36	26.5	60	44.1	40	29.4	4	3.0	**122**	89.7	10	7.3	**21.25**	**0.000****

X^2: Chi-Square Test. (**) highly statistically significant at p<0.001

Table (4): Comparison between secondary school students regarding the social e effect of the mobile phone (pre and post-implementation of intervention program). (n=136 setting = Ali Mubarak Secondary School

Statements	Pre-intervention						Post-intervention						X^2	P-value
	Always		Sometimes		Never		Always		Sometimes		Never			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
1-Affects the spirit of communication, interaction, and the pattern of social relationships, turning them into marginal and superficial relationships	115	84.6	11	8.1	10	7.3	0	0.0	126	92.6	10	7.4	15.11	0.000**
2-Student is distracted by his family	109	80.1	16	11.8	11	8.1	0	0.0	122	89.7	14	10.3	20.63	0.000**
3-Family disintegration and increased distance between family members	116	85.3	9	6.6	11	8.1	3	2.2	124	91.2	9	6.6	21.01	0.000**
4-Family estrangement, poverty of feelings, and emotional exploitation	113	83.1	4	2.9	19	14.0	0	0.0	117	86.0	19	14.0	18.10	0.000**
5-Illegal dating between the sexes	30	22.1	27	19.8	79	58.1	0	0.0	19	14.0	117	86.0	17.87	0.000**
6-A means of liberation	109	80.1	14	10.3	13	9.6	0	0.0	123	90.4	13	9.6	16.11	0.000**
7-Leads to pornography by sending and receiving everything that is forbidden	36	26.5	60	44.1	40	29.4	0	0.0	8	5.9	128	94.1	18.61	0.000**

X2: Chi-Square Test. (**) highly statistically significant at p<0.001.

Table (5): Comparison between secondary school students regarding the psychological effect of the mobile phone (pre and post-implementation of intervention program). (n=136 setting = Ali Mubarak Secondary School

Statements	Pre-intervention						Post-intervention						X^2	P-value
	Always		Sometimes		Never		Always		Sometimes		Never			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
1-Feelings of tension and nervousness	111	81.6	14	10.3	11	8.1	3	2.2	122	89.7	11	8.1	**15.67**	**0.000****
2-Feeling aggressive in dealing with peers	114	83.8	12	8.8	10	7.4	3	2.2	123	90.4	10	7.4	**15.84**	**0.000****
3-Became kind of obsessive and addictive daily	108	79.4	14	10.3	14	10.3	0	0.0	122	89.7	14	10.3	**17.01**	**0.000****
4-Feeling less confident with other	113	83.1	16	11.8	7	5.1	2	1.5	126	92.6	8	5.9	**15.43**	**0.000****
5-Feeling depressed and attempting suicide	**30**	**22.1**	27	19.8	79	58.1	0	0.0	**44**	**32.3**	92	67.7	**18.15**	**0.000****
6-Feel anxious and confused	112	80.4	13	9.6	11	8.1	0	0.0	112	82.3	24	17.7	**18.55**	**0.000****
7-Feeling of isolation	104	76.5	13	9.6	19	14.0	**0**	**0.0**	104	76.5	32	23.5	**19.14**	**0.000****

$X^{2:}$ Chi-Square Test. (**) highly statistically significant at p<0.001

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Part IV: Secondary school students' reported practices toward using mobile phone.

Table (6): Comparison between total secondary school students regarding total reported practices toward using the mobile phone (pre and post-implementation of intervention program) (n=136) setting = Ali Mubarak Secondary School

Practices Subscales	Pre-intervention				Post-intervention				X^2	p-value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No.	%	No.	%	No.	%	No.	%		
1- Practices when receiving calls	19	14.0	117	**86.0**	110	**80.9**	26	19.1	**32.99**	**0.000****
2- Practices when charging a mobile phone	26	19.1	110	**80.9**	114	**83.8**	22	16.2	**34.04**	**0.000****
Total practices score	**22**	**16.2**	**114**	**83.8**	**112**	**82.4**	**24**	**17.6**	**35.11**	**0.000****
Mean ± SD	**4.43 ± 1.15**				**12.04 ± 0.98**				**t=28.15**	**0.000****

$X^{2:}$ Chi-Square Test t= Paired test. **(**)** highly Statistically significant at p <0.001.

