Health Belief Model Application and Internet Addiction among Menofia University Students

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Abstract: **University students are vulnerable to Internet addiction. Influences of cognitions based on the health belief model affecting students' internet addiction, which it is a psychological model that attempts to explain and predict health behaviors. This is done by focusing on the attitudes and beliefs of individuals. Aim: to determine the effect of health belief model application on internet addiction among Menofia University students. Design: Quasi experimental design with pre and post-test was utilized. Setting: This study was conducted at four faculties from both scientific and literary faculties in Menofia University. Subjects: Multistage random sample consisted of 383 students were used. Tools: The following tools were used, 1.Self-administered structured questionnaire which involved socio-demographic data and pattern of internet use. 2. Internet addiction test.3 structured questionnaire related to health belief model constructs. Results: After the intervention, the prevalence of internet addiction significantly decreased in post the intervention 44.86 ± 11.04 compared by pre intervention74.43 ± 12.71 and the mean scores of health belief model constructs significantly increased in post-test 96.86 ± 7.59 compared by pretest 62.76 ± 7.72. Conclusion: the perceptions of the students were increase about internet addiction after education based on the health belief model. Recommendation: further educational intervention program based on models dealing with behaviors change to be applied for university student about internet addiction.**

Keywords: **Internet addiction, health belief model, university students.**

1. INTRODUCTION

Internet addiction is defined as an impulse-control disorder of Internet use that has negative impacts on daily life function, family relationships, and emotional stability (Wang etal, 2016). The Health Belief Model a commonly used theory has been applied to explain various health-related behaviors and to design related interventions (Wang & et al., 2016).

Young people are the most vulnerable group for internet addiction. As they prefer to communicate with others on social networking sites rather than the actual contact in the real world. Faculty students are believed to be at a high risk with a marked increase in their internet usage worldwide. Internet addiction among those students was found to be correlated with psychological disorders as depression, anxiety, stress, low self-steam, and low psychological well-being (Desouky, etal, 2015).

The Health Belief Model (HBM) is a simultaneous process used to encourage healthy behavior among individuals who put themselves at risk of developing negative health outcomes. A person must evaluate their perceptions of susceptibility and severity of developing a disease. Then it is necessary to feel threatened by these perceptions Lastly the benefits to change must be weighed against the barriers to change behavior in order to determine that taking action will be worthwhile (Janz, Champion, Strecher, 2002).

The Health Belief Model posits that messages will achieve optimal behavior change if they successfully target perceived barriers, benefits, self-efficacy, and threat which posits that people will take action to prevent illness if they regard themselves as susceptible to a condition (perceived susceptibility), if they believe it would have potentially serious consequences (perceived severity), if they believe that a particular course of action available to them would reduce the susceptibility or severity or lead to other positive outcomes (perceived benefits), and if they perceive few negative

attributes related to the health action (perceived barriers). Additionally, HBM scholars later suggested that self-efficacy the belief that one can successfully complete the behavior of interest (Jones, Jensen, Courtney, Scherr, Natasha, Brown, Christy & Weaver, 2015).

1.1. Significance of the Study

A growing social issue, the considerable variance of the prevalence rates reported for Internet Addiction Disorder (IAD) between 0.3% and 38 % (Chakraborty, Basu and Kumar, 2010). Worldwide 3,566,321,015 World Internet Users at 2016, 15 million people in the United States used the internet every day. Every three months the rate of use was increasing by 25 % (World Internet Users Statistics, 2016).

Internet use is growing in the Middle East; there were 123,172,132 internet users for 2015. Over 40% of the population is now connected to the internet and the rate is increasing rapidly in the wealthier countries of the Arab Middle East due to infrastructure based competition from mobile network operators (Nauert, 2015).

In Egypt Lee, (2016) reported that 30,835,256 Internet Users at 2016, Egypt's population use the internet were 39%. 48% of them are men and 29% of are women use the internet. The percentage of IA from age group 15-24: was 56% which is Represent the largest proportion for the rest of the categories.

1.2. Aim of the Study

The aim of this study was to examine the effect of health belief model application on internet addiction among Menofia university students.

1.3. Hypotheses

1. The participants' score of internet addiction at post-test will be lower than their score at pre-test after application educational intervention based on health belief model.

2. The participants' score of health belief model constructs at post-test will be higher than their score at pre-test after application the educational intervention based on health belief model.

2. SUBJECTS AND METHODS

2.1. Research Design:

Quasi experimental design with pre and post-test was utilized to accomplish the aim of the study.

2.2. Research Setting

This study was conducted at four faculties in Menofia University, including three scientific faculties (Medicine, Science & Nursing) and one literary faculty (Arts).

2.3. Sample

A multistage random sample consisted of 383 university students included. It was conducted from November 2017 to the end of March 2018. The least sample size was calculated according to Idrees, (2008) using 5% confidences limits at 99% confidence level. For better accuracy and validity and to cover any losses due to incomplete questionnaires, 400 students were estimated to participate in the study. **A multistage random sampling technique was used to select sample:**

1. First stage included simple random selection of 4 faculties including three scientific and one literary faculty out of 16 faculties in Menofia University, Shibin El-Kom center.

2. Second stage included simple random selection of one department from each faculty.

3. Third stage included random selection of students from each selected department through using a simple random sample technique.

Sample Size

The number of undergraduate students was selected according to the following equation:

$$n = \frac{n\, z^2\, p(1-p)}{Ne^2 + z^2\, p(1-p)}$$

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (106-119), Month: May - August 2019, Available at: www.noveltyjournals.com

Where "n" is the sample size and "N" The size of the study population and the standard err or limits are" 1.96" When the confidence level is 95% and "p" The ratio of the number of sample samples in which the studied property is "50%" and "e" is the sample error allowed in the estimation of the percentage .05%.

