Problematic Mobile Phone and Internet Use: A Comparative Study between Saudi and Egyptian Female Adolescents

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Abstract

Objective: To compare the prevalence of problematic mobile and internet use among Egyptian and Saudi adolescent females.

Methods: A cross sectional study was done on 538 Saudi and 802 Egyptian adolescent students. Participants responded to questionnaires on patterns of mobile phone and internet use. Young Internet Addiction Test (YIAT) and the Mobile Phone Addiction Scale (MPAI) were used.

Results: Saudi students showed higher rates of mobile and internet addiction, longer duration of mobile use, longer length and higher number of calls, longer time of internet use and more frequent internet use per week. A significant weak positive correlation was found between YIAT scores and MPAI scores.

Conclusion: This study indicated the need for future studies to address the related risk factors of both problems among adolescents in both countries.

Keywords: Problematic; Mobile; Internet; Saudi; Egyptian; Adolescents

Abbreviations:

PMPU: Problematic Mobile Phone Use; PIU: Problematic Internet Use; KSA: Kingdom of Saudi Arabia; YIAT: Young Internet Addiction Test; MPAI: Mobile Phone Addiction Scale; SPSS: Statistical Package of Social Science; GNI: Gross National Income; UNCTAD: United Nations Conference on Trade and Development; UNDP: United Nations Development Programme

Introduction

Problematic mobile phone use (PMPU) is a behavior which makes the individual unable to regulate his mobile phone use, leading to dependence, social and behavioral problems [1]. Problematic internet use (PIU) is the uncontrollable use of the internet which is markedly distressing and resulting in social, occupational or financial difficulties [2].

Mobile phones became an integral part of adolescent's lives [3]. It provides identity and prestige among peers [4], and offers recent technological innovations in which adolescents are highly interested [5]. That is why they are a vulnerable group to mobile phone addiction. Adolescents were also found to be vulnerable to internet addiction and to the psychological and sociological problems related to it [6]. Internet and mobile phone addiction are closely related, as studies have shown a significant correlation between the two types of addiction [7,8]. This was explained by sharing parallel lifestyles in both types of addicts [8].

Previous studies have shown that problematic mobile phone use was significantly and negatively related to cardio-respiratory fitness [9]. And excessive mobile users experience more loneliness [10], depressive symptoms, difficulty in expression of emotion, higher interpersonal anxiety and lower self-esteem [11]. Internet addiction was found to be correlated with depression, anxiety, stress [12], and low psychological well-being [13].

Previous studies have found a 1.4-17.9% prevalence of internet addiction among adolescents in Western and Eastern societies [6,14,15], and a prevalence of 0-38% of mobile phone addiction [1].

There were 16.4 million internet users in Saudi Arabia in 2013 [16], and regarding mobile phone use, Saudi Arabia has the largest number of mobile phone users worldwide [17]. In Egypt, according to the Ministry of Communications and Information Technology report in 2013, the number of internet users reached 30 million, with young people constituting more than 80% of the internet café clients [18]. The number of Egyptian mobile phone users reached 92 million in 2013 [19].

In Saudi Arabia, only two studies were carried out to address the physical adverse effects of mobile phone use [20,21]. Regarding internet addiction, a previous Saudi study carried out on secondary school students found a prevalence of 5.3% [22]. In Egypt, the same physical adverse effects of mobile phone use were addressed in a previous study [23]. And according to internet addiction, two studies were done on adolescents, one found a prevalence of 2.6% of PIU [24], and the other found a prevalence of 0.8% [25].

Studies on PIU and PMPU in Arab countries are scarce. The present study aimed at assessing the prevalence of PIU and PMPU among adolescent females in two Arab countries, Egypt and Saudi Arabia.
Methods

Study design and time frame

A cross-sectional study was carried out on adolescent female students from Egypt and Saudi Arabia in the time frame from November 2014 to February 2015.

Sampling methodology

For the Egyptian sample, multistage sampling methodology was done, where the secondary school community of Menoufa Governorate was the sampling frame. Two private and public schools were randomly chosen. Only female classes in both schools were considered.

There were 12 female classes for the 3 grades of the public school, and 9 female classes for the 3 grades of the private school. The total number of female students in both schools was 839, and after exclusion of the non-respondents, the response rate was 95.5% and 802 students constituted the Egyptian sample. For the Saudi sample, the same sampling methodology was followed, where the secondary school community of Taif city in KSA was the sampling frame. From the twelve female secondary schools in the city, two schools (public and private) were chosen following simple random sampling methodology. In each school, there were 9 classes for the 3 grades. The total number of students in the 18 classes in both schools was 585 students. Students who refused sharing in the study or were absent during the study days were excluded. After exclusion of the non-respondents, the response rate was 91.9%, and a total sample of 538 students constituted the Saudi sample. The aim of the study was explained to schools managers and students.

Ethical considerations

Official approvals were obtained from the ethics committee of scientific research of Taif University, and from the school headmasters in KSA. Approvals were obtained also from the ethics committee of the faculty of medicine of Menoufa University. Verbal consents were obtained from the respondent students before sharing in the study.

Study instrument

Students were asked to complete a questionnaire to collect data about (a) age and educational grade, (b) Pattern of mobile phone use: duration of having a mobile phone, mobile type, duration of daily mobile use per minutes and number and length of daily calls, (c) Pattern of internet use: time spent on-line per day and frequency of internet use per week.

To collect data about internet and mobile phone addiction, two scales were used. The researcher explained to students how to fill these two scales. The first scale was the Arabic version of the Young internet addiction test (YIAT) which was validated in a previous Lebanon study [26]. It is a 20-items questionnaire where students were asked to indicate their answer for each item on a Likert scale ranging from 1 to 5, with 1 indicating “not at all” and 5 indicating “always.” The total scores ranged from 20-100. Students were classified according to their scores into: internet addicts (score from 70 to 100), potential internet addicts (score from 40 to 69), and non-addicts with a score less than 40. The same cut offs were used to measures different levels of internet addiction in other studies [27].

Data about mobile phone addiction were collected by the mobile phone addiction scale (MPAI). It is a 17 items scale where one answer for every item was allocated on a Likert scale ranging from 0 to 4. The internal reliability of the MPAI was reported in previous studies [28,29]. The cut-off point score for MPAI scale was 51, where students who obtained scores higher than 51 were considered as mobile addicts [28,29].

According to the literature review, no study was carried out in any of the Arabic countries to assess mobile phone addiction, so there was not any Arabic validated version of any mobile phone addiction scale. In the present study the mobile phone addiction scale was translated to Arabic by a health care professional and an expert in the field of translation fluent in both Arabic and English. The Arabic form was back translated into English by another two experts fluent in the same languages who were blinded to the original English version of the scale. Then, the back translated version was compared with the original English version of the scale to ensure that all questions were properly translated and to check the translation quality. Afterwards, a pilot study was carried out on 90 Egyptian students and 60 Saudi students to check the clarity, comprehension and the interpretation of each item of the Arabic questionnaire form.

To differentiate between using the mobile phone as phone only or source of internet, questions about duration of mobile use meant whether with use of the internet or not. And question on the length of daily calls meant duration of calls when offline or online (using the internet for free calls or without internet use). Where questions on time spent on-line per day and frequency of internet use per week meant the use of internet whether on the smartphones or any other computer in purposes other than calls.

Data analysis

Data were coded, tabulated and analyzed using [SPSS] version 20 (Armonk, NY: IBM Corp.). Descriptive data was expressed as numbers and percentages, and the Chi-square (χ2) test was applied to test the relationship between variables. Quantitative data was expressed as mean and standard deviation (Mean ± SD), and Mann-Whitney (U) test was applied to compare means for groups not normally distributed. Spearman correlation test was applied to test the relationship between quantitative variables. A p-value of <0.05 was considered as statistically significant.

