Health-related quality of life among female university students in Dammam district: Is Internet use related?

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Abstract:

BACKGROUND: Quality of life (QOL) is defined by the World Health Organization as the individual’s perception of his/her position in life, within the context of culture and system of values in which the individual lives, and as relates to his/her objectives, expectations, standards, and concerns. Life in university is so stressful; it can affect health-related QOL (HRQOL). There are many factors that affect HRQOL of university students. The aim of this study was to assess the QOL of female university students in Dammam, Saudi Arabia, and identify factors related to it, with special emphasis on Internet use.

MATERIALS AND METHODS: This cross-sectional study surveyed 2516 female students at Imam Abdulrahman Bin Faisal University in Dammam, using a self-administered questionnaire with sections on sociodemographics, score for Internet use/addiction (IA), and an assessment of HRQOL. Two latent factors were extracted: physical component summaries (PCSs) and mental component summaries (MCSs). Bivariate analyses and MANOVA were then performed.

RESULTS: The overall PCS and MCS were 69% ± 19.6 and 62% ± 19.9, respectively. Almost two-thirds of the students were found to have IA or possible IA. Students whose parents had lower education reported less PCS. Students with high family income reported higher PCS and MCS than those with a lower income. MANOVA model has shown that the higher the IA score, the lower the score of both the PCS and MCS.

CONCLUSION: HRQOL in female students was found to be affected by parental educational level, family income, and problematic Internet use.

Keywords:
Internet addiction, quality of life, university students

Introduction

The term, quality of life (QOL), was first used in the US after the Second World War to demonstrate that having a good life is of more value than just being financially well off.[1,2] QOL is defined by the World Health Organization (WHO) as the individual’s perception of his/her position in life within the context of culture and system of values where the individual lives, and in relation to his objectives, expectations, standards, and concerns.[3] QOL issues have become steadily more important so that the measurement of health should include not only an indication of changes in the frequency and severity of diseases, but also an estimation of well-being, which can be assessed by measuring the improvement in the QOL related to health.[4] Health-related QOL (HRQOL) is a multidimensional concept that includes domains related to physical, mental, emotional, and social functioning. It goes beyond the direct measures of population health, life expectancy, and causes of death.

How to cite this article: Barayan SS, Al Dabal BK, Abdelwahab MM, Shafey MM, Al Omar RS. Health-related quality of life among female university students in Dammam district: Is Internet use related?. J Fam Community Med 2018;25:20-8.
IA is a worldwide mental health problem in university students and has negative psychosocial and physical effects\[^{12}\] and the overall QOL.\[^{10}\] Despite the widespread use of Internet in the Kingdom of Saudi Arabia (KSA), there is not enough data on the relationship between Internet use or addiction in adolescents and young adults and its effects on the QOL.

The objective of the present study was to assess the overall HRQOL of female university students in Dammam, Saudi Arabia, and identify factors related to HRQOL, such as sociodemographic elements, with a special emphasis on problematic Internet use.

**Materials and Methods**

This cross-sectional study surveyed 2516 female university students proportionately drawn from the departments of Art, Education and Sciences of Arrayan campus, Imam Abdulrahman Bin Faisal University (IAU). After consultation with the administration, the students were addressed in their classrooms. Students’ support for the completion of the questionnaire was taken as consent. The overall missing answers did not exceed 21 (0.8%) for any of the questions. Participants completed a self-administered questionnaire with sections on sociodemographics, patterns, and effect of Internet use and an assessment of HRQOL.

Guided by an analysis of the content of Young’s short version IA test,\[^{20}\] an IA tool that covered aspects of the loss of control of time management, craving for the Internet and social problems, was developed. The IA tool assessed IA of respondents by means of 10 yes–no questions. These questions were aggregated to produce a compound percentage score with a sum of all scores divided by ten, so that the higher the score, the higher the perceived addiction. This was developed according to the results obtained from a pilot study that tested the questionnaire to obtain more internal consistency and a better response rate. Internal consistency reliability of the compound score was confirmed by a calculated Kuder–Richardson 20 value of 0.72, which was considered satisfactory. The ceiling and flooring effects were found to be 4.7% and 2.3%, respectively. Then, the IA score was categorized as non-IA (IA score <40%), possible IA (40% - <70%), and Internet addict (70%+).\[^{21}\]

Guided by the 12-item short-form health survey (SF-12)\[^{22}\] that is used as a generic measure of HRQOL besides the results of the pilot study, an Arabic questionnaire was developed and modified to measure performance status by eight concepts: physical functioning, role limitations resulting from physical health problems, bodily pain, general health, vitality (energy/fatigue), social functioning, role limitations resulting from emotional problems, and...
mental health (psychological distress and well-being). Reverse coding was performed where necessary so that lower scores depicted a bad evaluation and higher scores a better evaluation. The percentage of the highest possible score was then computed for all 12 questions, so for example, for the 5-point Likert scale questions, the value was multiplied by 100 and divided by 5.

In order to understand the latent structure of these QOL questions (indicators), a principal component analysis (PCA) was used. This method comes up with a small number of principal factors that explain a large amount of variation within the indicators. The analysis was performed in Stata software version 12 (Stata Statistical Software: Release 12. College Station, TX: StataCorp LP, USA). The data were first checked using the Kaiser-Meyer-Olkin test, which yielded a result of 0.77 and the Bartlett’s test, which returned significant. Both of these tests indicated that the data were suitable for a PCA. The first was used to assess whether the partial correlation coefficients were small, indicating that the indicators were highly correlated; and the second was to check whether the correlation matrix was an identity one. After the model was run, the number of retained factors depended on the Kaiser Rule and interpretability of these factors. The initial factors were then rotated to facilitate their interpretation through an oblique rotation which allowed the resulting factors to correlate.

The PCA initially resulted in three factors which accounted for 22.6%, 17.5%, and 13% of the variance. The internal consistency for each factor is shown in Table 1. Due to the inability to interpret factor 3, and its low internal consistency compared to factors 1 and 2 (0.53), it was discarded. The retained two-factor construct explained 40% of the variance with factor loadings >0.30 as acceptable (>0.5 in half of the items). Question 9 which concerned the perceived general well-being on the third component was analyzed separately with IA. The resulting two factors were labeled as the physical and mental components. The highest ceiling and flooring effects were observed in questions 1, 2, and 9.

Subsequently, Cronbach’s alpha and item-to-domain correlational analysis were used to determine the internal consistency of the items within each factor. This further provided the rationale for the decision to retain the resulting factors. The ceiling and flooring effects were used to examine the score distributions of each of the 12 questions.

The 5-point score for perceived general well-being (first item in the 12 questions) was presented in three categories, namely “Poor” combined the lower 2 scores, “Fair” for the middle score, and “Good” for the highest 2 scores.

**Statistical analysis**

Statistical analyses were performed using IBM SPSS version 21.0 and confirmed by STATA version 12; 2-tailed statistical significance was set at $p < 0.05$. Frequency distribution and summary statistics (range, median, mean, and standard deviation) were used as descriptive analysis. Differences between PSC and MCS for Saudis and non-Saudis were analyzed using independent samples $t$-test, and among all the other factors using ANOVA with a further application of Bonferroni correction for pairwise comparisons. Chi-square test was used to test association between categories of IA and those of perceived general well-being. MANOVA was performed with PCS and MCS as dependent variables and all factors studied in bivariate analyses as independent factors.

**Results**

The present study comprised 2516 female students of IAU-City of Dammam, aged from 17 to 25 years with an average age of 21; further distribution of the sample according to sociodemographic characteristics and scholastic achievement is displayed in Table 2. About 30% of the students were considered as having IA, while 38.2% had a possible IA problem.

Concerning average HRQOL PCS among the students, overall PCS percentage was 69% ± 19.6 [Table 3]. Non-Saudi students had higher scores than Saudi students. Students whose fathers and mothers had lower education reported lower scores. Students with total family income >10,000 SR per month reported higher scores than those with lower incomes. Also, those who had “A” grades the year before reported higher PCS (70% ± 19.8) than those who got “D” (66% ± 19.3).