2.4. Tools of the Study

2.4.1. Self-Administered Structured Questionnaire

It was developed by the researchers after reviewing the related literature and included the following:

A. Socio-demographic data: It was included student's age, gender, type of faculty, academic year, and residence.

B. pattern of internet use: it was include average hours of Internet use, minutes of Internet use in every time, the main cause of using Internet, number of friends on internet, preferred place and preferred device.

2.4.2. Internet Addiction test (IAT):

Internet Addiction Test (IAT) was developed by developed by Dr. Kimberly Young (1950), used to identify probable cases of internet addiction.it is a reliable and valid measure of addictive use of Internet .It consists of "20" items that measures mild, moderate and severe level of Internet Addiction. The test consists of 20 items on 5-point Likert scale and is scored from 1 to 5. Finally, individuals' scores are divided into two equal groups, lower than 49 and higher than 50, showing normal status and users' addiction, respectively. A summative score was formed, with higher scores indicating higher severity of IA. These questions such as: - How often do you feel that you should decrease the amount of time spent online? & - How often do you daydream about the Internet?

Scoring system: After all the questions have been answered, add the points for each response to obtain a final score, as follows: 1:" None internet addict" 0 – 30 points, 2:"Mild internet addiction" 31- 49 points, 3: "Moderate internet addiction" 50 -79 points, and 4:" Severe internet addiction "80 – 100 points.

2.5. Validity and Reliability of Tools

Validation of the assessment tool was tested for its content validity &face validity by three experts in the fields of family and community health nursing , psychology specialist, and psychiatric health nursing who reviewed this instruments and judge it to measure what intended to be measured (face validity) &judge the item for their adequacy (content validity).A reliability analysis was carried out in order to examine the internal consistency of its questions and identify the extent to which the items of tools measured the same concept and correlate with each other. The reliability was measured by Cronbach's Alpha coefficient test. The value of Cronbach's alpha was **0.944**, this indicating that the instrument was consistent and reliable in achieving the study.

2.4.3: Health Belief Model Structured questionnaire:

Health belief model questionnaire related to Internet addiction. It was developed by originally developed in the 1950s by social psychologists working at the U.S. Subsequently, it was extended by Leventhal, Rosenstock, and Becker and others to explain differing reactions to symptoms and to explain variations in adherence to treatment. It will be adopted at the current study. It includes constructed six scales for the six constructs of the HBM on issues related to Internet use and IA, (1) Perceived Susceptibility to IA. (2) Perceived Severity of IA. (3) The Perceived Benefits. (4) The Perceived Barriers. (5) The Cue to Action. (6) Lastly, the Perceived Self-efficacy (Rosenstock, Strecher and Becker, 2016). Perceptions of students about internet addiction were measured using the HBM as the literary framework. This included a number of items for each component of the HBM. Perceived susceptibility for harmful effects of internet addiction on lifestyle and health (8 items) Cronbach's alpha was(.708), perceived severity and health risk from internet addiction (6 items) Cronbach's alpha was(.676), perceived benefit of taking preventive measures (5 items) Cronbach's alpha was(. 695), perceived barriers to taking the preventive action (4 items) Cronbach's alpha was(.700), and cues to taking action (6 item) Cronbach's alpha was(.696), lastly the self-efficacy for taking healthy behavior(4) Cronbach's alpha was(.717). The researcher was asked students to provide responses on a 5-point Likert response scale (from *strongly disagree* to *strongly agree*) Higher scores of the constructed scales represented higher levels of the perception.

Scoring system: The researchers were asked students to provide responses on a five-point Likert scale ranging from 1(strongly disagree) to 5(strongly agree). Subscale mean scores were obtained by summing and averaging the items

(range 1-5). Each subscale was calculated separately, and therefore six different scores were obtained for each subject. A higher score indicated a more positive Perception & belief toward internet use.

2.5. Validity and Reliability of Tools:

Validation of the assessment tool will be tested for its content validity by three experts in the fields of family and Community Health nursing and psychologists, and epidemiologists. The reliability will be measured by test re test reliability. The summative scale was formed by summing up the score of the first item and the reversed score of the second item; Cronbach's alpha = (**0.712**).

2.6. Pilot Study

Pilot study was conducted on 10% of undergraduate students from both scientific and literary faculties. The pilot sample was not included in the total sample of the research work. The pilot study was carried out to test the applicability and clarity of the constructed questionnaire and detect any problems that might arise during the actual collection of data. According to the results of the pilot study, the necessary modifications and clarifications of some questions were done. Then the final form was developed and used in data collection.

2.7. Ethical considerations:

Researchers followed all the ethical issues in conducting the research. Verbal consent was obtained from the participants who were willing to participate in the study. The participants were informed that participation in this study is voluntary; they can withdraw at any time during the study without giving reasons. The researchers were explained the aim of the study to all university students in the study sample. They reassured that any obtained information would be strictly confidential.

2.8 .Data collection procedure:

- This study was conducted during the period starting from November 2017 to the end of March 2018.

- Necessary approval was obtained from the dean of each selected faculty after issuing letters to them from the Faculty of Nursing, Menofia University explaining the aim of the study in order to obtain permission and help. Also, meetings were done with the heads of departments' which were selected in each faculty to explain the aim of the research and method of data collection to obtain permission for conducting the study.

- After obtaining approval and informed consent to conduct the study, the researcher was introduced herself and a brief explanation about the purpose of the study was given to the students.

- Initiated data collection from university students according to their schedules time table. Duration and time of sessions were different from each other depending on participants' readiness and study conditions through using adapted internet addiction scale. The researcher was present during data collection for any clarifications to the subjects about questionnaires. Participants were asked to fill the test. Internet addiction was measured using the Arabic version of Young internet addiction test (YIAT). This session took about 15- 20 minutes

- The researcher selected the students who had scores above 40 % at internet addiction test and completed study with them.

- Self-administered questionnaire were used to collect (a) demographic characteristics: age, sex etc. (b) Pattern of internet use: time spent on-line per day, the purpose and place of internet use, etc.

- The obtained data used as the baseline assessment (pre-test). The researcher was developed instructions with visual materials aimed to improve student's perception regarding internet use.

- Teaching methods were used: - Role plays, modeling, group discussion, brain storming, also; media was picture and handout booklet and cylinder disk prepared by the researcher. To ensure that participants understands the session's content, each session will start with a summary and follow up of the new, taking into consideration using a simple language to suit personal differences.

- At first session, increasing knowledge of faculty students about internet addiction and its side effects of internet addiction, discuss the importance of internet use, list positive and negative effect of internet use, define internet addiction, and predict characteristics of internet addictive person. Identify the signs and symptoms or indicators of internet addiction. This session took about 25-30 minutes.

- The second session intervention was implemented discussion about the negative consequences of internet addiction individually in and outside the home. The researcher helped every participant to be able to: discuss the psychological, social, behavioral and economical health effects on persons, family and community resulting from internet addiction & Identify cues to action for improving their uses.

- In the last session, group discussion was about the benefits of adopting preventive behaviors of internet addiction and barriers of adopting preventive behaviors of internet addiction. Students were given a guide booklet developed by the researchers after reviewing the related literature.

- At the end of each session the researcher made conclusion and took feedback for every participant& informed about the content of the next session and its time.

- After month, post –test was performed by using the same pre-test questionnaire.

2.9. Statistical Analysis

The collected data was entered and statistical analyzed by using SPSS statistical package version 19.Graphics were done using Excel program. Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using paired t- test for comparison between two Means. Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ($\chi2$) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used(if the table was 4 cells), or Likelihood test (if the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

3. RESULTS

Figure (1): The percentage of internet addiction among total sample (383).
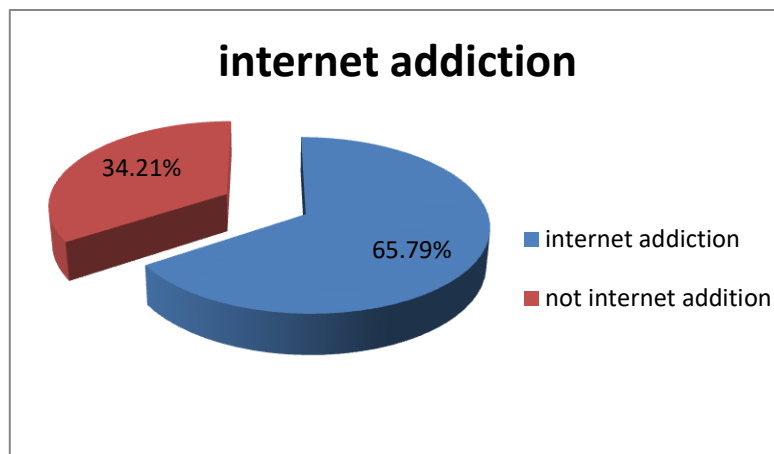
This figure 1 showed that the percentage of internet addiction was 65.79 % (252) from the total sample (383).

Table (1): Socio demographic characteristics of the total sample (n=383).

Variable	Non Addicts (n=131)		addicts (n=252)	
	No.	%	No.	%
Age				
≤19	5	40.5	133	52.8
>19	78	59.5	119	47.2
Gender				
Male	60	45.8	8	3.2

Female	71	54.2	244	96.8
Faculty type				
literary	60	45.8	132	52.4
scientific	71	54.2	120	47.6
Level of Mother education				
1- Illiterate	7	5.4	21	8.3
2- Primary education	28	21.5	37	14.7
3- Moderate education	59	45.4	132	52.4
4- High education	34	26.2	58	23.0
5- Other	2	1.5	4	1.6
Level of Father education				
1- Illiterate	5	3.8	11	4.4
2- Primary education	25	19.2	56	22.2
3- Moderate education	62	47.7	120	47.6
4- High education	38	29.2	65	25.8

Table 1 showed that 52.8% were addict and 40.5% were not addict from teenage or adolescent but 47.2% were addict and 59.5% not addict from young adult with significant difference (p=0.022), 96.8% from female gender were addict and 54.2% not addict but 3.2% only from male were addict and 45.8% were not addict, and the addict subjects were more than half of sample 52.4% from the literary faculty and 47.6% from scientific faculties, 47.6% of the sample have moderate educated father and 52.4% have moderate educated mother

Table (2): Mean and standard deviation of internet addiction related to types of faculties of studied group based on the scale of internet addiction test before intervention (n=252)

Variable	literary faculties (n=132) Mean ± SD	scientific faculty (n=120) Mean ± SD	T-test	P value
Total score of internet addiction scale test	69.1 ± 11.53	62.8 ± 12.59	5.34	<0.001 **

** = highly significant   P < 0.001

Table 2 this table showed the comparison of the prevalence of internet addiction before intervention according to internet addiction scale test among studied groups based on the types of their faculties which reveals that (62.8 ± 12.59) were addict from scientific faculties and (69.1 ± 11.53) were addict from literacy faculties with (p<0.001)**.**
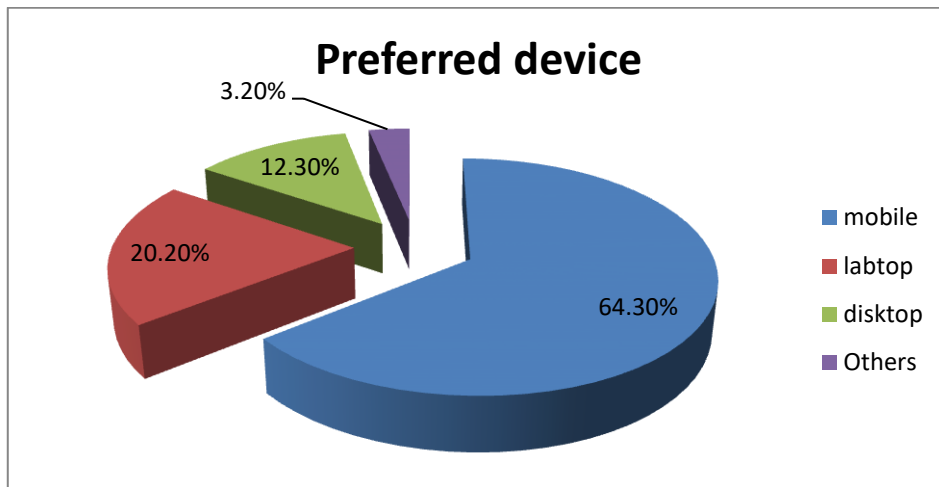
Figure (2): Reported purpose of internet use among studied group (n=252).
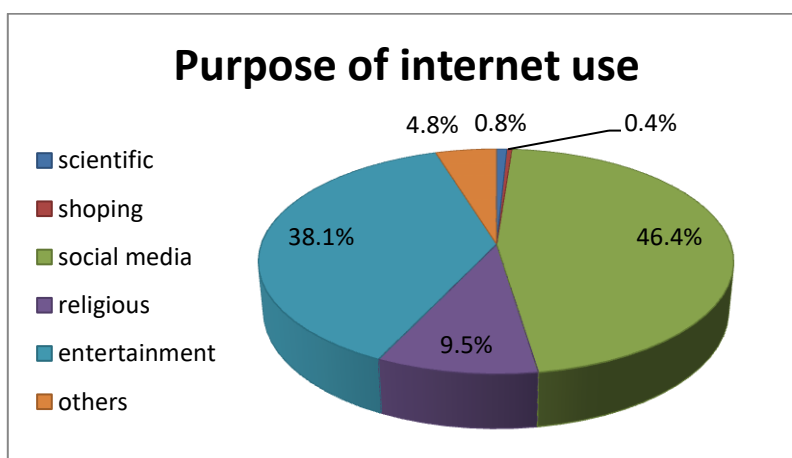
This figure revealed that: Social media sites were the most current purpose among addict subjects (46.4 %) followed by entertainment 38.1%, religious 9.5%, others (4.8%), scientific (0.8%) & shopping (0.4%) respectively.
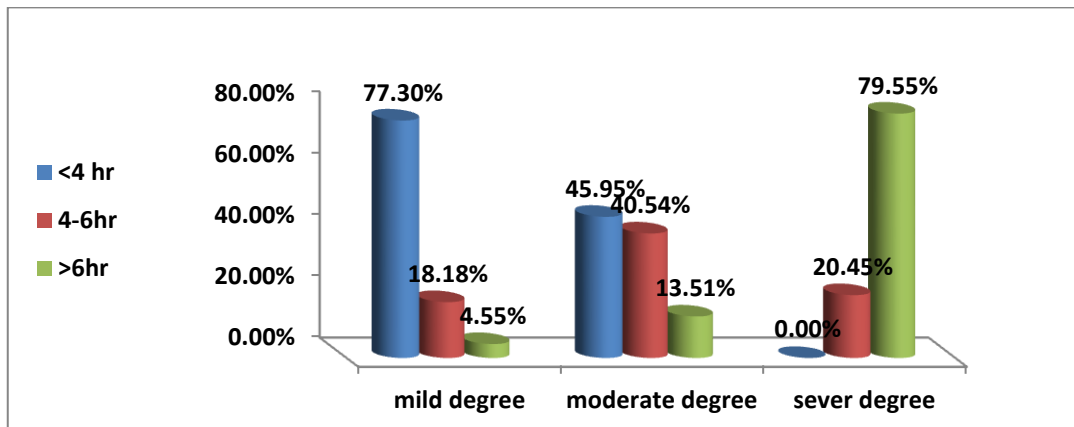
Figure (3): Reported preferred device for internet use among studied group (n=252).

This figure illustrated that: The most preferred device was mobile (64.3%) followed laptop was (20.2%), desktop was (12.3%) and others were (3.2%) respectively.
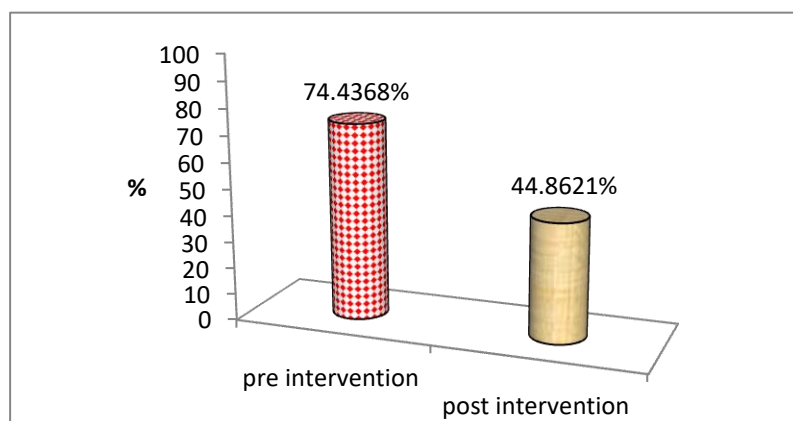
Figure (3): The degrees of internet addiction with the number of screening hours per day pre intervention


(Mean± SD) 4.69 ± 2.63

This figure revealed that79.5% of those spends more than 6 hours per day were had sever degree of internet addiction. Also 77.30 % of those who spend less than 4 hours per day had mild degree of internet addiction, and the mean± SD of hours spends on net daily was 4.69 ± 2.63.

**Figure (4)**: The percentage of internet addiction before and after intervention based on HBM **(n=252).**

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (106-119), Month: May - August 2019, Available at: **www.noveltyjournals.com**

This figure summarized that, there was a statistical improvement in mean ±SD of internet addiction test score in post intervention 44.8621±11.04276 compared by pre intervention 74.4368±12.716 after intervention based on health belief model (p=. 000).

