Prevalence of internet, gaming and porn addiction and their relationship with increased Stress, anxiety, and depression among Medical students in some countries in the Middle East, a cross-sectional study.

NCT Number: Not yet registered

Document date: 29 July 2025

Introduction

Internet usage has increased greatly. It is expected to be more than 4 billion by the end of this year(1). About 80% of them spend most of their internet time on social media, and are expected by 2026 to be about 50% of the total population to use social media at least once a month(1). The internet is mainly used to connect with friends, relatives, learn new skills, or for entertainment, such as video gaming (2). However, with this increasing usage, internet addiction can easily increase.

Internet addiction or pathological internet use is defined as uncontrolled, excessive use of it, with uncontrolled time consuming that can cause distress, and impairment (3,4). The prevalence of internet addiction varied between regions. A study in the seven countries in Europe reported a prevalence of addiction among adolescents to be 1%, and an additional 12.7% at risk of having addiction(5). In Turkey, a recent cross-sectional study conducted by Sayili et al found a prevalence of 18.3% (6) . In the Middle East, the prevalence varied greatly from 0.9% to 33% among adolescents (7–9). For Egypt, Ibrahim et al, 2020 assess the prevalence of internet addiction among undergraduate medical students in Assiut University. They collected data from 321 students, revealing a prevalence being 9%. They also found a statistical association between internet addiction and increasing depression among these students(10). Sayed et al, 2022 was another cross-sectional study that was conducted among pharmacy students in Egypt. They also found a prevalence being 38.5%. They also found a statistically significant association between internet addiction and stress, depression and anxiety.(11)

Additionally, internet video gaming is another addictive problem that can affect adolescents. A previous meta-analysis showed that gaming addiction prevalence ranged from 0.9% to 19.9%, with males being higher than females(12). Also, Pitanupong et al 2025 showed a prevalence of about 8.4% among Thailand medical students. (13). Shouman et al 2023 was a cross-sectional study conducted among university students in Egypt at Mansoura university. They found a 6% prevalence among these students. Again,

they found a statistically significant association between gaming addiction and psychological factors. (14)

On the other hand, overuse of the internet can lead to an increase in problematic pornography use. Karim et al. 2025(15) found a significant association between increased usage of the internet and pornography addiction (P value: <0.001). Additionally, previous studies showed a prevalence of porn addiction ranging from 3.2% to 16.6%(16). Also, a negative correlation between education level and porn addiction was observed.(17).

All these behavioral addictions increase depression, anxiety, and stress for addicts. