

Relation between Problematic Internet Use and Mental Health Status of Technical Nursing Students in Tanta City

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Abstract

Background: Students are believed to be at a high risk with a marked increase in their internet usage worldwide. Problematic Internet use (PIU) is characterized by a lack of control over the concern, encouragement, or problems related to anxiety, stress and depression as a result of its use. **Aim of the study:** to identify the relation between problematic internet use and mental health status of technical nursing students in Tanta city. **Design:** A descriptive design was used in this study. This study was conducted at two secondary technical nursing schools and the technical health institute (nursing branch) in Tanta city. **Subjects:** A convenient sample of 273 students in the above mentioned schools was included in the study. Three tools were used by the researchers to obtain the necessary data, the structured questionnaire schedule, General health questionnaire (GHQ-28) and the Internet Addiction Test (IAT). **Results:** More than half of the studied students had frequent problems related to internet usage (56.4%) and about one third of them (31.9%) had a significant problems. Slightly less than two fifths of the studied subjects (38.8 %) had poor mental health. Significant differences were observed between the studied level of internet usage and their age, sex and social level ($P = <0.001, 0.009$ and 0.034) respectively. **Conclusion:** There were strong significant positive correlation between the level of internet usage and students' mental health status. **Recommendations:** Further studies needed to develop and implement rehabilitation programs, for students with psychological problems related to excessive internet usage.

Keywords: *Problematic Internet Use, Technical Nursing Students, Mental Health and subjective happiness.*

Introduction

Internet becomes a critical part of modern life. As a medium of information and communication, it has an important place in social and academic life of nursing students in many societies. Today's students have unprecedented access to modern technology and use them in expected and unexpected ways. They spend many hours a day using it ^(1,2). The internet is the most effective tool in all different areas of science, business, education, culture and politics. It brings a huge change and convince; people spend more and more time online, ranged from 19 to 68 hours per week. Worldwide, internet users were 1.2 billion in the year 2000 and increased to 3.17 billion in 2015. According to the internet usage statistics in Egypt, internet users are 54.6 % of the population in 2015, compared to 35.6% in 2012. More than 80% of the Egyptian internet café clients are young people ⁽³⁻⁷⁾. However, while the internet has become a major information and communication medium for the students, the number of unhealthy or excessive internet users among them has also grown remarkably ⁽⁵⁾. Problematic internet use refers to the excessive use of internet and significantly influences one's normal life including psychological, family and social life ⁽⁶⁾. It is a maladaptive use of the internet that

can lead to social and functional impairment ^(7,8)

Problematic Internet Use (PIU) is a heterogeneous construct. Two features appear fundamental to its conceptualization. The first refers to the aspects of internet use, as excessive or compulsive, along with preoccupation with and loss of control over use of the internet. The second refers to various adverse consequences of spending too much time on the internet, such as neglecting social activities, relationships, health and work or school duties, and altering sleep and eating habits in a detrimental way ^(4,9).

Problematic internet use or overuse is not just a matter of using the internet to perform, or using an average amount of time on computers. Instead, compulsively use the internet, to such an extent that it is given priority over all other responsibilities which also affect time and attention to school work, domestic and responsibilities at home, and even interaction and relationships. Some examples and activities of internet overuse may include chatting online, playing online video games, or visiting sexually illicit or pornographic sites ⁽¹⁰⁾. Five negative internet technology (IT) related issues were identified: techno-stress, information overload, multitasking, addictions, and technology misuse ^(11,12-14).

School age is a unique and formative time. It is a time of self-disclosure and conflict to find a balance between autonomy and connectedness. It is a period in which an individual face major physical, psychological, body and brain changes. It may begin as early as age 6 and extend until age 24. This age group represents one fifth of the global population. In Egypt, according to Egypt Demographic Profile 2018, the age group of 15-24 years represent 18.94% of the total population ^(15,16). Whilst most of students have good mental health, multiple physical, emotional and social changes can make them vulnerable to mental health problems. They are vulnerable to misuse of internet technology if they have not been taught how to use it adequately or if they are without supervision when using it ⁽¹⁷⁾.

Technical nursing students are those students who enrolled in secondary nursing schools or institutes. Their ages ranged between 15-19 years. In general, those nurses are at a critical period of addiction vulnerability, based on their educational, social and also neurobiological factors. With regard to the internet they are more vulnerable and at risk as they have easy access to the internet and flexible timetables. Furthermore, they tend to be less self-

regulative, and also have less ability to control their enthusiasm for internet activities ⁽¹⁸⁻²⁴⁾.

Promoting psychological well-being and protecting students from adverse experiences and risk factors which can impact their potential to thrive aren't only critical for his or her well-being during adolescence, but also for their physical and mental health in adulthood. Community health nurse and psychiatric nurse play an important role in promoting students' physical and psychological health, control health risk behavior to maintain normal development and managing actual and potential health problems facing them while using the internet ⁽²⁵⁾. They play a critical role especially at the primary level of prevention. The contact of these nurses with the students offers an opportunity to implement primary level of prevention in a most effective manner. This level of prevention might be instituted through such approaches as health promoter, educator, health screener, care provider and leader for health policies and programs ⁽²⁶⁾.

Significance of the study

The internet now is used as a tool to acquire new information, make contact with various social groups, and expand personal relationships. Recently,

researches on the adverse effects of internet use have gained a great importance ⁽⁴⁾. Researchers have identified that the continuous use of internet results in a lot of psychological and mental disorders like anxiety, depression, stress and obsessive compulsive disorder. Furthermore, they found that Problematic Internet Use was associated with sleep problems including subjective insomnia and poor sleep quality ^(27,28). However, there is currently insufficient data on internet use among technical school nurses. So, the aim of this study was to identify the relation between problematic internet use and mental health status of technical nursing students in Tanta city.