Figure (5): The percentage of total score for Perceived susceptibility pre and post intervention **(n= 252)**.
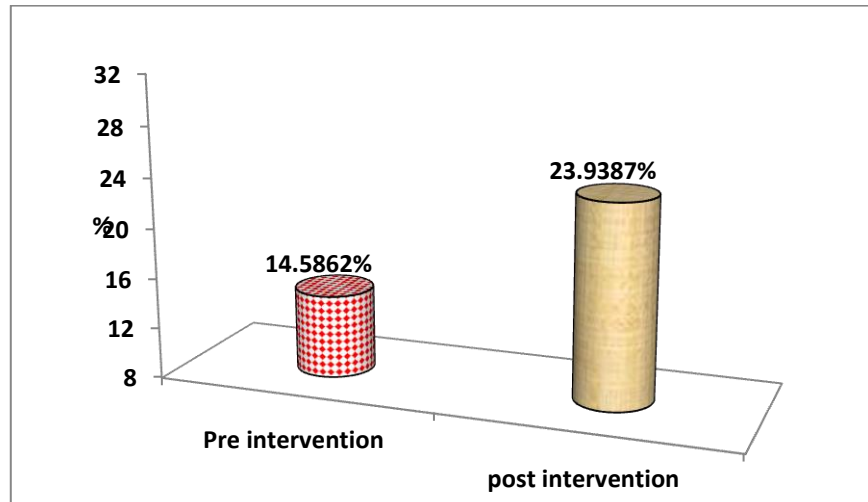
This figure clarified that, the percentage of perception for susceptibility aspect after intervention was higher in post-test 23.93% compared by pre-test 14.58% after intervention based on health belief model.
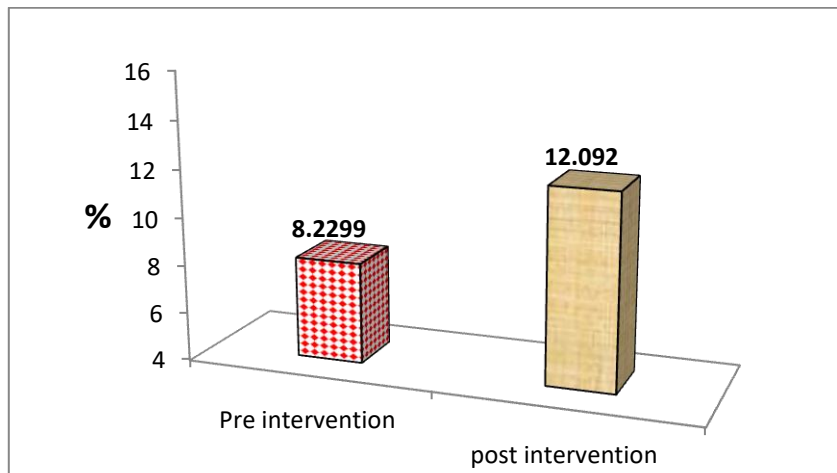
Figure (6): The percentage of total score for perceived severity before and after intervention **(n= 252).**
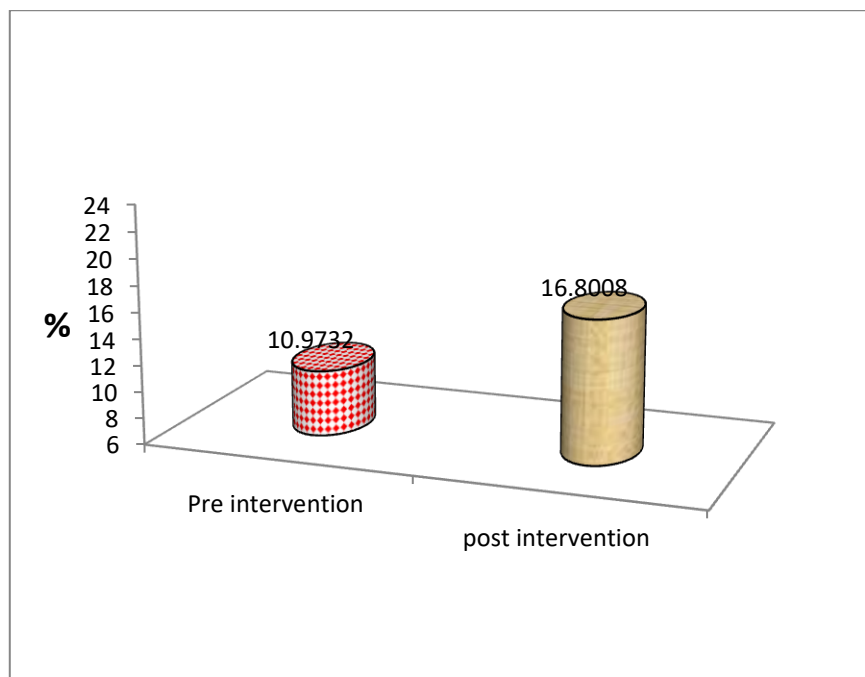
This figure illustrated that, the percentage of perception for severity aspect after intervention was higher in post-test 16.80% compared by pre-test10.97% after intervention based on health belief model.

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (106-119), Month: May - August 2019, Available at: **www.noveltyjournals.com**

Figure (7): The percentage of total score for barrier pre and post intervention **(n= 252).**

This figure showed that, the percentage of perception for barrier was higher than in post- test12.092% compared by pre-test8.229% after intervention based on health belief model.