As regards average HRQOL “mental component score” (MCS) of the students, overall MCS percentage was 62% ± 19.9 [Table 3]. Students whose mothers were business women reported lower scores than those whose mothers worked as teachers, nurses, or clerks. Students with a total family income of >10,000 SR per month reported higher scores than those with incomes <5000 SR. Students who had higher grades, i.e., “A” or “B” grades in the previous year reported higher MCS (63.2% ± 19.3 and 63%±20, respectively) than those who got “D” (59.2% ± 18.6), yet this was not statistically significant.

Students who were considered not to have IA reported the highest PCS and MCS, those considered as possible IA had lower scores in both components, while students considered to be Internet addicts reported the lowest PCS and MCS; the differences among the three categories were statistically significant ($p < 0.0001$) [Figure 1].
Table 1: Factor loadings, item-total correlations, and Cronbach's alpha coefficients of the short-form quality of life instrument in University of Dammam female student population

| Variables                                           | Loadings to each factor | Item-total correlation | Cronbach's alpha | Cronbach's alpha if item deleted | Ceiling/Flooring (%) |
|-----------------------------------------------------|-------------------------|------------------------|------------------|----------------------------------|----------------------|
| Factor 1 (mental component)                         |                         |                        |                  |                                  |                      |
| 1. How long have you felt depressed?                | 0.57                    | 0.67                   | 0.75             | 0.70                             | 36.4/17.1            |
| 2. Has your psychological condition reduced your desire to perform your duties? | 0.56                    | 0.82                   | 0.75             | 0.75                             | 43.6/16.4            |
| 3. Has your psychological condition prevented you from performing your duties with the same diligence as before? | 0.83                    |                        | 0.64             | 20.0/10.9                        |                      |
| 4. How long has your mental/physical health constrained your social life? | 0.36                    | 0.68                   | 0.65             | 20.4/6.9                         |                      |
| Factor 2 (physical component)                       |                         |                        |                  |                                  |                      |
| 5. How much does your physical health restrict you from performing your regular duties? | 0.42                    | 0.78                   | 0.78             | 0.77                             | 12.6/6.4             |
| 6. How much does your physical condition restrict you from climbing several floors of stairs? | 0.52                    | 0.72                   | 0.67             | 13/12.6                          |                      |
| 7. Has your physical condition reduced your desire to perform your duties | 0.53                    | 0.71                   | 0.67             | 12.8/8.9                         |                      |
| 8. Has your physical condition prevented you from performing certain activities? | 0.37                    | 0.70                   | 0.76             | 18.7/7.2                         |                      |
| Factor 3 (un-named)                                 |                         |                        |                  |                                  |                      |
| 9. How would you describe your overall health?       | 0.40                    | 0.52                   | 0.53             | 0.47                             | 36.4/17.1            |
| 10. How long have you felt calm?                    | 0.59                    | 0.76                   | 0.41             | 15.6/2.9                         |                      |
| 11. How long have you felt energized?               | 0.60                    | 0.77                   | 0.42             | 13.0/4.1                         |                      |
| 12. To what extent has your physical pain hampered your daily activities? | 0.30                    | 0.41                   | 0.52             | 20.4/0.9                         |                      |

Students suffering from any chronic diseases, pain, tremors, or disturbed sleep reported lower PCS and MCS.

Perceived good general well-being was lower in percentage in students considered to be IA (71%) than those who were non-IA (83%) or possible IA. Perceived poor general well-being was higher in percentage in IA (8%) than possible IA and non-IA (3%). The differences were statistically significant ($P < 0.0001$) [Figure 2]. After adjusting for all studied factors in a bivariate analysis by entering them into MANOVA model, Table 4 shows significant independent factors for PCS and MCS of HRQOL.

The higher the IA score, the lower both PCS and MCS. Saudi students had lower PCS than non-Saudis. Students whose fathers had higher education had higher physical scores. Compared to housewife mothers, students whose mothers were business women had lower MCS, while students whose mothers were teachers, nurses, or clerks had higher PCS and MCS. Compared to students with total family income of >10,000 SR, students in a family with an income of <5000 SR per month had lower PCS and MCS and those with 5000–10,000 SR had lower MCS. Students who reported that they had pain in the hand had lower PCS and those who reported hand tremors or disturbed sleep had lower MCS than those who did not. Students who had “D” grades the previous year had lower MCS than those who had higher grades.

**Discussion**

Since early nineties, there has been a significant increase in the number of students in universities in the KSA, and now the university student population constitutes a major part of young adult population. Women comprise 60% of Saudi Arabia’s college students.[28,29] The transition to higher education has been recognized as a critical period that may affect student QOL. University students, especially females, are a special population group with regard to health issues, concerns, burdens, and worries. They are subjected to a diversity of stresses, such as...
This is the first study to examine QOL in university students in the KSA using the Arabic version of the SF-12 derived from SF-36. The current study shows that overall PCS percentage was 69% ± 19.6 and overall MCS percentage was 62% ± 19.9. The results of the study indicate that the higher value was obtained for physical functioning and the lower for mental functioning, which is consistent with the results of other studies which adopted SF-36 to study QOL in university students. At King Khalid University in the KSA, female students scored 73.58 + 16.01 in physical functioning and 58.21 + 18.14 in emotional well-being. In a Jordanian university, females had a mean score of 83.58 + 18.60 in physical functioning and 53.58 + 22.30 in emotional well-being, whereas in Lebanon, they scored 88.8 + 10.6 and 54.0 + 20.7 in physical functioning and emotional well-being, respectively. Turkish female university students scored 50.09 ± 8.63 and 43.67 ± 9.50 in physical and mental functioning, respectively. In Croatian students, the summary scores in physical and mental components were 54.89 ± 7.03 and 42.80 ± 9.32, and in Serbia, female students had 78.4 ± 14.0 and 68.6 ± 19.1 in PCS and MCS, respectively. In the current study, the lower MCS than PCS scores obtained agree with most of the studies in Arab and Western countries. University students are subjected to many stresses related to their studies and their future. These stressful life situations tend to impact on female students’ self-evaluation of their well-being.

HRQOL is influenced by a number of factors. In the present study, non-Saudi female students had higher scores than Saudi students for both PCS and MCS, possibly due to the cultural conservatism in Saudi Arabia that proscribes physical activity, which consequently affects their perception of physical well-being. Our study shows that students whose parents had little education reported lower scores of PCS and MCS. Evidently, education enhances people’s understanding

academic and social pressures and financial problems that ultimately affect their QOL.[7]

QOL is one’s subjective perception of one’s own well-being within one’s sociocultural context. HRQOL measures make it possible to demonstrate scientifically the impact of QOL (on health).[30]
Table 3: Physical component summary and mental component summary of health-related quality of life according to sociodemographics of Imam Abdulrahman Bin Faisal University female students (2015-2016)

| Nationality        | PCS Minimum-maximum | PCS Median | PCS Mean±SD | MCS Minimum-maximum | MCS Median | MCS Mean±SD |
|--------------------|---------------------|------------|-------------|---------------------|------------|-------------|
| Saudi              | 25-100              | 67         | 69±19.6     | 17-100              | 63         | 62±19.9     |
| Non-Saudi          | 22-100              | 75         | 74±19.2     | 17-100              | 67         | 63±18.3     |
| Marital status     |                     |            |             |                     |            |             |
| Single             | 22-100              | 67         | 69±19.5     | 17-100              | 63         | 62±20.0     |
| Married            | 25-100              | 67         | 70±19.6     | 17-100              | 65         | 64±19.2     |
| Divorced           | 25-100              | 71         | 71±24.7     | 17-92               | 54         | 59±21.2     |
| Widowed            | 42-100              | 73         | 71±22.4     | 29-96               | 52         | 56±25.4     |
| Father’s education |                     |            |             |                     |            |             |
| Illiterate or read and write | 25-100 | 63         | 63±19.2     | 17-100              | 58         | 60±20.0     |
| Primary up to diploma | 25-100 | 71         | 70±19.5     | 17-100              | 63         | 63±19.6     |
| University or postgraduate | 22-100 | 71         | 70±19.4     | 17-100              | 63         | 63±20.2     |
| Mother’s education |                     |            |             |                     |            |             |
| Illiterate or read and write | 25-100 | 67         | 67±19.4     | 17-100              | 63         | 61±19.3     |
| Primary up to diploma | 25-100 | 71         | 71±19.5     | 17-100              | 63         | 63±19.7     |
| University or postgraduate | 22-100 | 67         | 69±19.7     | 17-100              | 63         | 62±20.7     |
| Father’s occupation|                     |            |             |                     |            |             |
| Businessperson     | 22-100              | 67         | 68±19.8     | 17-100              | 63         | 61±19.7     |
| Professor, physician, engineer | 25-100 | 75         | 72±20.4     | 17-100              | 67         | 65±19.1     |
| Military           | 25-100              | 67         | 69±18.7     | 17-100              | 63         | 62±21.0     |
| Clerk, secretary, salesman | 25-100 | 69         | 70±19.6     | 17-100              | 63         | 63±20.2     |
| Retired            | 25-100              | 71         | 70±19.3     | 17-100              | 63         | 62±19.4     |
| Other              | 25-100              | 71         | 70±20.5     | 17-100              | 63         | 62±20.6     |
| Mother’s occupation|                     |            |             |                     |            |             |
| Homemaker          | 22-100              | 67         | 69±19.6     | 17-100              | 63         | 62±19.7     |
| Business woman     | 29-100              | 63         | 66±20.1     | 17-100              | 54         | 57±21.0     |
| University professor | 42-100             | 54         | 63±20.5     | 29-96               | 58         | 60±19.3     |
| Physician          | 29-100              | 56         | 62±23.0     | 29-92               | 71         | 63±22.9     |
| Teacher, nurse, clerk | 25-100          | 73         | 71±19.1     | 17-100              | 67         | 64±20.3     |
| Other              | 29-100              | 71         | 70±20.1     | 17-100              | 63         | 66±19.0     |
| Total family income (SR) |       |            |             |                     |            |             |
| <5000              | 25-100              | 67         | 66±18.2     | 17-100              | 58         | 60±18.9     |
| 5000-10,000        | 25-100              | 67         | 69±19.4     | 17-100              | 63         | 62±19.7     |
| >10,000            | 22-100              | 71         | 71±19.9     | 17-100              | 67         | 63±20.2     |
| Last year’s grades |                     |            |             |                     |            |             |
| A                  | 25-100              | 71         | 70±19.8     | 17-100              | 63         | 63±19.3     |
| B                  | 25-100              | 67         | 69±19.4     | 17-100              | 63         | 63±20.1     |
| C                  | 22-100              | 67         | 69±19.5     | 17-100              | 63         | 61±20.6     |
| D                  | 25-100              | 67         | 66±19.3     | 17-100              | 58         | 59±18.6     |
| Total              | 22-100              | 67         | 69±19.6     | 17-100              | 63         | 62±19.9     |

Values in the same column not sharing the same subscript letter are significantly different at \(P<0.05\) in the two-sided test of equality for means. Tests are adjusted for all pairwise comparisons using the Bonferroni correction. SD = Standard deviation, PCS = Physical component summary, MCS = Mental component summary

and thinking and molds their perception of life which is subsequently reflected in their offspring.

There are few studies on the socioeconomic status (SES) of family and QOL. Economic support from the family is essential in a student’s life. We related the scores of HRQOL of students with family incomes per month, as a direct measure of SES. Students with a total family income of >10,000 SR per month reported higher scores than those on incomes <5000 SR. This was in accord with the study of Belgrade University students in whom the total SF-36 score significantly correlated with the average monthly family income \((P = 0.002)\).[33]

Significant relationship between QOL and academic achievement was shown in both bi- and multi-variate analyses in which students who reported that they had had “A” grades the previous year had higher PCS than those who reported “D” grades. Students who had had higher grades, i.e., “A” or “B” grades the previous year reported higher MCS than those who got a “D”. Very few studies have examined the relationship between QOL
Table 4: MANOVA results for independent factors associated with physical component summary and mental component summary, Imam Abdulrahman Bin Faisal University female students (2015-2016)

| Parameter                        | PCS  |             |             |             |             |             |             |             |             |             |             |             |
|----------------------------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                  | B    | SE          | t           | p-Value     | 95% CI      | Partial η²  | B            | SE          | t           | p-Value     | 95% CI      | Partial η²  |
| Intercept                        | 78.613 | 3.243  | 24.240     | 0.000    | 72.253     | 84.973     | 0.202       | 72.978      | 3.282  | 22.237     | 0.000     | 66.543  | 79.414     | 0.175   |
| Internet addiction score         | -0.141 | 0.016   | -8.973     | <0.001   | -0.172     | -1.111     | 0.033       | -0.187      | 0.016   | -11.11     | <0.001   | -0.218  | -0.156     | 0.056   |
| Nationality                      |       |            |             |           |             |             |             |             |             |             |             |             |
| Saudi                            | -6.616 | 2.013  | -3.286     | <0.001   | -10.56     | -2.668     | 0.005       | -1.696      | 2.037   | -0.833     | 0.405    | -5.691  | 2.299      | 0.0001  |
| Non-Saudi                        | Reference |     |            |           |             |             |             | Reference |     |            |           |         |           |         |
| Father's education               |       |            |             |           |             |             |             |             |             |             |             |             |
| Primary up to diploma            | 5.993  | 1.409   | 4.254      | <0.001   | 3.230      | 8.755      | 0.008       | 1.091       | 1.426   | 0.765      | 0.444    | -1.705  | 3.886      | 0.0001  |
| University or postgraduate        | 6.407  | 1.548   | 4.139      | <0.001   | 3.372      | 9.443      | 0.007       | 0.357       | 1.567   | 0.228      | 0.820    | -2.715  | 3.429      | 0.0001  |
| Illiterate or read and write      | Reference |     |            |           |             |             |             | Reference |     |            |           |         |           |         |
| Mother's occupation              |       |            |             |           |             |             |             |             |             |             |             |             |
| Businesswoman                    | -4.029 | 4.169   | -0.966     | 0.334    | -12.20     | 4.146      | 0.000       | -0.669      | 4.219   | -0.159     | 0.874    | -8.942  | 7.603      | 0.0001  |
| University professor             | -4.178 | 4.610   | -1.340     | 0.180    | -15.22     | 2.863      | 0.001       | 0.582       | 4.666   | 0.125      | 0.901    | -8.567  | 9.731      | 0.0001  |
| Physician                        | 3.460  | 1.283   | 2.740      | 0.006    | 0.984      | 5.936      | 0.003       | 3.175       | 1.278   | 2.485      | 0.013    | 0.669   | 5.681      | 0.003   |
| Teacher, nurse, clerk            | 1.630  | 2.617   | 0.623      | 0.534    | -3.502     | 6.761      | 0.000       | 3.930       | 2.648   | 1.484      | 0.138    | -1.263  | 9.122      | 0.001   |
| Other                            | Reference |     |            |           |             |             |             | Reference |     |            |           |         |           |         |
| Total family income (SIR)        |       |            |             |           |             |             |             |             |             |             |             |             |
| <5000                            | -3.455 | 1.409   | -2.452     | 0.014    | -6.218     | -0.692     | 0.003       | -3.249      | 1.426   | -2.279     | 0.023    | -6.045  | -0.453     | 0.002   |
| 5000-10,000                      | -1.610 | 0.867   | -1.858     | 0.063    | -3.310     | 0.990      | 0.001       | -1.975      | 0.877   | -2.251     | 0.024    | -3.695  | -0.255     | 0.002   |
| >10,000                          | Reference |     |            |           |             |             |             | Reference |     |            |           |         |           |         |
| Grades                           |       |            |             |           |             |             |             |             |             |             |             |             |
| A                                | 2.557  | 1.444   | 1.771      | 0.077    | -0.275     | 5.389      | 0.001       | 2.722       | 1.461   | 1.863      | 0.063    | -0.143  | 5.588      | 0.001   |
| B                                | 2.197  | 1.434   | 1.533      | 0.126    | -0.614     | 5.009      | 0.001       | 2.942       | 1.451   | 2.028      | 0.043    | 0.097   | 5.788      | 0.002   |
| C                                | 1.812  | 1.528   | 1.186      | 0.236    | -1.184     | 4.809      | 0.001       | 0.373       | 1.546   | 0.241      | 0.810    | 2.660   | 3.405      | 0.0001  |
| D                                | Reference |     |            |           |             |             |             | Reference |     |            |           |         |           |         |
| Box's M, p-value                 | 195.7  | 0.514 |           |           |             |             |             |             |             |             |             |             |