Aim of the study:

The aim of this study was to identify the relation between problematic internet use and mental health status of technical nursing students in Tanta city.

Research question;

Is there a relation between problematic internet use and mental health status of technical nursing students?

Subjects and Method

Subjects:

Study design: Descriptive research design was utilized to conduct this study.

Setting: This study was conducted at two secondary technical nursing schools (one

school for male students and the other one for female students) in addition to the Technical Health Institute (nursing branch) in Tanta city that affiliated to Ministry of Health and Population.

Study subjects:

A convenient sample of 273 students of both sexes (92 Boys and 181 girls) enrolled in the previous mentioned settings during the academic year 2017/ 2018 that represent all the students from grade one to grade five who were willing to participate in the study who were live with their biological parents and who were free from any physical or psychological problems were included in the study.

Tools of the study:

Three tools were used to collect the necessary data as follow:

Tool I: Structured questionnaire schedule that consisted of three parts as follow:

Part (1): Socio-demographic characteristics of the study subjects which was developed by the researchers based on reviewing the recent related literatures, as age, sex, grade, birth order, residence, type of family, family income and daily expense.

Part (2): The Family Affluence Scale (FAS) which developed by Curries 2008 ⁽²⁹⁾ to assess the social level , the economic status of the students. It consists of four

items as: number of cars does the family own, if the students have bedroom, the number of travel on vacation with their families during the past year and number of computers do their families own.

Scoring system;

FAS score ranged between 0-9. The FAS score was calculated by summing the responses to these four items, and the respondents were grouped into low social level (0–2), middle social level (3–5), and high social level (6–9).

Tool II: Mental health status of the studied students:

Part (1) General health questionnaire (GHQ-28)⁽³⁰⁾:

It was developed by **Goldberg in 1978**; it included 28 items to measure emotional distress in medical settings. The GHQ-28 has been divided into four subscales: **somatic symptoms** (items 1–7); **anxiety/insomnia** (items 8–14); **social dysfunction** (items 15–21), and **severe depression** (items 22–28). Each item is accompanied by four possible responses: not at all, no more than usual, rather more than usual, and much more than usual, scored from 0 to 3 for each response with a total possible score ranging from 0 to 84.

Scoring system;

The students' mental health status was categorized as follow:

- Good mental health: ($< 60\%$) = < 50 point of total score.
- Poor mental health: ($\geq 60\%$) ≥ 50 point of total score.

Part (2): The Subjective Happiness Scale (SHS)⁽³¹⁾.

The Subjective Happiness Scale (SHS) scale that was developed by Lyubomirsky and Lepper (1999) to assess the extent of overall subjective happiness among students was adopted by the researchers. It consisted of 4-items and assessed with a five-point Likert scale rated from 1 to 5. The total score of the scale ranged from 4 - 20. This score was converted into a percent score, and classified into the following three categories:

- Not happy $< 50\%$ of the total happiness score.
- Happy 50-70 % of the total happiness score.
- Very happy $> 70\%$ of the total happiness score.

Tool III: Internet Addiction Test (IAT):

The internet addiction test is a reliable and valid measure of addictive use of internet, developed by **Dr. Kimberly Young⁽³²⁾**. It consists of 20 items that measures mild, moderate and severe level of internet addiction answered in five likert scale ranging from 1 (rarely) to 5 (Always). The minimum score is 20 and the maximum is 100. The higher score indicates the greater

problematic internet use. Young suggests that a score of 20-49 points is an average online user who has complete control over his/ her usage. A score of 50- 79 signifies frequent problems due to internet usage, and the score of 80- 100 means that the internet is causing significant problems.

Method

1-Obtaining approvals

Official permission to conduct the study was obtained from faculty of nursing to the responsible authorities to facilitate the researchers' work.

2- Ethical considerations:

- Approval of the ethical committee was obtained before conducting the study
- Informed consent was obtained from the students to participate in the study after explanation of the aim of the study.
- They were informed about their rights to refuse or withdraw at any time.
- The anonymity of participants was respected.
- The confidentiality of the information obtained was ensured.
- The privacy of the students was asserted.
- The study didn't cause harm to the studied subjects.

3-Developing the tools

- The study tools were developed by the researchers based on literature review. The developed tools were tested for content and face validity by a jury of 5 academic professors in community and psychiatric health nursing. Accordingly corrections and modifications were done.
 - The reliability of the study tools were tested using Cronbach's Alpha test. It was 0.845 for all questionnaire variables, 0.857 for tool II and 0.919 for tool III which indicate a high reliability of studied tools.
 - A pilot study was carried out on ten percent of study sample (27 students) to test the tool for its relevance and clarity. Modifications were done accordingly. Data collected from pilot part of the study were excluded from the final sample.
- ### **4- The actual study**
- The collection of the data continued during a period of three months starting from beginning February2018 to April 2018.
 - The data was collected by administering the questionnaire to each student individually to complete it by his / herself with the attendance of the researcher to offer guidance and clarification when needed.
 - The average time spent for collecting

data from each student was approximately 30-40 minutes to complete the questionnaire.

5- Statistical analysis

The collected data were organized, tabulated and statistically analyzed using Statistical Package of Social Studies (SPSS) version 23. For numerical data, the range, mean and standard deviation were calculated. The association between variables was calculated by Pearson's correlation coefficient (r). For categorical variables, the number and percentage were calculated. Differences between categories of each variable were statistically analyzed using chi square test (X^2). The level of significance was adopted at $p < 0.05$.

Results:

Table (1) shows socio demographic characteristics of studied students. It was clear that more than two thirds of the studied subjects were females in the age group of 17 – 20 years (66.3% and 68.2%) respectively. More than two fifths of them were the oldest child who enrolled in the third grade and had a daily expense of 5-10 pound or more than 10 pounds per day (41%, 86.5%, 41.8% and 40.7%) respectively. As regard the monthly income and residence, the table showed that nearly two thirds of the studied students had adequate income and from rural areas (63 %and 63.7%) respectively.

More than half of them live with extended families (58.3%) and the majority of them had excellent academic achievement (81%).

Fig (1) presents the distribution of the studied subjects according to the mean of net connection. It was clear that the majority of the studied subjects use the mobile phone as a mean of net connection (86%).

Fig (2) illustrates the distribution of the studied subjects according to their social level. More than half of the studied subjects (55.7%) were of low social level and slightly less than two fifths of them (39.9%) were from the middle social class

Fig (3): shows the distribution of the studied subjects according to their level of subjective feeling of happiness. The figure showed that about one quarter of the studied subject had feeling of unhappy (23%) while only 4.8 % of the reported that they were very happy. Nearly about three quarters of the studied students (72.2%) reported that they were happy.

Table 2: presents the distribution of the studied sample according to mental health status. Generally, slightly less than one fifth of the studied subjects (38.8 %) reported poor mental health. The total mean score of the students' mental health was 60.728 ± 12.124 . As regard somatic manifestation, it was clear that more than

one quarter of them had high level of somatic manifestation (25.6%), while more than half of them had a higher level of insomnia/ anxiety (57.5%) and high level of social dysfunction (62.3%). As for depression status, more than one third of the studied subjects had severe level of depression (35.5%).

Fig (4) illustrates the distribution of the studied subjects according to total mental health score. It was obvious that slightly less than two fifths of the studied subjects (38.8 %) had poor mental health.

Concerning the level of the problems that internet use cause, **fig (5)** showed that more than half of the studied students reported that they have frequent problems related to internet use (56.4%) and about one third of them (31.9%) reported significant problems related to internet usage.

Table (3): Presents the relation between levels of the problems that internet use cause and the general health status of the studied students. This table shows nearly about one third of the studied students had a high level of insomnia / anxiety and classified as having frequent or significant problems due to use of internet (28.9 % and 22.3%) respectively. Furthermore, less than one fifth of them categorized had frequent or significant problem due to internet use were described as severe

depression (17.2% and 15.8%) respectively. However, around one fifth of the studied students with poor mental health status were classified as having frequent or significant problems due to internet use (19% and 17.2%) respectively. Significant differences were observed between the level of the problems due to internet use and students' mental health status, insomnia/anxiety level and depression ($p= 0.001, 0.15$ and 0.003) respectively.

Table (4) presents the relation between socio-demographic characteristics of studied students and their level of problems caused by internet use. It was clear that more than one third of the studied subjects with frequent problems of internet use (38.5%) were in the age group 7-20 years and about one fourth of the same age group had significant problems of internet use (23.4 %). More than one third of the studied subjects with frequent problems and about one fifth of those with significant problems of using internet were females (37.7% and 18.3%). About one quarter of the studied subjects of low or middle social level had frequent problems (28.6% and 24.2%) respectively.

Furthermore, the highest percentages of the studied students with significant problems related to internet use were found among the students of low and

middle social level (17.9% and 13.2%) respectively compared to only 0.7% of the students of high social class. As regard the school grade, the table showed that the highest percentages of students with frequent and significant problems of internet use were found among the 3rd grade students (26% and 16.5%) respectively.

The students of large families (five or more) particularly the extended families showed the highest frequencies of frequent and significant problems of internet use than those of small families (31.1% and 16.1%) and (33% and 19%) respectively. The percentages of students with frequent and significant problems of internet use were found among the middle students of rural residence with adequate family income who use the mobile phone as a mean of net connection (20.1% and 13.2%, 35.9% and 19%, 33.7 and 20.5%, 74.6% and 27.1%) respectively. Significant differences were observed between the studied level of problems caused by internet use and their age, sex and social level ($P = <0.001$, 0.009 and 0.034) respectively.

Table (5) shows the correlation between studied subjects' social level, mental health, happiness and level of problems caused by internet use. There were significant positive correlations between

the level of the problems caused by internet use and students' mental health status and their social level ($p < 0.001$ and 0.022) respectively, while no significant correlations were found between level of happiness of the studied subjects and their level problems of internet use ($p = 0.317$).

Table (6) shows the correlation between mental health status, happiness and problems caused by internet use and the socio-demographic characteristics of the studied subjects. The table showed that there were significant positive correlations between the level of the studied subjects' level of problems caused by internet use and their age, study grade and birth order ($p = 0.001$, 0.001 and 0.017) respectively which means that the older students of higher academic grade have higher level of problematic internet use. Furthermore, strong significant correlation was observed between the sex of the studied subjects and their mental health status ($p = 0.008$). On the other hand, significant negative correlation was found between sex of the students and their level of internet usage ($p = 0.024$). Also, negative significant correlation was found between the student birth order and their mental health status ($p = 0.020$).

Table 1: Socio demographic characteristics of studied students (No=273).

Socio demographic characteristics	No	%
Age		
Less than 17 years	32	11.7
17 -20 years	186	68.2
More than 20 years	55	20.1
Mean \pm SD	18.63 \pm 1.72	
Range	15-23	
Sex		
Males	92	33.7
Females	181	66.3
Grade		
1 st grade	34	12.5
2 nd grade	43	15.8
3 rd grade	127	46.5
4 th grade	41	15.0
5 th grade	28	10.2
Birth order		
The oldest	112	41.0
The middle	99	36.3
The youngest	62	22.7
Monthly income		
Adequate and saving	61	22.3
Adequate	172	63.0
Inadequate	40	14.7
Daily expense		
Less than 5 pounds	48	17.5
5-10 pounds	114	41.8
More than 10 pounds	111	40.7
Residence		
Urban	99	36.3
Rural	174	63.7
Family type		
Nuclear family	94	34.4
Extended family	159	58.3
Single parent family	20	7.3
Academic achievement		
Weak	13	4.8
Good	39	14.2
Excellent	221	81.0

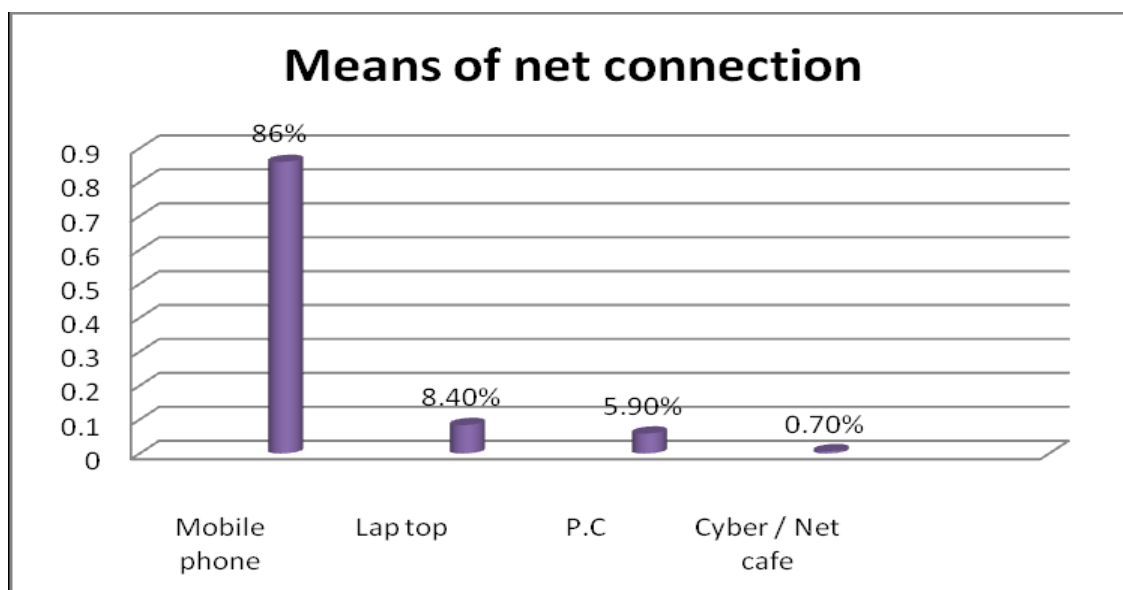


Fig (1): Distribution of the studied subjects according to the means of net connection

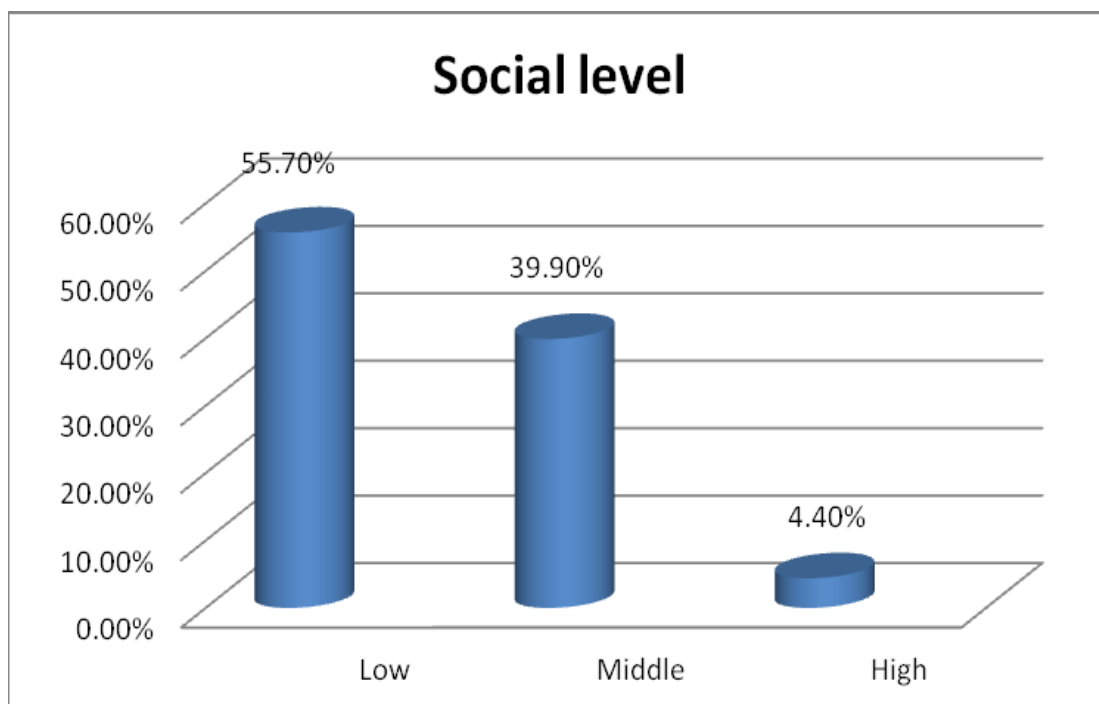


Fig (2): Distribution of the studied subjects according to their social level

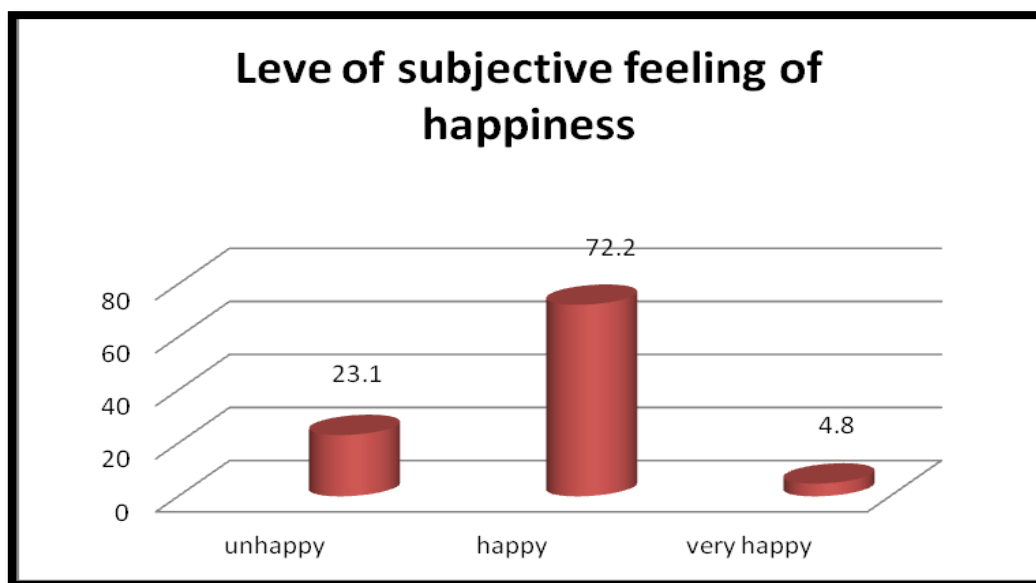


Fig (3): Distribution of the studied subjects according to level of subjective feeling of happiness

Table 2: Distribution of the studied sample according to mental health status

Dimensions of mental health status	No	%
Somatic manifestation		
Lower level of somatic manifestations	203	74.4
Higher level of somatic manifestations	70	25.6
Mean \pm SD	14.12 \pm 3.81	
Range	7-28	
Insomnia / anxiety		
Lower level of insomnia / anxiety	116	42.5
Higher level of insomnia / anxiety	157	57.5
Mean \pm SD	16.1319 \pm 4.76015	
Range	7-28	
Social dysfunction		
Low social dysfunction	103	37.7
High social dysfunction	170	62.3
Mean \pm SD	16.5018 \pm 3.69033	
Range	8-27	
Depression		
Mild depression	176	64.5
Severe depression	97	35.5
Mean \pm SD	13.9560 \pm 5.17185	
Range	7-28	
Mental health status		
Good mental health	167	61.2
Poor mental health	106	38.8
Mean \pm SD	60.728 \pm 12.124	
Range	36-93	

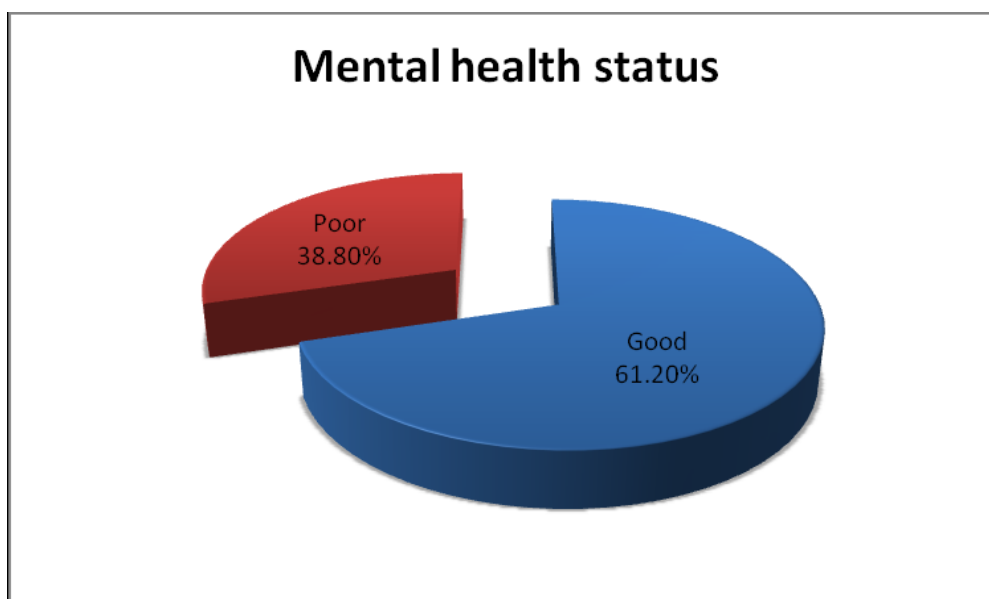


Fig (4): Distribution of the studied subjects according to total mental health score

