Effect of Digital Drugs Educational Program on Nursing Students' Knowledge and Attitudes at Benha University

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Abstract: Background: Digital drug abuse has recently been approached as an urging topic endangering Middle Eastern teenager through different media channels. This approach raised a lot of discussion and speculations among health practitioners, especially toxicologists, psychiatrists and community health practitioners. *This study aimed to* evaluate the effect of digital drugs educational program on nursing students' knowledge and attitude at Benha University. *A Quasi-experimental design* was used to conduct this study, at Faculty of Nursing Benha University during the period from October 2017 to December 2017 then from March 2018 to May 2018. *Subjects:* A purposive sample of 313 students selected according to study formula based on the total number of students during the academic year 2017-2018. *Tools:* Two tools were utilized for data collection. The Tool I- A Self-administrated Questionnaire was developed. Tool II- A Likert scale to assess nursing student's attitude regarding digital drugs. *Results:* There were statistically significant differences between the mean students' knowledge scores and attitude of pre-program and post-program(P<0.001). Also, a highly statistically significant positive association was found among the studied students' knowledge and attitude pre and post-program. *Conclusion:* The result showed the effectiveness of an educational program on improving students' knowledge and attitude regarding the digital drug. *Recommendation:* There was an urgent need for educational programs for all nursing undergraduate as well as teenagers to prepare them to oversee their awareness around the digital drug.

Keywords: Digital Drug, Healthcare Practitioners, Prevention, Teenage.

INTRODUCTION

A scientist in the United Arab Emirates started making noiseabout banning something called "binaural beats," which referred to as "digital drugs." These are audio tracks calling them "music" would be a bit of a stretch that a person can buy online. Banning tones that purport to alter person state of mind sounded like an over-the-top, reactionary response to something that probably didn't even work (**Asad, 2012**).

Digital drugs, more accurately called binaural beats or I-dosing, are sounds that are thought to be capable of changing brain wave patterns and inducing an altered state of consciousness like that effected by taking drugs or achieving a deep state of meditation (**McConnell, et al., 2014**).

"'Binaural beats', apparently used "as a way of achieving a simulated mood or experience", are the subject of legal measures in each country". The effect of binaural beats was first discovered in 1839 by Prussian scientist Heinrich Wilhelm Dove and subsequently gained public attention on claims that the effect could be used for medicinal purposes, including relaxation, meditation and other mental states. Claims that the beats can produce a narcotic-like effect are disputed (**Sandorutca, 2016**).

Binaural beats occur when two different pure-tone sine waves with frequencies less than 1500 Hz with an inter-wave difference less than a 40 Hz are presented to a listener dichotically through each ear (**Wikipedia, 2018; Dove,**

2014).When the listener uses a headphone, he can notice the minimal difference in frequencies of perceived tone and subsequently tones the brain waves to this frequency producing the desired effect. Without the use of headphones, a person will pick up both tones, but the slight difference in frequency is perceived as a single sound overall; however, when binaural beats are heard through headphones, an individual can clearly hear the difference and the brain processes the sounds as two separate beats. The brain naturally processes rhythmic sounds as electrical impulses or brain waves and the idea behind digital drugs is to control these brain waves by synchronizing them with designated binaural beats (**Jirakittayakorn & Wongsawat, 2015; Gao, et al., 2014**).

An ancient the most common reasons for choosing to use of digital drugs. Where some people consider digital drugs to be beneficial as they can help individuals with sleep difficulties, ADHD, anxiety, depression, relaxation, relieve stress, enhance sexual performance, feel confident, improve mood, acquire extra sensory powers, and simulate the effects of ecstasy, or cocaine. However, digital drugs can also mimic the effects of more powerful, dangerous drugs such as cocaine, peyote, heroin, opium, ecstasy, and more. The side effects of these illicit, recreational drugs are harmful no matter how they are achieved, in substance or in sound (**Rachael, 2016;The River Source, 2013**).