Results

In Table 1, a significant difference was found between Egyptians and Saudis according to different parameters, as Saudi students showed significant higher rates of having a mobile phone (100% vs. 96.5%) and owning smart phones (71.6% vs. 38%). In addition they showed a significant longer period (more than 3 years) of having a mobile phone (88.8% vs. 65.5%) and a significant difference in pattern of mobile phone use (longer duration of mobile use, longer length of daily calls and higher number of calls).

The MPAI scores were significantly higher among Saudi students, and regarding the pattern of internet use, Saudi students showed significantly longer time of daily internet use and more frequent internet use per week. According to YIAT scores, Saudi students showed a significant higher mean score (42.93 ± 14.71), compared to the Egyptian students (39.85 ± 11.22).

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<table>
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<th>Saudi students</th>
<th>Test</th>
<th>p-value</th>
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<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Grad</td>
<td>269</td>
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<tr>
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<td>256</td>
<td>33</td>
<td>244</td>
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<tr>
<td>Mean ± SD of students age (Years) (17 ± 1.03 years)</td>
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<td>16.96 ± 0.97</td>
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<td>Having a mobile phone</td>
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<td>Yes</td>
<td>774</td>
<td>96.5</td>
<td>538</td>
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<td>3.5</td>
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<td>30&lt;60 minutes</td>
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<tr>
<td>&gt; 60 minutes</td>
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<td>5.2</td>
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<tr>
<td>Duration of mobile use (minutes/day)</td>
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<td>27.33 ± 24.33</td>
<td>U test 139795</td>
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<td>Number of calls daily</td>
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<td>2.63 ± 1.05</td>
<td>U test 111284</td>
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<td>length of daily calls</td>
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<td>8.32 ± 5.78</td>
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<td>40.25 ± 8.015</td>
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<td>Time spent on-line per day</td>
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<td>70.1</td>
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<td>2&lt;4 h</td>
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<td>25.6</td>
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<td>2.4</td>
<td>23</td>
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<tr>
<td>Frequency of internet use per week</td>
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</table>
Table 1: Distribution of the studied students regarding their characters, pattern of mobile phone, internet use and scores on YIAT and MPAI.

Regarding mobile phone addiction, a significant difference was found between the two groups, where 11.7% of Saudi students were classified as mobile addicts compared to 6.1% of the Egyptian students (Figure 1).

![Figure 1: Distribution of students regarding mobile phone and internet addiction.](image1)

![Figure 2: Relationship between mobile addiction and duration of owning a mobile phone.](image2)

![Figure 3: Relationship between internet and mobile phone addiction and student's grades.](image3)

![Figure 4: Scatter plot of YIAT scores against MPAI scores.](image4)

Figure 2 shows that the percent of mobile phone addicts among students who owned a mobile phone for more than 3 years was significantly higher than among those who owned it for less than 3 years.
Older students in the 3rd grade showed significant higher rates of mobile phone addiction, where 46.4% of 3rd grade students were addicts compared to 16.4% and 37.3% of the 1st and 2nd grades students respectively (Figure 3).

The prevalence of PIU and potential problematic internet use was significantly higher among Saudi students (5.8% vs. 1.6% for the Egyptian students) and (36.1% vs. 34.5% for the Egyptian students) respectively (Figure 1). Higher rate of PIU was found among 3rd grade students, as the prevalence among 3rd grade students was 44.2% compared to 59.5% and 16.3% for the 1st and 2nd grades (Figure 3).

Figure 4 shows a significant positive correlation between YIAT scores and MPAI scores ($r=0.127$, $p \leq 0.001$).

Discussion

Mobile phone ownership

In the present study all Saudi students reported owning a mobile phone compared to 96.5% of Egyptian students (Table 1). This result is in line with official reports demonstrating the excessive ownership and use of mobile phones by Saudi population. Of those reports, is that issued by the United Nations Conference on Trade and Development (UNCTAD) which stated that there are 180 mobile phones for every 100 residents in Saudi Arabia [17]. Another report was issued by the Saudi Communication and information technology commission in 2013, which stated that the total number of mobile subscriptions in Saudi Arabia is about 51 million, which nearly doubles the number of the country population in 2013 [16].

The percent of Egyptian students who own a mobile phone is consistent with that observed in a previous Italian study where 96% of 14-18 teens owned at least one mobile phone [30]. It is also in line with an American study which showed an ownership prevalence of 96.7% [31]. These results are also going with the report issued by the Egyptian Ministry of Communications and Information Technology in 2013, where the number of Egyptian mobile phone users reached 92 million, which is nearly equal to the number of country population [19].

Duration of having a mobile phone

The present study showed that 88.8% of Saudi students owned a mobile phone for more than 3 years compared to 65.5% of Egyptian students, and 71.6% of them have smartphones compared to 38% of Egyptian students (Table 1). This could be attributed to the better socioeconomic standard of Saudi Arabia which has an oil-based economy and ranks as the largest exporter of petroleum [32], a matter that has a great impact on Gross National Income (GNI) per capita.

Duration and frequency of mobile phone use

The Saudi students showed longer duration of mobile use, longer length of daily calls and higher number of calls compared to Egyptian students (Table 1). This result is in agreement with a previous Saudi study which showed an extensive use of mobile phone by the Saudi population [21]. However, there is a difference between the results of the present study and the previously mentioned one regarding the duration of daily calls [21]. In the present study 19.7% of Saudi students mentioned duration of 30-60 minutes of daily calls, while 8% mentioned more than 60 minutes compared to (10.5% and 4.6%) in the former study respectively. This difference could be explained by the sample difference, as the former study was carried out in a sample with an age ranging from 18-42 years [21]. Another explanation could be the attractive characteristics of the mobile phone to adolescents which provides identity and prestige among peers, in addition to being a source of entertainment and social relationships [4,5].

Mobile addiction prevalence

A higher prevalence of mobile phone addiction was observed among Saudi students (11.6% vs. 6.1% for Egyptian students) (Figure 1). A significant difference was also found between Egyptian and Saudi students as regards the MPAI scores, where Saudi students showed higher scores. Mobile phone addiction prevalence among Saudi and Egyptian students lies within the world wide range (0-38%) which was mentioned in a previous literature review [1]. The prevalence among Saudi students is somewhat in agreement with the prevalence reported from a British study done on adolescents which showed a prevalence of 10% [33]. It is also in line with previous studies done in Europe [34]. In the same time, it is higher than that reported from an Italian study carried out on adolescents which showed a prevalence of 6.3% [35], and it is lower than that observed in a study done on the same age group in Taiwan where the prevalence was 16.4% [3]. This observed diversity in mobile addiction prevalence in the previously mentioned studies could be attributed to the usage of different instruments, assessment tools, cut-offs, classification criteria, and the difference in the social and cultural contexts which makes the comparability of the findings difficult.

Regarding Egyptian students, the prevalence of mobile phone addiction is consistent with the previously mentioned Italian study (6.3%) [36].

The observed higher prevalence of mobile addiction among Saudi students could be attributed to the high percent of Saudi students who own smartphones. Smartphones provide free messengers and social media applications that provide users with free chat when they can get Wi-Fi access [35]. In addition, smart-phone owners call and text more than traditional mobile phone owners, which make them at a greater risk to develop high usage pattern and addiction [36]. This difference could also be explained by the significant longer duration of mobile use, longer length of daily calls and the higher number of calls reported by Saudi students compared to Egyptian students. This association was demonstrated in previous studies which showed higher rates of addiction among users who use the mobile phone more frequency and for longer duration [37].

Mobile addiction and students grades

In the present study, higher rates of mobile phone addiction were found among older students in the 3rd grade (Figure 3). The same result was found in a study done on Taiwanese adolescents where higher level of problematic mobile phone use was found among students 15 years or older compared to students younger than 15 years [3]. Another study explained this by the tendency of older individuals to get acquainted with the new technology [38].

Mobile addiction and duration of mobile ownership

In the present work, a significantly higher percent of mobile phone addicts was found among students who owned a mobile phone for more than 3 years (Figure 1). The relationship between mobile addiction and the longer duration of mobile ownership was demonstrated in a previous study, where mobile phone addiction level was significantly higher among students who owned a mobile at the
age of 13 and below compared with students whose age for first mobile phone use was 16 and above [37].