Figure (8): The percentage of total score for cause to Perceived benefits before and after intervention based on health belief model **(n= 252).**
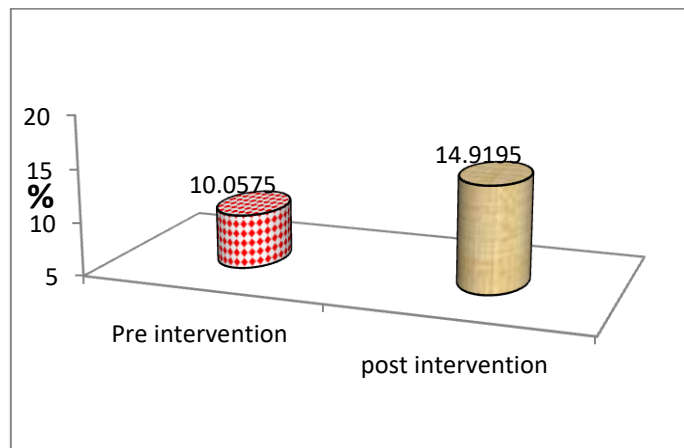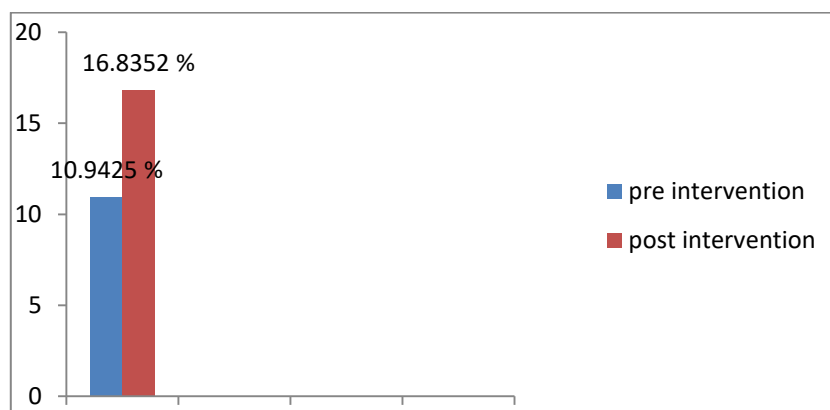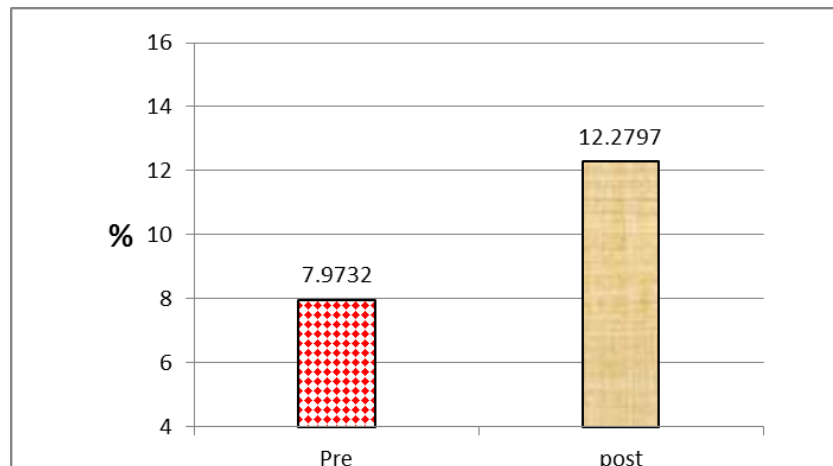

Figure 8 summarized the percentage of perception for benefit aspect of internet use is higher in post- test14.91% compared by pre-test 10.05% after intervention based on health belief model.

Figure (9): The percentage of total score for cause to take action before and after intervention based on health belief model **(n= 252).**

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (106-119), Month: May - August 2019, Available at: www.noveltyjournals.com

This figure illustrated the percentage of perceived cues to action which was higher in post- test16.83% compared by pre-test 10.94 % after intervention based on health belief model.

Figure (10): the percentage of total score for self-efficacy before and after intervention based on health belief model (**n= 252**).

This figure summarized the percentage of perception of self- efficacy regarding to reducing internet addiction which changing from 7.97   in pre-test to 12.279   in post-test after intervention based on health belief model.

Table (3): Mean and standard deviation scores of the internet addiction scale test and Health Belief Model constructs before and after intervention (n=252).

Variable	Pre intervention (n=252) Mean ± SD	Post intervention (n=252) Mean ± SD	Paired t Test	P value
Scale of addiction	74.43 ± 12.71	44.86 ± 11.04	50.60	<0.001
Perceived susceptibility	14.58 ± 2.35	23.93 ± 1.66	150.06	<0.001
Perceived severity	10.97 ± 2.55	16.80 ± 2.36	248.76	<0.001
Perceived barriers	8.22 ± 2.01	12.09 ± 1.81	180.59	<0.001
Perceived benefits	10.05 ± 2.66	14.91 ± 2.55	154.69	<0.001
Cues to action	10.94 ± 1.91	16.83 ± 1.85	44.97	<0.001
Self-efficacy	7.97 ± 1.21	12.27 ± 1.70	62.56	<0.001
Total scale	62.76 ± 7.72	96.86 ± 7.59	271.31	<0.001

This table summarized all results of used tools which showed that, the mean and stander deviation of total score of internet addiction scale test in post intervention 44.86 ± 11.04 was lower than pre intervention 74.43 ± 12.71 with highly significant improvement after educational intervention based on health belief model(p<0.001) . And the mean and stander deviation of total score health belief model with all its aspects; Perceived susceptibility, Perceived severity, Perceived barriers, Perceived benefits, Cues to action and Self-efficacy were higher in post-test 23.93 ± 1.66,16.80 ± 2.36,12.09 ± 1.81,14.91 ± 2.55,16.83 ± 1.85,12.27 ± 1.70 than pre-test74.43 ± 12.71,14.58 ± 2.35,10.97 ± 2.55,8.22 ± 2.01,10.05 ± 2.66,10.94 ± 1.91,7.97 ± 1.21 respectively with highly significant improvement(p<0.001) .