Some individuals report negative side effects after using these binaural beats for an extended period. It appears that the mind will adjust after overuse of the audio files, as with substances of abuse, and can lead to frequent headaches,

nightmares, and restlessness. Seizures are the most dangerous health risk **(The Treatment Specialist, 2018).**

Digital drugs aren't addictive, but some people can become dependent on them. If a person prioritizes sounds above everyday needs and responsibilities, a persons' behavior pattern is problematic, and it's wise to consider other options. Whether its digital drugs becoming dependent on any substance limits persons' options and can have consequences **(The Freedom Model Retreats, 2018).**

But from a psychological sense, digital drugs may be addictive due to their mood-altering properties. Many consider such dependency to be more difficult to break than a physical addiction. Many experts argue that even though there isn't much evidence to support the addiction claims, the bigger concern remains that if a teen is interested in exploring this, they may be looking for bigger things or harder drugs **(Ahmed, 2017).**

If a person struggles with digital drug addiction, it is essential to examine why person has come to depend on these drugs. Maybe suffering from depression or anxiety or trying to work as a way within a traumatic experience, so he abuses these drugs to self-medicate the distressing symptoms. But in the safe environment of a rehabilitation center, the person can work through all the mental health concerns and learn healthier coping methods that exclude relying on sonic drugs for a mind-altering experience **(Addiction Help Center, 2017).**

There is an increasing awareness of the need for prevention of digital drugs related problems. The nurse is especially equipped to strengthen the bonds among citizens and parents, health agencies and schools, law enforcement and hospitals to assist the community in the design and implementation of its own prevention program. The nurse can facilitate the own vested interests of the community in a way that is consistent with people needs. Traditionally, the nature and scope of nursing practice has included responses to behavior that lead to health. The nurse emphasizes health issues of self-determination and choice; therefore, such these drugs prevention efforts are likely to be incorporated by the community. The nurse provides the knowledge and helps the community improve its health using nursing theory, interpersonal process, research skills and teaching skills **(Fawzi & Mansouri, 2017).**Also, treating addictive behavior by cognitive behavioral therapy. It is effective because the therapist will guide the patient toward recognizing the distorted thoughts that may lead them to believe they must use these digital drugs in the first place. The therapist will help them modify their dysfunctional thoughts and behaviors so they can overcome the need to use these digital drugs **(The Treatment Specialist, 2018).**

Significance of study:
In light of the rapid development in the world of the Internet and the technology of communication, information, electronic applications and the appeal of various categories to use, and as a serious phenomenon that threatens the lives of those who use certain sites on the Internet, especially young people, as it adversely affects the mental health, physical and nervous user, The varying intensity is specifically designed to move her listener into a state of neurotic euphoria and imaginary neurotic relaxation, through its effect on the natural brain vibrations. Considering the emergence of this phenomenon and the frequent talk about it recently came. There is an increasing need to explore knowledge regarding sources, exposure, diagnosis, treatment and prevention of digital drug abuse in our society, in general and particularly among medical and nursing practitioners, to control it effectively. So, the present study intended to evaluate the effect of digital drugs educational program on nursing students' knowledge and attitude at Benha University.

Aim of the study:
This study intended to evaluate the effect of digital drugs educational program on nursing students' knowledge and attitude at Benha University.

Research hypothesis:
To fulfill the aim of this study the following research hypothesis were formulate:
H1: Mean score of nursing students' knowledge post educational program will be significantly higher than before program
H2: Mean score of nursing students' attitude post educational program will be significantly higher than before program
H3: There will be a significant association between knowledge and attitude among nursing students

SUBJECT AND METHODS

Research design: Quasi experimental design was used

Research setting: The study was carried out at Faculty of Nursing Benha University.
Subject:
A. Type: A purposive sample
B. Size: The sample size was calculated based on the previous academic year results of nursing students. A total number of subjects was 313 nursing students at different academic years utilizing the following equation**(Yamane, 1967)**

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

Where:
n= sample size
N= total population (1437)
e= margin error (0.05)

Tools of the study: Two tools were used for data collection

Tool I: Self-administrated Questionnaire: It consisted of two parts.

Part one: Personal characteristics of studied sample as age, gender, marital status, academic year, using internet technologies, and Average times of daily hours spent using technology, and the setting for practice internet technology.

Part two: Adapted Electronic Arabic Questionnaire was developed by **Altaraky (2010)** and **Ali (2010)** to assess nursing student's knowledge regarding digital drugs**.** It consists of 12 items namely: definition, sources, causes of

digital drugs, effect of digital drugs on personal physically and psychologically health, preventive measures of digital drug, community and family role in prevention of digital drug.

Scoring system: each question had a different number of a correct answer and nursing students were asked to choose all the correct answer. The total score was categorized as follows: unsatisfactory knowledge< 60% of total knowledge score and satisfactory knowledge ≥60% of total knowledge score.

Tool II: Digital Drugs Attitude Sheet: A Likert scale sheet to assess nursing student's attitude regarding digital drugs developed by **Samhan, (2010); Soliman (2008):** It used to measure attitude of nursing student toward digital drug and its effect. It consists of negative 10 items divided into: personal aspect (Q1,4,5,8& 9), social aspect (Q3,6, 10), religious aspect (Q2), and economic aspect (Q7).

Scoring system: The questionnaire consisted of five point Likert scale, strongly disagree, disagree, neutral, agree, and strongly agree. The scoring system for the answer was "1" strongly disagree, "2" disagree, "3" neutral, "4" agree, and "5" strongly agree. The total score was categorized as follows: negative attitude: < 60% of total attitude score, positive attitude: 60-75%of total attitude score and highly Positive attitude: >75%of total attitude score.

*Validity: The tools were originated Arabic language and reviewed to ascertain their content validity by five experts in nursing and medicine. The validity of knowledge and attitude tools was97%, and 98% respectively.

*Reliability of tools: Knowledge and attitude tools Cronbach's alpha coefficient were calculated and were 0.86, 0.92 respectively.

Methods of data collection:

Pilot study:

It was carried out before starting data collection. It consisted of 10% of the study sample selected randomly their number was (31) to test the applicability and clarity of the tools. Also, it helped to determine time needed for filling up the questionnaire, the time needed to fill out the sheet was 10-15 minutes. The pilot subjects were not included in the main study sample.

Ethical considerations:

The researchers explained the aim of the study to each nurse student and informed about the confidentiality of obtained data and only used for the purpose of the research. Nursing students have ethical rights to participate or withdrawal from the research at any time. Oral consent to participate in the study was taken from them.

The field work: data were collected in the following sequence:
- An official permission to carry out the study was obtained from Dean of Faculty of Nursing Benha University after explanation of its purpose. Then, structured interview was conducted for nursing students eligible for the study (fulfilled the inclusion and exclusion criteria) in order to explain the purpose of the study, assure confidentiality and to obtain informed oral consent.
- Data collection extended over a period of six months from October 2017 to December 2017 then from March 2018 to May 2018.Because the participant taken from different academic levels.

Procedures:

The digital drug training program comprised the following phases:

A- Assessment Phase:

Each nursing student was interviewed in a group before applying the planned program to collect the baseline student's data using all study tools. This interview took about 10 to 20 minutes.

B- Implementation Phase:

The program was implemented in Faculty of Nursing Benha University. The field work included nursing students from each academic year. First, the researcher collected available nursing students from the first and second year for one month (October2017) to be acquainted with them, explained to them the objectives of the research and its expected outcomes. They took about 10-20 minutes to fill in the questionnaires (pre-test) in the class and the researcher took about 10 minutes to explain any vigorous items. This process took two month (from November to December 2017), divided them into 8 groups (21 students) for giving lecture and made post -test. Every group was taken two sessions for 30 minutes.

According to third and fourth year were the same as first and second year. Pre- test for them made during (March 2018). This process took two months (from April to May 2018), divided them into 10 groups (14& 15 students) respectively for giving lecture and made post–test. Each group attended the sessions and filled the post-test questionnaire immediately after.

The program was developed by the researcher based on review of current literature. A booklet containing the content of the program, it was written in a simple Arabic language and supplemented by photos and illustrations to help the students understanding of the content involved: definition of digital drug, causes, effect of digital drug on physical, psychological health and attitude effect. Suitable teaching aids prepared specially for the program were: booklet, flipchart, interactive lecture, Discussion and questions video and real situations. At the end of every session, nurse students' questions were discussed to correct any misunderstanding, which has been happened.

To ensure that the students understand the program content, each session was ended by a summary about what was given from the session started and used simple language to suit all students. To ensure exposure of all subjects to the same learning experience all students received the same protocol content using the same teaching methods.