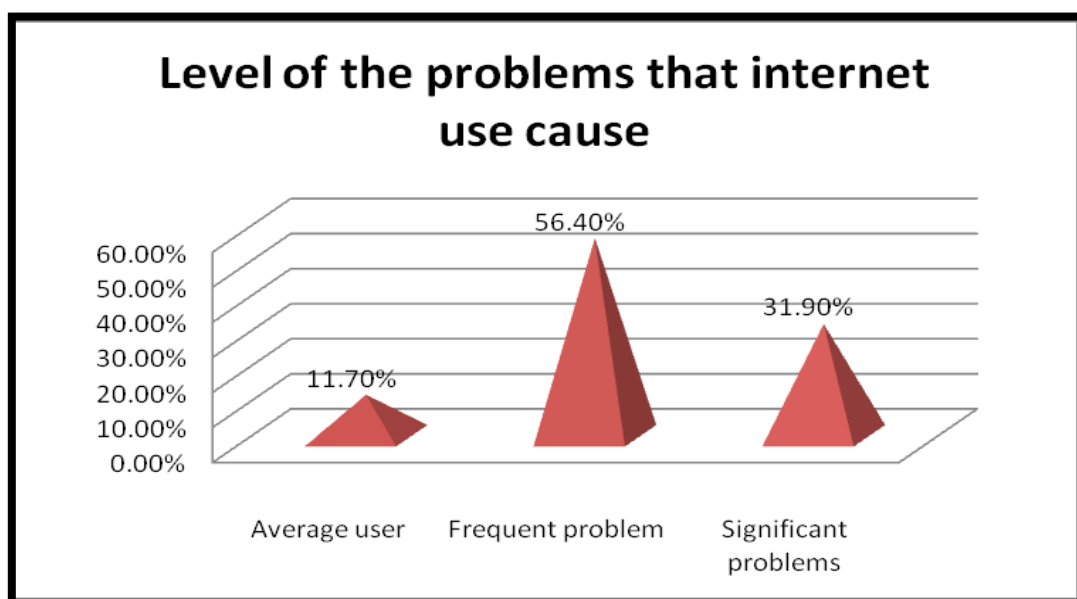


Fig (5): Distribution of the studied subjects according to level of the problems that internet use cause

Table (3): Relation between the level of problem that internet use cause and studied students' general health status.

Dimensions of general health questionnaire	level of problems that internet use cause					
	Average user		Frequent problem		Significant problem	
	No	%	No	%	No	%
Somatic manifestation						
Low level of somatic manifestation	26	9.5	117	42.9	60	22
High level of somatic manifestation	6	2.2	37	13.6	27	9.9
X^2	2.335					
P	0.311					
Insomnia / anxiety						
Lower level of insomnia / anxiety	15	5.5	75	27.5	26	9.5
Higher level of insomnia / anxiety	17	6.2	79	28.9	61	22.3
X^2	8.340					
P	0.015*					
Social dysfunction						
Low social dysfunction	15	5.5	59	21.6	29	10.6
High social dysfunction	17	6.2	95	34.8	58	21.2
X^2	1.877					
P	0.391					
Depression						
Mild depression	25	9.2	107	39.2	44	16.1
Severe depression	7	2.6	47	17.2	43	15.8
X^2	11.626					
P	0.003**					
Mental health status						
Good mental health	25	9.2	102	37.4	40	14.7
Poor mental health	7	2.6	52	19	47	17.2
X^2	13.99					
P	0.001**					

Table 4: Relation between socio-demographic characteristics of the studied students and their level of problems caused by internet use (No=274).

Socio-demographic characteristics	level of problems caused by internet use						X ²	P
	Average use		Frequent problems		Significant problems			
	No	%	No	%	No	%		
Age							26.153	<0.001**
Less than 17 years	11	4	20	7.3	1	0.4		
17 -20 years	17	6.2	106	38.5	64	23.4		
More than 20 years	4	1.5	29	10.6	22	8.1		
Sex							9.496	0.009**
Males	4	1.5	51	18.7	37	13.6		
Females	28	10.3	103	37.7	50	18.3		
Grade							15.287	0.054
1 st grade	9	3.3	21	7.7	4	1.5		
2 nd grade	7	2.6	24	8.8	12	4.4		
3 rd grade	11	4	71	26	45	16.5		
4 th grade	3	1.1	23	8.4	15	5.5		
5 th grade	2	0.7	15	5.5	11	4		
No of family members							9.446	0.051
Three or less	2	0.7	22	8.1	19	7		
Four members	5	1.8	47	17.2	24	8.8		
Five or more	25	9.2	85	31.1	44	16.1		
Birth order							4.440	.350
The oldest	18	6.6	63	23.1	31	11.4		
The middle	8	2.9	55	20.1	36	13.2		
The youngest	6	2.2	36	13.2	20	7.3		
Family income							3.639	.457
Adequate and save	6	2.2	38	13.9	17	6.2		
Adequate	24	8.8	92	33.7	56	20.5		
Inadequate	2	0.7	24	8.8	14	5.1		
Daily expense							8.311	.081
Less than 5 pounds	4	1.5	26	9.5	18	6.6		
5-10 pounds	20	7.3	65	23.8	29	10.6		
More than 10 pounds	8	2.9	63	23.1	40	14.7		
Residence							2.349	.309
Rural	24	8.8	98	35.9	52	19		
Urban	8	2.9	56	20.5	35	12.8		
Family type							.510	0.973
Nuclear family	12	4.4	53	19.4	29	10.6		
Extended family	17	6.2	90	33	52	19		
Single parent family	3	1.1	11	4	6	2.2		
Social level							10.409	.034*
Low	25	9.2	78	28.6	49	17.9		
Middle	7	2.6	66	24.2	36	13.2		
High	0	0.0	10	3.7	2	0.7		
Means of net connection							1.076	0.983
Mobile phone	28	10.3	130	47.6	74	27.1		
Lap top	2	0.7	13	4.8	8	2.9		
P.C	2	0.7	10	3.7	4	1.5		
Cyber / Net cafe	00	0.0	1	0.4	1	0.4		
Academic achievement							7.258	0.123
Weak	0	0.0	7	2.6	6	2.2		
Good	4	1.5	17	6.2	18	6.6		
Excellent	28	10.3	130	47.6	63	23.1		

Significant at <0.05

Table 5: Correlation between studied students' social level, mental health, happiness and level of the problems caused by internet use.