4.   DISCUSSION

Using theories and models of health behavior for health education is essential for health promotion professionals. Many researches showed the effectiveness of health education programs depend on correct theories and models used in health education. One of the health education models that are used in the prevention of addictive behaviors is Health Belief Model (HBM) (Zadeh, Changizi, & Sadeghi, 2014).

Regarding to socio-demographic data, this study revealed that, the percentage of adolescent or teen age had internet addiction more than the half of sample compared by young adult (52.8%), this result agree with Gupta, (2018), who reported that, the mean ± SD age of the participants was 19.1 ±1.02 years .Similar finding reported by Marahatta et al., (2015), who found the mean ± SD of the age was 19.9 ± 2.8. and Krishnamurthy & Chetlapalli, (2015), who studied" Internet Addiction: Prevalence and Risk Factors: A cross-Sectional Study among College Students in Bengaluru, India" they reported that, the initial year's undergraduate study was associated with higher burden of internet addiction .

On the other hand this result disagrees with Kawabe, Horiuchi, Ochi, Oka & Ueno., (2016) who reported that, higher grades among undergraduate students had a higher prevalence of internet addiction & Abadi et al., (2015) who reported that, the mean and standard deviation of students' age were 21.68±4.02 years. This is may be because, as age increases during the faculty's years, it leads to an increase in cognitive maturity. Additionally, the current study found that, the internet addict subject were 52.4% at literary faculty and 47.6% at scientific faculties. This result come in the same line with Desouky et al., (2015) who reported that, 72.5% of addict subject were from the literary faculty and about 49% of scientific faculties. This could be explained by the academic overload and the high pressure of study demands and the nature of education in almost of practical college. This may be a barrier towards having enough free time to overuse of the internet to a degree of addiction.

Furthermore, the current study found that, the internet addict subject were 52.4% at literary faculties and 47.6% at scientific faculties. This result come in the same line with Desouky et al., (2015) who reported that, 72.5% of addict subject were from the literary faculties and about 49% of scientific faculties. This could be explained by the nature of education in almost of practical faculties from academic overload and the high pressure of study demands act as a barrier towards having enough free time to overuse of the internet to a degree of addiction.

Regarding to level of education of mother and father, this study revealed that the highest percentage of the subject had a moderate educated father and mother (47.2%, 49.20% respectively) and only 26.2% had highly educated father & 22 % had highly educated mother. This result was supported by the study of Wang, (2016), who found that, 25.03% had high educated father and 23.4 had high educated mother. This may be illustrating higher paternal education levels as a protective factor against internet addiction.

On the other hand this result did not agree with Desouky et al., (2015), who found that, 48.7% of internet addict had a highly educated father and 45.1% had a highly educated mother. This could be explained by the easiness and freedom access to internet in acquiring academic materials and communication and information technologies has increased our dependence on technology for various aspects of our lives, furthermore readiness of student for overuse of the internet to a degree of addiction.

Regarding to the degree of internet addiction, this study revealed that the subject had mild, moderate, and sever internet addiction (7.6% 75.8% and 16.7% respectively) before intervention. This result disagree with Saied et al., (2016), who reported that, two thirds (64.1%) of the student were average internet users (mild), while only minor percentage of them (2.7%) had problematic internet use (sever degree). And disagree with Abadi et al., (2015), who reported that 20.2% of samples were at risk of addiction and also 0.6% was addicted to internet, and Marahatta et al., (2015), who revealed 1.3% only, were severe internet addicts. This difference may be illustrated by studying done on scientific and literary faculties but others mentioned studies done on scientific faculties only.

Also this result disagree with study of Hosseini et al., (2015), who indicated that, 15% of subjects had average (mild) addiction and 4.2% had severe addiction, and Uddin et al., (2016) who reported that, 20.7% male and 7.7% and female were in the range of mild degree, 47.7% male and 44.5% female were in the range of severe degree, then 27.1% male and 33.9% female were in the range of moderate degree. Here, the differences may be due to more than half of the sample of previous mentioned study were male (52%) which have more unstructured time than female.

Regarding to the purpose of internet use, the current study found that, the highest percentage of purpose of internet use was social media (46.4%), followed by entertainment (38.1%), this result was supported by Saied et al., (2016), who reported that, contact with friends, relatives and social purposes were reported by the highest percentage of both groups as the main causes of Facebook use. And Desouky, (2015)who reported that, problematic internet users used the internet more for relieving loneliness and entertainment purposes than non- addicts and potential addicts. Kesici & Şahin (2009), who showed that, the internet addiction tends to use the internet more for entertainment purposes and social activities.

But Abadi et al., (2015) reported that the maximum percentage of using Internet 79.5% was belonged to entertainment. Internet addiction as a compensatory mechanism, internet use is a coping venue for limited social skills, coping with low mood, and need to escape or gain status, but regarding to previous mentioned study the difference here may be illustrated by using sample from medical science university; this type of sample has limited unstructured time, so their priorities may be for entertainment than others.

In regard to the preferred device of internet use, this study revealed that, the most preferred device was mobile (64.3%) followed by laptop (20.2%), desktop (12.3%) and others (3.2%) respectively. which are similarly to Reda, Rabie, Mohsen & Hassan, (2012), who reported around half of the subject (46.3%) had internet access through their mobile phones among a group of Egyptian adolescents.

Also this result agree with Saied et al., (2016), who found that, most commonly used device was the mobile phone with significant higher percentage (92.4%) among Malaysian students (p=0.000). Abadi et al., (2015), reported that 60.4% of Internet access was by mobile. Also agree with Tabassum Khan and Ahmed (2018), who reported that, over 800 million Facebook users, 350 million people can easily access Facebook through their cell phones. This can be attributed to the easy access to the internet, and presence of mobile with the capability to connect to the Internet and also to Wi-Fi networks in nearly all places.

The results of this study showed that after the intervention, the percentage of internet addiction and adverse effect of internet addiction significantly decreased. These findings of this study reassured the effectiveness of education based on the HBM, to reduce the prevalence of internet addiction. These result come in the same line with study done in Tehran University of Medical Sciences by Maheri et al., (2017), who reported that, education based on the health belief model was effective on the reduction and prevention of internet addiction among female college students, and educational interventions in this field are highly recommended.

Also Johari, Eslami, Alahverdipoor & Hasanzade, (2014), reported that educational interventions based on the HBM are effective in the prevention of addictive behaviors. And Maheri & et al., (2017), reported that, health belief model is one of the broadest frameworks for understanding health-related behavior. Hence, the main focus of this study is to promote preventive behaviors of internet addiction based on the health belief model.

Regarding to perceived susceptibility, in this study, mean ± SD of perceived susceptibility aspects after intervention is higher in post-test (23.93 ± 1.66) than pre-test (14.58 ± 2.35). This result agree with Maheri & et al., (2017) who reported that, perceived susceptibility significantly increased in the intervention group at post intervention(21.8±3.6) than pre intervention (16.2±4). Also this result showed that, the total score of perceived susceptibility was14.58% at pre intervention which come in the same line with Wang, Anise, and Joseph (2016), who reported that, slightly more than one tenth (12.2 %) of all the sampled students definitely agreed or agreed that they would develop internet addiction (perceived susceptibility).

Regarding to perceived severity, this study found that, perception of severity aspect after intervention is higher in post-test 16.80 ± 2.36 compared by pre-test 10.97 ± 2.55, this result congruent with Maheri & et al., (2017), who reported that, perceived severity significantly increased in the intervention group at post intervention than 26.3±3.9 pre intervention 9±5.1. This result was supported by Rahnavard, Mohammadi, Rajabi & Zolfaghari, (2011), who showed that, increasing perceived susceptibility and perceived severity are predictive factors in adopting health behaviors such as preventive behaviors of addiction.

Regarding to perceived benefits, this study revealed that, mean ± SD of perceived benefits aspect of internet use is higher in post- test14.91 ± 2.55 than pre-test 10.05 ± 2.66. This result congruent with Maheri & et al., (2017), who reported that perceived severity significantly increased in the intervention group at post intervention21.9±3.8 than pre intervention 17.6±7. Additionally Wang et al., (2016) reported that, from 11.57to 20.96 definitely agreed or agreed that they would develop benefits from correctly internet use (perceived benefits). Furthermore this result agree with Johari et al., (2014), who reported that, there are strong relationship between the increase perceived benefits and decrease perceived barriers of preventive behaviors of internet addiction among subjects after educational intervention.

Regarding to perceived self-efficacy, this study showed that, after the intervention, the mean score of perceived self-efficacy for adopting preventive health behaviors of internet addiction significantly increased12.27 ± 1.70 compared by pre intervention 7.97 ± 1.21. This result come with the same line Maheri et al., (2017), who stated that," Self-efficacy is

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (106-119), Month: May - August 2019, Available at: www.noveltyjournals.com

one of the factors that influence on healthy behaviors and various studies show that increased self-efficacy increased adopting healthy behavior and confirm on designing and implementation of theory-based educational interventions are necessary to increase self-efficacy to control anxiety and depression among college students ."

Regarding to cue to action, this result illustrated that, the percentage of perceived cue to action which was higher in post-test than pre- test from 10.94 ± 1.91 to 16.83 ± 1.85 and Attend seminars, conferences, or listen to a television program on how to use the correct information were highly significantly ($p<0.001$) after intervention based on health belief model. This result supported by Maheri et al., (2017), they reported that , after the intervention, there was significant difference between two groups in terms of report of poster ($P < 0.001$), pamphlets and leaflets training ($P < 0.001$), and classroom training ($P < 0.001$), as a cause to action.

This result supported by El-Nagar, Abd Elsalam, Ahmed (2017), who studied "Effect of Instruction With Visual Materials Based on Health Belief Model on Global Warming Perception among University Students" they reported that, after instruction, the majority of students agreed that they had the necessary information to face global warming impacts as well as the confidence and ability to protect themselves from health impacts of climate change. Also Wang et al., (2016) reported that, low perceived self-efficacy to reduce Internet use was significantly associated with internet addiction, it is hence important to increase students' perceived self-efficacy to regulate their own Internet use.

The result of this study showed that after the intervention, the mean $\pm$ SD of HBM constructs (perceived Susceptibility, perceived severity, perceived benefits, and perceived self-efficacy) were significantly increased after intervention from 62.76 ± 7.72 to 96.86 ± 7.59. This result agree with Maheri et al., (2017), who reported tha,t educational program based on the HBM could increase the perceived benefits of preventive behaviors and could be effectiveness on preventive behaviors of internet addiction and overcome barriers of adopting preventive behaviors of internet addiction among college students.

Additionally, this result supported by El-Nagar, Abd Elsalam, Ahmed (2017), who reported that, there was significant improvement in the mean score of university student's perception including perceived vulnerability, perceived severity of global warming, perceived benefits of taking Preventive activities and perceived barriers of take action to reduce risk of global warming after instruction compared to before instruction, and there was significant improvement in the perception of university students' about global warming based on HBM after instruction compared to before instruction.

5. CONCLUSION

Based on the results of this study, it was concluded by, the results of this study showed the effectiveness of an educational intervention based on the HBM structure in improving the attitude, and practice relating to preventive behaviors of internet addiction and reducing the rate of internet addiction among faculty students of Menofia University either scientifically or literacy.

6. RECOMMENDATIONS

- Educational intervention programs especially based on models deals with changing behavior to reduce internet overuse among university students.

- Disconnection from the Internet, create a study plan and reward you for studying. Avoid using the Internet without a specific goal.

- Get an interest that doesn't involve the internet (video games, computer… etc.) as involving with teams, clubs, sports, music, singing, libraries and entertainment… etc .

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