C- Evaluation Phase:

Immediately after implementation of the program, each student in the study was asked to evaluate

knowledge and attitude using tool I part two and tool II (post-test).The results were compared to the pre-test results.

Statistical Design:

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation and, Paired t-test, was used to compare mean between groups pre and post program. Independent t-test was used to compare mean between two different groups and ANOVA was used to compare mean between more than two groups. A Linear Correlation Coefficient [r].

RESULTS

Table (1): Distribution of the studied students according to their personnel characteristics (n=313).

Variable	Frequency	%
Gender		
Male	111	35.5
Female	202	64.5
Marital status		
Married	42	13.4
Single	271	86.6
Academic level		
First	84	26.7
Second	84	26.7
Third	70	22.7
Fourth	75	23.9
Age in Years		
18-	118	37.7
20-	131	41.9
≥22	64	20.4
Mean ±SD	23.56±4.73	

Table 1 presents distribution of studied students according to their personal characteristic; it was found that (41.4%) of them are from 20 to 22 years old and (64.5%) of them are female with mean age (23.56±4.73). regarding their academic equal percent of them in first and second year (26.7%).

Table (2): Distribution of internet using history among the studied students (n=313).

Variable	Frequency	%
Using internet technology		
No	15	4.8
Yes	253	80.8
Shared between several persons	45	14.4
Methods of utilized internet technology		
No	15	4.8
Mobile	202	64.5
IPAD	28	8.9
lap top or computer	68	21.7
Frequency of using internet technology		
No	15	4.8
less than 5 hours	194	62.0
5>10 hours	56	17.8
10>15 hours	24	7.7
More than 15 hours	24	7.7
Setting for practice internet technology		
No	15	4.8
Home only	113	36.1
Home& university	21	6.7
Everywhere	164	52.4

Table 2indicates that distribution of internet using history among the studied students, it showed that (80.8%) of studied students used internet technology. (64.5%) of studied students used mobile method for less than 5 hours in everywhere (62%, 52.4%) respectively.
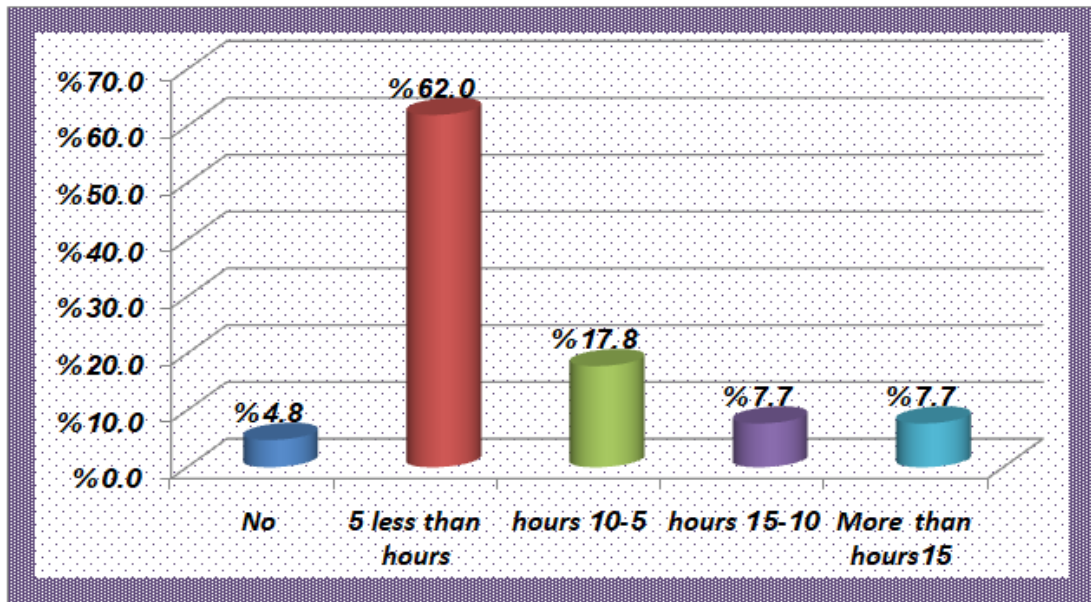
Figure (1): Distribution of the studied students according to frequency of using internet technology per day (n=313).