	Level of problems caused by internet use	
	r	p
Mental health	0.331	<0.001**
Happiness level	0.113	0.317
Social level	0.256	0.022*

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level

Table 6: Correlation between mental health status, happiness level and level of problems caused by internet use and the socio-demographic characteristics of the studied subjects

Sociodemographic data	Mental health status		Happiness level		Level of problems caused by internet use	
	r	p	r	p	r	p
Age	-.043	0.482	.038	0.531	..225	0.001**
Sex	0.160	0.008**	.103	.091	-.137	.024*
Grade	-.106	0.081	-.016	0.791	0.196	.001**
Birth order	-.141	.020*	-.064	.289	0.145	0.017*
Daily expense	0.005	0.935	.092	.128	.052	0.391
Residence	-0.050	0.407	.011	0.859	0.078	0.200

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level

Discussion

Internet now has become indispensable for both individual and societal life. As the result of technology revolution worldwide, the accessibility, duration, and dependence level on internet increased day by day. Nursing students use the internet for learning and providing information, but they are also at risk of problematic internet use. ^(33,34). Scientific studies have found that excessive use of internet is related to a variety of negative psychosocial consequences ⁽³³⁾. Therefore, the present study aimed to identify the relation between problematic internet use and mental health status of nursing students in Tanta city.

As regard to the mean of net connection, the majority of our subjects use mobile phone as a mean of net connection. This can be attributed to the availability of mobile phones and the accessibility of mobile net connection throughout the world. This result was supported by the results of **Shaheen et al (2016)**⁽³⁵⁾, **Parel and Thomas (2017)**⁽³⁶⁾, and **Gopala VV et al. (2014)**⁽³⁷⁾, who mentioned that the majority of their subjects were predominantly use mobile phone for internet connection as the primary object for the internet usage. In contrast, this result disagree with the result of **Aylaz et al. (2015)**⁽³⁸⁾ who found that 74.4% had a

computer at home. They connected to the internet mostly at home and in internet cafes.

As for the degree of internet use, the current study revealed that only 11.7 % of the studied subjects were average user of internet while the majority of them were identified to have frequent and significant problem related to internet usage. This result was in agreement with **Khalil et al (2016)** ⁽³⁹⁾ who reported that 38.4 % and 2.1 % of their participants were categorized as moderate to severe internet addiction and with **Parel and Thomas (2017)**⁽³⁶⁾ who reported that about 17.52% of students reported with no addiction while problematic use of internet was prominent feature among the rest of their subjects ranging from mild, moderate and sever net addiction.

In the same line the result of **Mohamed et al (2019)**⁽⁴⁰⁾ who found that The majority (82.3%) of participants reported frequently staying online longer than intended. Meanwhile, the current result contradict with the result of **Cao et al (2011)**⁽⁴¹⁾. In their study, they identified only 8.1% of the students with problematic Internet users. Moreover, there have been several studies about the prevalence rate of Internet addiction in the middle and Far East. Among those studies an Iranian study

done by **Mazhari (2012)**⁽⁴²⁾ examining the prevalence of IA among medical students as she found that 21% of the students were identified as problematic Internet users, and **Kheirkhah et al. (2010)**⁽⁴³⁾ investigated the prevalence of Internet addiction in the Mazandaran province as they found that 22.8% of the Internet users were Internet addicts. From the researchers' point of views, this variation could be related to cultural diversity among participants or different tools that were used to measure the internet usage level among the participants.

It was reported that as problematic internet use increased, the general individuals' health declined and insomnia associated with increased prevalence of depressive symptoms emerged ⁽⁶⁾. In this regard, the current study revealed that more than one quarter of the studied students had low level of psychosomatic manifestation and more than one third of them had low level of mental health status. More than one third of them categorized as severe depression while more than half of them were categorized as of higher level of insomnia / anxiety and high level of social dysfunction.

This is in agreement with the study of **Malak et al, 2017**⁽⁴⁴⁾ who revealed that Jordanian school students had high

prevalence of anxiety and depression indicating a relationship between anxiety, depression and IA. They explained this as the school students aged 12-18 undergo many developmental changes leading them to experience social and psychological problems, therefore Internet is considered as rich environment to fulfill their needs and forget their problems. As for the relation of problematic use of internet and the general health of the studied subjects, the current result indicated that there was strong significant positive correlation between level of internet use and mental health condition of the studied subjects. This result is in agreement with the results of **Andersona et al (2016)** ⁽⁴⁵⁾.

Additionally, an Australian study which concluded that the links between PIU and anxiety, social anxiety, depression and general psychological distress have been examined mainly as predictors, and less as potential consequences of PIU, across predominantly Asian populations (Korean, Singaporean) ⁽⁴⁶⁾. Finally, there have been contradictory findings considering the association between psychotic symptoms and PIU, with one study that support our results and suggesting that an increase in psychotic symptoms over two-months related to significantly higher PIU (**Mittal et al, 2013**) ⁽⁴⁷⁾, and a second study which

disagree with ours, resulting in no significant associations (**Dong et al, 2011**)⁽⁴⁸⁾.

A statistically significant relationship was found between level of insomnia / anxiety and problematic internet use. Nearly about one quarter of the studied student who were categorized as frequent or significant problems related to internet use were described to had high level of insomnia / anxiety. This result was in the same line of the result of **Aylaz et al. (2015)**⁽³⁸⁾ who reported that there was a statistically significant relationship between sleeping problems and problematic internet use among their participants. Furthermore, the current results revealed that the prevalence of severe depression among the studied students was statistically related to the problematic internet use.