Discussion

Mobile phones such as Blackberry and iPhone, are cellular telephones with built-in applications and Internet access so that they have become mobile computers. The use of smartphones has exploded and has become an essential part of business, commerce, and society. They make it easy to stay in touch with people, but their use has raised concerns that exposure to radiation through phones might have negative impacts on the health of students who might be more vulnerable because of their heavy use of the smartphone for study**.**

The study aimed to assess the effect of health education program for secondary students toward unhealthy use of mobile phone through, assessing secondary school student's knowledge and practice of the method of using a mobile phone, assessing secondary school student's knowledge and practice impact toward un health using of mobile phone, planning and implementing health education programs among secondary school students toward a correct method for using a mobile phone, evaluating the effect of health education program outcomes about the correct method of using mobile phone among secondary school students.

Discussion of the study is presented in the following sequences; **the first part** is concerned with socio-demographic data of the studied secondary school students **the second part** is concerned with students' knowledge and skills regards mobile phone throughout the program; **the third part** is concerned with the effect of the mobile phone on the physical and psychosocial condition throughout the program and **the fourth part** focus on Secondary school students' reported practices toward using the mobile phone.

I: Regarding socio-demographic data of the studied secondary school students

The results of the present study show that; the majority number of students were aged <16 - <18 years old, and the mean SD age was (17.32 ± 0.81). more than one-quarter of students whose fathers and mothers have a university education and most of their fathers have a job. While their mother was a housewife. Most of them say had three rooms, 2-4 family members, and had a proportionate crowding rate in the home. According to budget income, a major number of them depend on their family, and all others depend on themselves. Half of them their family's monthly income meets all the requirements and needs of daily life.

these present results are **concerning** by **(Endla et al, 2020)** who found that the majority of the student belonged to the age group of 16-18 years, majority of the student were females, this indicates that the majority of students were females, because female use mobile phones more in social interaction than male do and have enough time than male, most of the student's fathers were graduate, while their mother has received a university education, most of the students father's were government employee and the majority of student's mothers were housewife, majority of the students depend on family income.

In the same line, these results are **supported** by **(Yadav &Deol, 2021)** who found that half of them were from age between 16 and 17 years of age group. in the same line, this result is **consistent** with

(Mansour,2021) who investigated the majority of his population and sample were females, this could be due to that males spend more time on other outdoor activities like hanging out and other stuff than females in that specific age group and the Arab culture and female had much leisure time

according to place of residence the present study findings are in **accordance** with **(Yadav &Deol, 2021)** who found that Maximum of the sample were living in an urban area, and the other on rural area reason for rural people to shift to colleges in larger cities could be the availability of better educational facilities as compared to their original place of stay. regarding the father's jobs and income the present study's findings is **disagreement** with **those (Hayat & Imran, 2022)** who found that one-third of students' fathers are government employees, and one-quarter of students' fathers have another type of employment, a very limited number of student his father s are self - employed, and minor number of his student father are unemployed and are private organization employee. The mean father income of the students is sufficient per month and the mean other family members ' income is insufficient per month.

II According to the comparison between secondary school students' knowledge of mobile phones.

The findings of the present study demonstrate that; before the implementation of the program a very limited number of students had good knowledge about mobile phones and electromagnetic waves, but the majority number had fair and poor knowledge, while after the implementation of the program the major number of the sample become had good knowledge about mobile phone and electromagnetic waves. The current study showed that there was a higher statistically significant difference regarding all items of the studied sample the total knowledge regarding mobile phone in pre, post.

This finding was **supported** by **an (Ibrahiem, 2019)** study which stated that the post-program score of knowledge was higher than the pre-program knowledge score

Along the same line, the present study **agrees** with **(Ibrahiem, 2019)** who found a statistically significant improvement in students ' knowledge level about mobile phone electromagnetic fields at the immediate post-health educational program -test, then that pre-test in all knowledge items.

The results of the present study **supported** by **(Bharti. 2019)** who found that the majority of the sample had poor and fair knowledge and a very limited number of the sample had good knowledge while after the program majority of the sample had good knowledge and other had poor and faire knowledge.

Along the same line, the current study is in **agreement** with **(Endla et al, 2020)** who found that at pre-test students had poor knowledge about mobile phone and electromagnetic fields while after the program gain an improvement in knowledge scores of students who were exposed to teaching program was higher than pretest.

From the viewpoint of the investigator, this occurs due to the role of the program in increasing awareness of students about the electromagnetic field and health use of mobile phones and the role of the health education program in increasing information and knowledge about mobile phone and electromagnetic fields.