Distribution of the studied students according to frequency of using internet technology per day. figure 1, It is obvious that, (62%) of studied students used the internet less than 5 hours.

Table (3): Mean knowledge scores of digital drugs pre and post program among the studied students (n=313).

Variables	Digital drugs Knowledge		Paired t test	P value
	Pre-program Mean ±SD	Post program Mean ±SD		
Definition of digital drugs	1.4249±.49512	1.7796±.41521	-9.733	<0.001**
Causes of using digital drugs	2.4665±.77604	5.3866±1.00356	-42.501	<0.001**
Effect of digital drugs on physical health	3.2556±.43689	6.2460±.76388	-60.964	<0.001**
Effect of digital drugs on psychological health	1.7700±.67329	5.6294±.62278	-76.614	<0.001**
Preventive measures of digital drugs	2.9329±1.25012	7.7732±.41946	-64.147	<0.001**
Community role on prevention of digital drugs	3.1757±.77488	5.7955±.40396	-51.804	<0.001**
Family role on prevention of digital drugs	3.4313±.61700	5.6390±.48107	-49.854	<0.001**
Total knowledge	18.4569±2.66005	38.2492±1.91030	-107.030	<0.001**

<0.001** highly significant

Mean score of the studied students' knowledge regarding digital drugs was represents in table 3. There were statistically significant differences between the mean students' knowledge scores of pre-program and post-program (P<0.001)
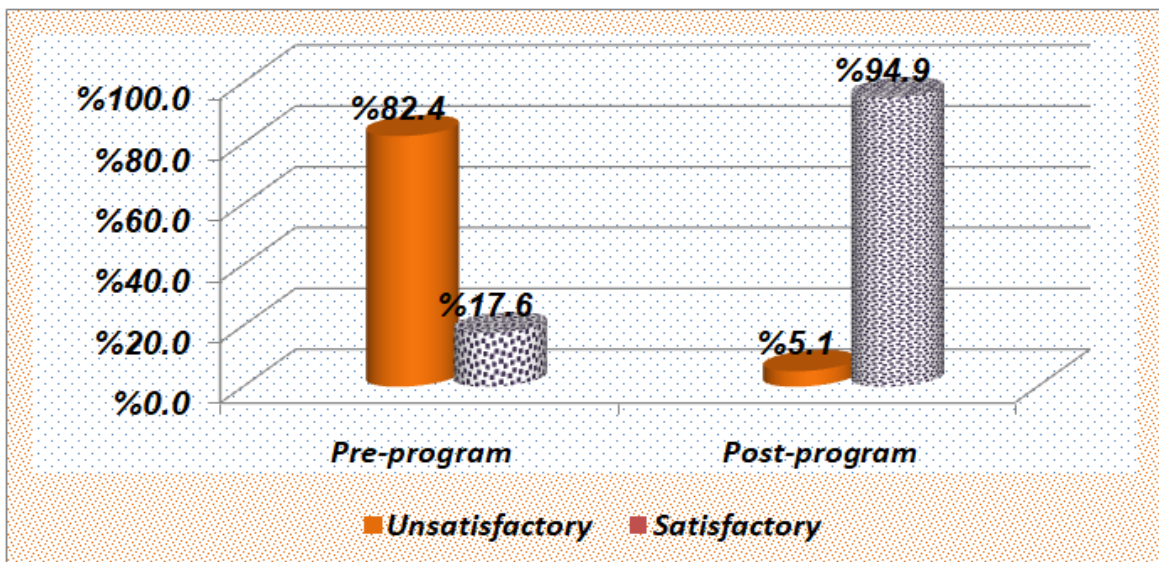

Figure (2): Distribution of studied students regarding to their total knowledge score about digital drugs pre and post program(n=313).

Figure 2 shows the distribution of studied students regarding to their total knowledge score about digital drugs, it displayed that before program (82.4%) of them unsatisfactory regarding total knowledge about digital drug, while after program most of them(94.9%) satisfactory regarding total knowledge about digital drug.

Table (4): The relation between the studied students' total digital drugs knowledge mean score and their personnel characteristics pre and post program (n=313).

Variable	Pre-program knowledge score			Post-program knowledge score		
	Mean ±SD	Statistical tests	P value	Mean ±SD	Statistical tests	P value
Age In years						
18-	16.7542±.98655	266.57 (F test)	<0.001**	37.4237±1.70673	106.789 (F test)	<0.001**
20-	18.0305±2.17658			37.8321±1.56477		
≥22	22.4688±1.14044			40.6250±.48795		
Gender		9.48 (Independent t test)	<0.001**		3.07 (Independent t test)	<0.001**
Male	16.9897±.82279			37.8247±1.39948		
Female	19.1157±2.92551			38.4398±2.07445		
Marital status		6.90 (Independent t test)	<0.001**		4.69 (Independent t test)	<0.001**
Yes	16.7381±1.53113			36.9524±1.93747		
No	18.7232±2.69996			38.4502±1.82886		
Academic level						
First	16.7188±1.07315	49.69 (F test)	<0.001**	37.3333±1.83915	31.82 (F test)	<0.001**
Second	16.9211±.81809			37.4474±1.05772		
Third	18.9688±3.13692			37.9844±2.28516		
Fourth	20.1304±2.53924			39.4261±1.24999		

<0.001** highly significant

Table4 indicates a highly statistically significant relation between total digital drugs knowledge and personnel characteristics of the studied students regarding all items both pre and post program.

Table (5): Comparison of studied students' attitude about digital drugs between pre and post program (n=313).

Attitude	Pre-program						Post-program						Chi square test	P value
	Disagree		Uncertain		Agree		Disagree		Uncertain		Agree			
	No	%	No	%	No	%	No	%	No	%	No	%		
Wasting time	125	79.1	118	49.8	70	30.3	33	20.9	161	69.7	119	50.2	89.42	<0.001**
Neglect of religious duties	189	95.5	65	72.2	59	17.5	9	4.5	279	82.5	25	27.8	324.60	<0.001**
Accompanying bad friends	185	87.3	73	54.9	55	19.6	27	12.7	226	80.4	60	45.1	223.08	<0.001**
Lack of mastery of work	148	81.8	104	68.4	61	20.8	33	18.2	232	79.2	48	31.6	193.94	<0.001**
Drug addiction	171	88.6	84	67.7	58	18.8	22	11.4	251	81.2	40	32.3	251.19	<0.001**
Disturbance for parent's relation	200	84.7	54	69.2	59	18.9	36	15.3	253	81.1	24	30.8	246.13	<0.001**
Extravagance and waste	152	84.0	89	65.0	72	23.4	29	16.0	236	76.6	48	35.0	183.18	<0.001**
Poor school achievement	127	99.2	111	32.6	75	47.8	1	0.8	82	52.2	230	67.4	165.87	<0.001**
stress and anxiety	142	77.2	96	86.5	75	22.7	42	22.8	256	77.3	15	13.5	212.43	<0.001**
Isolation from society and family	155	89.6	82	78.8	76	21.8	18	10.4	273	78.2	22	21.2	254.30	<0.001**

<0.001** highly significant

Distribution of studied students regarding to their attitude about digital drugs pre and post program (n=313) presents in table 5. There were highly statistically significant differences. Before program the majority of students disagree regarding all items, while after program half of them (50.2%) agree about the digital drug waste time and majority of them (67.4%) agree regarding poor school achievement.
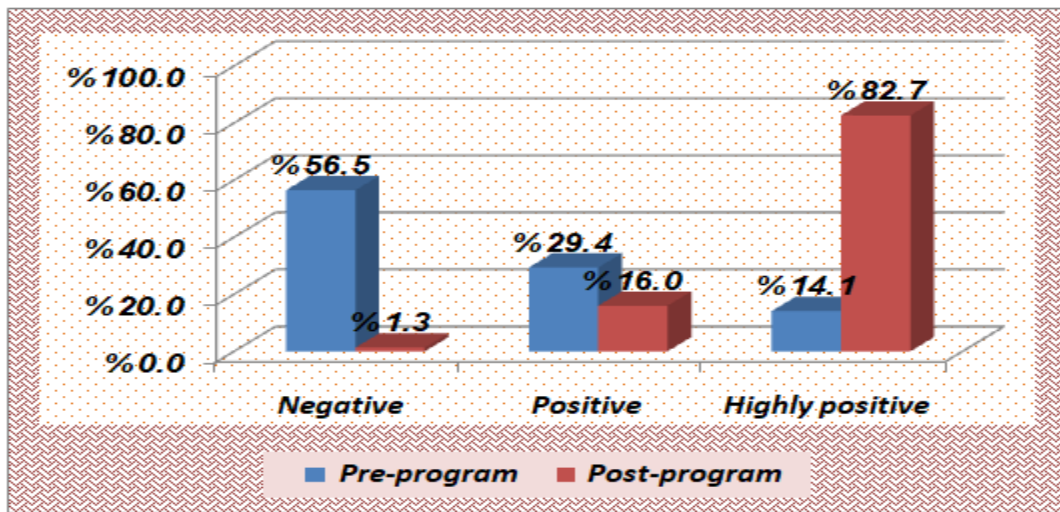
Figure (3): Distribution of studied students regarding to their total attitude about digital drugs pre and post program (n=313).

Figure 3 displays that before program; 56.5% of the studied participants had negative total attitude, 29.4% of studied students had positive total attitude and 14.1% had highly positive scores regarding digital drug, while after program; highly positive total attitude scores increased to 82.7% and negative total attitude decreased to 1.3%.

Table (6): The relation between total digital drugs attitude mean score and personnel characteristics of the studied students pre and post program (n=313).

Variable	Pre- program attitude			Post- program attitude		
	Mean ±SD	Statistical tests	P value	Mean ±SD	Statistical tests	P value
Age In years						
18-	14.3051±3.067	214.87 (F test)	<0.001**	25.3220±3.6394	42.55 (F test)	<0.001**
20-	14.9389±4.667			26.0458±2.1904		
≥22	26.2656±4.083			29.0469±.54713		
Gender		5.33 (Independent t test)	<0.001**		13.24	<0.001**
Male	14.9588±2.882			23.6907±2.4339		
Female	17.9398±6.987			27.5972±2.3663		
Marital status		6.53 (Independent t test)	<0.001**		4.27 (Independent t test)	<0.001**
Yes	13.2381±3.54			24.0952±3.8749		
No	17.6015±6.29			26.7417±2.6693		
Academic level		29.82 (F test)	<0.001**		192.70 (F test)	<0.001**
First	12.8421±3.76			27.7105±1.7844		
Second	14.6146±3.29			22.7708±2.6337		
Third	16.7188±7.116			27.8957±1.1874		
Fourth	20.5652±6.26			28.3125±.75330		

<0.001** highly significant

Table 6 reveals that the relation between total digital drugs attitude mean score and personnel characteristics of the studied students pre and post program, there were highly statistically significant differences both pre and post program of studied students in relation to all items.

Table (7): Correlation between total digital drugs knowledge and attitude scores of the studied students pre and post program(n=313).

Variables	Knowledge pre-program		Knowledge post-program	
	r	P value	r	P value
Attitude pre- program	0.413**	<0.001**	-	-
Attitude post program	-	-	0.636**	<0.001**

Table 7 shows the correlation between total digital drugs knowledge and attitude scores of the studied students' pre and post program. Highly statistically significant positive association was found among the studied students' knowledge and attitude pre and post program.

DISCUSSION

The study aimed to evaluate the effect of digital drugs educational program on nursing students' knowledge and attitude at Benha University. According to personal characteristic of the studied subject, the present study results showed that, the mean age of studied sample was 23.56±4.73,more than one quadrant of them were in first and second year (26.7%).These findings were in accordance with **Waithaka (2013),** who stated in their study that, the majority of the respondents (75.7%) were in the age group 16 to 25 years and in the undergraduate category, 28.6% was in their second year of study. As well, the present study revealed that less than two thirds were female. These

findings were in the same line with **Davinson and Sillence (2010)** who found that majority of studied subject were female.