SE = Standard error, CI = Confidence interval, UL = Upper limit, LP = Lower limit, PCS = Physical component summary, MCS = Mental component summary

and the academic achievement of university students, which make a comparison difficult. Further research is, therefore, required. However, the Jordanian study found no significant relation between QOL and academic achievement.[32] The significant results in QOL in terms of grade point average (GPA) in the current study could be due to the fact that students are elated when their GPA is high, thereby positively improving their QOL domains.

One of the important factors affecting the QOL is the IA. In the current study, IA was reported at 28.7% of the female students and 38.2% for those with possible IA. Al-Hantoshi and Al-Abdullateef reported a prevalence rate of 5.3% in secondary school students.[15] A study of Taif University students showed an estimated 4% prevalence of IA and a possible addiction in 45.3%.[16] Recently, a study to screen for IA in King Khalid University reported mild IA in 47.8% medical students, whereas 5.8% had moderate IA.[31]

IA in Jordanian university students was reported as 40%, while it was 22.2% in Iranian university students.[12,18] These differences in the prevalence of IA in various studies may be due to the diversity of the study designs, different assessment methods used, and the sampling from different subpopulation.[14]

IA has been found to affect the overall QOL and cause detrimental physical and psychosocial effects. In our current study, the higher the IA score, the lower both the

Journal of Family and Community Medicine - Volume 25, Issue 1, January-April 2018
PCs and MCS. These findings are similar to a study in India using WHOQOL-BREF where the higher Internet use, the lower QOL.[19] In Japan, a significant association had been shown between more Internet-addicted adolescents and more disturbed mental status compared to nonaddicted adolescents.[34]

“Well-being is a positive and sustainable condition that allows individuals, groups, or nations to thrive and flourish.”[35] As seen in the results, perceived good general well-being was lower percent wise in students considered IA (71%) than those who had possible IA or non-IA (83%). A cross-sectional study conducted in India revealed that adolescents who use the Internet excessively have higher scores in depression and anxiety.[19] Al-Hantoshi and Al-Abdulateef also found that Internet addicts are at a higher risk of having poor sleep, and an increased level of depression.[15] It was also observed in Turkish students that there were significant correlations between IA and psychological well-being.[36] Findings from India indicated that the level of IA is high among university students and that it affects their subjective well-being.[11]

Conclusion

HRQOL in female students was found to be affected by parental educational level, family income, and problematic Internet use.

The main limitation of the study is that the data reported here for QOL and IA are derived from self-report, which can have the problem of positivity bias.

From the study findings of HRQOL in female students, and its related factors, it is recommended that more studies are done to explore factors affecting the QOL of university students, especially as related to Internet use and its negative impact on health. IA is a growing problem that requires preventive strategies and interventions. Counseling and physical activity programs are highly recommended to help relieve students’ stress and strains and improve their health.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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