III Evaluation of the effect of the mobile phone on the physical and psychosocial condition

1-According to the comparison between secondary school students regarding the physical effect of the mobile phone

The present study shows that present a **higher statistically significant** study regarding our comparison of the effect of mobile phone on physical condition.

This result is **supported** by **(Ibrahiem, 2019)** who investigate that there are **statistically significant differences** in the effect of mobile phone on the physical condition of the study program pre, post.

The current study were **dis supported** by **(Mesbah & Sayed. 2020)** who found that there were **statistically not significant differences** between the effect of cell phone on physical condition according to all items throughout the program.

From the viewpoint of the investigator, this difference indicates the success of the educational program in the improvement of students ' healthy use of mobile phone and identifying the physical effect and hazards of mobile phone.

2-According to the comparison between secondary school students regarding the social effect of the mobile phone.

Our study found a higher statistically significant study of the social effect of mobile phone between pre, post implementation of the program

Along the same line, the current study is **consistent** with **(Ashiq & Mahmood& Siraj. 2020)** who investigate that there is a statistically significant difference between the effect of cell phones on the social condition of the study program pre, post. While the present our study are **dis agreement** with **(Mesbah & Sayed.2020)** who found that there were **statistically no significant** differences between the

effect of cell phones on social conditions throughout the program.

From the viewpoint of the investigator, this difference indicates the success of the educational program in the improvement of students ' healthy use of mobile phone and identifying the effect and hazards of mobile phone.

3-According to the comparison between secondary school students regarding the psychological effect of the mobile phone

The current study found a higher statistically significant study between the psychological effect of mobile phone between pre, post implementation of the program.

This result is **consistent** with **those (Ashiq & Mahmood& Siraj. 2020)** who investigate that there is **a statistical**ly **significant** difference between the effect of cell phone on the psychological condition of the study program pre, and post.

From the viewpoint of the investigator, there were differences in the effect of mobile phones on psychological condition according to all items at pre-program than post program pre-test effect of mobile phones on the psychological condition was high than post because at pre-test students unaware and don't know about hazards and negative effect of mobile phone while after program student become aware of the effect of mobile phone and effect become and low and no effect.

In the same line, the present study is **disagreement** with **(Wilkinson et al, 2020)** who show that there were **statistically no significant** differences between the effect of cell phone on psychological conditions throughout the program.

IV According to a Comparison between total practice when receiving calls and when charging a mobile phone pre, post implementation of the program.

The current study shows that presents the higher statistical significance of the study throughout the program.

This result is in **agreement** with **(Al-Shafi. 2020)** who illustrates that there are **statistically significant** differences between the studied subjects' reported practices pre/post program as stated by them regarding receiving calls, communicating, carrying a cell phone, and when charging a mobile phone throughout the program.

From the viewpoint of the investigator, pre-program students had lack of knowledge and information about the healthy use of mobile and risky behavior practices but after the program student identify precautions and healthy use of mobile phone when receiving calls and charging their mobile phone and practiced become satisfactory indicate to effective of education program.

Conclusion

Based on the findings of the current study, it can be concluded Before the implementation of the program; present poor and faire of our student's knowledge, and practice about mobile phone and electromagnetic waves, present high and moderate bad effects of mobile phone on our students' health condition (physical and psychosocial health condition), our student reported that present unsatisfactory from themselves because the unhealthy method used concerning when used the mobile phone.

After implementation of the program: the investigator achieve that there was a high statistical difference in the improvement of our student's knowledge, skills, and practice toward applying the healthy method when using the mobile phone and low /decrease some negative side effects for our students' healthy condition.

Recommendations

Based on the previous finding of the present study and conclusion, the following recommendations are suggested as the following;

For further researches

1- More studies in this field are urgently needed with a large probability sample from different geographical areas to allow greater representation and generalization of the results, to develop health education programs for students about the effects of mobile phone.

2- Reapplication of the study on another target group as a nursing student

3- There are more studies and more information is needed about the knowledge and attitude of students towards smartphones. This is an important health issue, as it affects future students. to provide strong evidence of the physical hazards of using smartphones.

4- Include participants over the age of 18 as it has been reported that at least 80% of undergraduates also use cellular devices

5- Increase and diversify the geographic location of participants to include the entire US.

For students

1- Create and generalization continuous training programs among school students to educate them in the different stages of education about

a) How to apply and practice the healthy use of the mobile phone

b) Clarify the harmful effects of misuse of mobile phones on the health of the individual, the family, and society

c) Circulating and distributing booklets and various means of health education for school students in the different stages of education for the content of the training program

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