Regarding, Frequency of using internet technology among the studied students. The current study revealed that majority of them use internet technology and more than two thirds used mobile as a method of using internet technology. These finding are consistent with **Hossain and Rahman (2017)** who stated that the percentage of internet usage among the students coming from background of Science and Arts is 92% (46) at Dhaka University and majority 27(54%) of the respondents coming from Science background use both PC & Smartphone to connect to the internet. Also, less than two thirds of the study subject use internet for less than 5 hours. These findings were congruent with **Ngoumandjoka (2012),** who said that almost 38% of our sample population use the Internet daily for more than 2.45 hours compared to about 62% of the total sample, therefore 38% of them were classified as 'heavy' Internet users and the remaining 62% as 'light' Internet users.

Concerning, students' knowledge regarding digital drugs, this study revealed that there were statistically significant differences between the mean students' knowledge scores of pre-program and post-program (P<0.001). This indicated that lack of pre-program knowledge can be attributed to the unavailability of information about digital drugs. This finding was in the same line with **Fawzi & Mansouri (2017),** in their study of awareness and prevention of digital drug abuse among healthcare practitioners in KSA; found that70% of them were unaware of the terms, "digital drug abuse" or "I-dosing". Only 14.7% were known about the mechanism of action of digital drugs or "auditory driving" while 85.3% were unaware of the mode of action of these drugs. Also, **Hifri, (2017),** stated that forty percent of the respondents said the topic of digital drugs should not be discussed. **El Money, (2012)** found in his Arabic study about Digital drugs and their effects (Exploratory study on school and university students) that 65% of the sample was in terms of their knowledge of digital drugs do not know this kind of drugs.

The relation between total digital drugs knowledge mean score and personnel characteristics of the studied students. The results of the present study indicated a highly statistically significant relation between total digital drugs knowledge and personnel characteristics of the studied students regarding all items both pre and post program. This asserts that lack the program helped the students improve their knowledge.

Regarding digital drugs effect on attitude of the studied students pre and post program, before program the majority of students disagree that digital drugs waste time and lead to poor school achievement, while after program half of them agree that the digital drug waste time and more than two thirds of them (67.4%) agree regarding poor school achievement. These finding is congruent with **Alam et al., (2014)**who stated that internet abuse impact issues on young adults. In particular, the terrible impact of psychological aspects, interpersonal relationships, physical problems, and work issues such as poor performance at work. In addition,

the academic impact of abuse and addiction on the Internet of students. Also, in Arabic study about impact of internet usage on the attitudes and behavior of university students by **Soliman (2008),** found that more than two fifth (41.32 %) of them disagree that internet waste time and slightly less than half (49.48 %) disagree that internet lead to lack of interest in the study. **Wahbeh et al., (2007),** stated that there was also a significant decrease in immediate verbal memory recall (p = 0.03) in the experimental condition compared to control condition, which reflect poorer immediate recall after listening to binaural beats, larger studies are needed to confirm these findings.

The relation between total digital drugs attitude mean score and personnel characteristics of the studied students' pre and post program. These finding was inconsistent with **Soliman (2008),** stated that there was no significant relation between internet use and students' attitude. Also, **Anitei and Chraif, (2019)** stated that those who listen to I-dosing type files should be warned about the effects of such files on mental and biological health.

The correlation between total digital drugs knowledge and attitude scores of the studied students at different phases of program. There was a highly statistically significant positive association among the knowledge and attitude of the students before and after the program. This outcome could be interpreted as improving students' knowledge is positively improving students' attitude plus the program was effective in improving students' knowledge and attitude regarding digital drugs.

Limitation of the study:
There may be some possible limitations in this study
1. Lack of previous research studies on this topic
2. Prior research studies on this topic was Arabic
3. Translate some Arabic research into English in discussion

CONCLUSION

This study concluded that there was significant improvement in students' knowledge and attitude before and after the educational program, it reflects the urgent need for an awareness program directed to the students and members of the community, aiming to combat the spread of digital drug abuse properly in our society.

RECOMMENDATION

- Training programs are fundamental for all community especially adolescent to equip them by essential knowledge and to increase their awareness regarding such these digital drugs.
- Additional area for investigation is parent awareness regarding digital drugs.
- Further researches are needed in this field.
- The Media should play an effective role in providing an educational message to community member about the digital drugs and about the negative effects of technology as well as positive effects.

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