PIU prevalence

Saudi students reported significantly longer duration of daily internet use and more frequent internet use per week in the present study (Table 1). A significantly higher prevalence of PIU and potential problematic internet use was also found among Saudi students compared to Egyptian students (Figure 1). The prevalence of PIU among Saudi and Egyptian students lies within the reported Middle East prevalence (1%-12%) [39].

The Saudi result is consistent with results from a previous Saudi study done in Riyadh city on secondary school students which showed a prevalence of 5.3% [22]. And it is in line with other studies done on adolescents [40]. The prevalence of PIU among Egyptian students is consistent with that revealed from previous national studies [24,25], and international studies done on the same age group [41]. However it is much lower than the prevalence observed in a recent Egyptian study done on older university students, where 13% of the participants had PIU [42]. This high figure among university students was explained previously by the too much unstructured time the university students have, which makes them seek for companionship through the internet and use the internet to escape the university sources of stress from studying and exams [43].

The observed difference in internet addiction between Saudi and Egyptian students could be attributed to the difference in internet population penetration which was estimated to be 54% for Saudis compared to 44.1% for Egyptians [44]. In addition to the steady progress in adopting computers and the availability of computers for Saudi population which led to an increase in the computer penetration among Saudis [45].

PIU and students grades

In this study, higher prevalence of PIU was found among the 3rd grade students when compared to the younger grades (Figure 3). This higher prevalence of PIU was also observed in other studies [46], which was attributed to the tendency of older students to have greater developmental dynamics, such as a stronger need to develop a sense of identity, and more access to the internet, than younger students when they first entered into secondary schools [47].

In the present study, a number of social and lifestyle differences between Saudi and Egyptian females could explain the significant higher prevalence of internet and mobile phone addiction among Saudi females. Of them is the Saudi Arabia reputation for being more restrictive of women’s mobility and public activity due to the implementation of Islamic principles in the society [48]. This makes Saudi females having more time to spend on computer, internet use [49], and screen activities [50], a trend that have changed to spending more time on smart phones, or iPads [51]. Another reason for this excessive use could be the low studying load on Saudi girls as the quality of education is lower for females than males, in addition to the less qualified teachers [52].

Regarding Egyptian adolescents, studies have shown the engagement of Egyptian females indifferent patterns of leisure time activities and a lower level of internet use [53]. In addition to the comparable higher prevalence of physical activity among them [54]. And for adolescents, they were found to spend more time of watching TV and doing religious activities [55]. The lower level of internet use among Egyptian females was observed in the population council’s Survey of Young People in Egypt (SYPE), where 23% of Egyptian youth are internet users, only 5% of them were females [19].

Correlation between mobile and internet addiction

The significant positive correlation found between YIAT scores and MPAI scores (Figure 4) was revealed from previous studies [7-9]. This observed correlation was explained by increasing mobile access to the internet by teens with increasing the adoption of smartphones [56], in addition to the extensive usage of social networking on smart-devices among teens due to the ability of continuous connection to the internet [35].

Conclusion

The aim of the present study was to compare the prevalence of problematic mobile phone and internet use between Egyptian and Saudi adolescent females. Based on the results of this study, a significant higher prevalence of both mobile and internet addiction was found among Saudi students who had more intensive use of mobile and internet as regards frequency and duration. A significant positive correlation was also found between YIAT scores and MPAI scores. Based on the results of this study, an appropriate health educational program directed to adolescents about the proper use of the mobile phone and internet, and the adverse health consequences of their excessive use should be carried out in both countries. These programmes can benefit from these communication channels to deliver health and healthy lifestyles messages to those young people and the whole family.

Study Limitations

The first limitation of this study was being a cross-sectional study where the causality and the direction of relationships cannot be determined. The second was the usage of a self-reported questionnaire which has the probability of recall bias. The third limitation was the rules of the educational authorities in KSA that prevent female researchers from conducting studies on male students. That is why the researchers assessed the prevalence of the two studied problems among female students only.

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