This result is support the finding of other studies (**Malak et al.2017, Çam, et al 2015, Goel et al,2013 and Tang et al,2014**)^(44, 49-51) indicating a relationship between anxiety, depression and problematic use of internet. This can be explained as adolescents undergo many developmental changes leading them to experience social and psychological problems, therefore internet is considered as rich environment to fulfill their needs and forget their problems.

Risk factors for problematic internet use have been reported to include social

factors as age, gender, birth order, level education, unsatisfactory financial situation and social leveling⁽³⁸⁾. Many studies have investigated gender differences in internet addiction (**Kaynak et al, 2018**)⁽⁵²⁾, **Şahin, 2011**⁽⁵³⁾, **Tonioni et al, 2012**⁽⁵⁴⁾ ;and **Wu et al, 2015**⁽⁵⁵⁾. These studies found that the “Internet addiction” total scores, and the problems in social relationships subscale scores were higher in male nurses than in their female colleagues.

This result disagree with the result of the current study which revealed that there was a significant negative correlation between internet problematic use and the sex of the studied students and the females were more apt to have either frequent or significant problem related to internet use. This can be attributed to the Arab culture particularly in rural areas in Egypt that restrict the hiking of females so, they tend to spend their time using internet seeking for companionship, building social relationship and sharing feelings and ideas. In the same line, other studies (**Aylaz et.al, 2015**)⁽³⁸⁾, **Malak et al, 2017**⁽⁴⁴⁾ and **Rücker et al, 2015**⁽⁵⁶⁾ reported that the average girls seem to be affected more by the negative results of the internet more than boys.

One of the findings of this study was that the high prevalence was among students

aged 17-20 years. Significant positive correlation was observed between the age of the studied subjects and the problematic internet use. This indicates that this group is more prone to excessive Internet usage than younger adolescents. This may be explained as the older adolescents experience serious problems associated with studying. This supported by **Wu et al. (2016)** ⁽⁵⁵⁾ who reported that late adolescents (aged 15-18) had a higher prevalence of IA compared to early adolescents (aged 11-14). On the other hand, this result disagree with the study of **Ko et al, (2012)** ⁽⁵⁷⁾ who indicated that age was associated with IA in junior high school male students.

The current study revealed that significant positive correlation was observed between the students' academic grade and problematic internet use. It showed that the prevalence of frequent or significant internet use was higher in the third grade and the higher grades. This may attributed to the stresses that those students face during preparation of assignments and other assigned duties needed for clinical assessment and studying for examination. The findings of this study are contradict with a previous researches (**Sasmaz et al, 2013** ⁽⁵⁸⁾ and **Malak et al, 2017** ⁽⁴⁴⁾ that showed the prevalence of IA was higher in

the first secondary class than the second secondary.

The current results showed that significant difference was observed between students' social level and problematic internet use indicated that students of low social level had high rates of frequent or significant problematic use of internet. This may be because of the students of high social level can spend much of their times in traveling or at clubs or gem while those of low social level haven't this chance of recreation so, they spend their times on internet either for gaming or for communication with their peers. This result stresses the need of these families for interventions and strategies regarding the risks of Internet and PIU. Excessive internet use among adolescents was correlated with poorer financial standards, as was found in previous studies (**Lam et al, 2009** ⁽⁵⁹⁾; **Tsai et al, 2009** ⁽⁶⁰⁾).

Additionally, the finding of the current study is similar to past research findings of **Wu et al. (2016)** ⁽⁵⁵⁾ study who documenting that adolescents with low family income had high rates of IA. Meanwhile, this result inconsistent with the findings of (**Malak at al,2017** ⁽⁴⁴⁾ and **Alhantoushi et al, 2014** ⁽⁶¹⁾ who mentioned that students with high family income had high percentage of IA. They attributed their result to the assumption

that high-income families obtain both computer and internet connection services at home.

Subjective happiness is a state of mind or feeling characterized by pleasure or satisfaction. Since subjective happiness is correlated to satisfying relationships, positive emotions, self-perceptions of well-being, satisfaction with life, the negative effect of internet addiction on subjective happiness seems very reasonable. The result of current study revealed that nearly about three quarters of the studied subjects were feeling happy while less than one quarter of them were unhappy. However, the result of this study revealed that no significant correlations were found between the level of problematic internet use and level of happiness among the studied students.

This finding is inconsistent with previous research (Akin 2011)⁽⁶²⁾, which found that a more problematic Internet use is associated with a lower subjective happiness. A greater dependent use of the Internet was negatively linked to psychological well-being and subjective happiness.

Conclusion

In the light of the results of the current study it was concluded that, the majority of the studied students have a frequent and significant problem in relation to internet

usage which has a devastating effect on the students' mental health. Significant positive correlation was found between mental health status and the level of problems caused by internet use. The students with significant problems related to internet use reported poor mental health status. Also, it was concluded that the most affected students were females of the age group of 17-20 years old. Significant positive correlations were observed between the level of internet usage and the students' age, grade and birth order where the older students of higher academic grade were classified as having frequent or significant problematic internet use. In addition, significant positive correlations were found between studied students' mental health status and their sex and birth order.

Recommendations

- Health-promotion strategies should be implemented and evaluated in respond to problematic internet use.
- Emphasizing the role of multimedia in advocating sound internet usage.
- Further studies needed to develop and implement of rehabilitation programs, for students with psychological problems related to excessive internet usage.
- Professional monitoring in collaboration with community-based

mental health centers, youth counseling centers, and other similar facilities is needed to provide affected students with solution-oriented professional support.

- Future studies need to develop and implement rehabilitation programs, such as camp or therapeutic schools, for students with problems related to excessive internet usage, and to verify the effects of such programs.

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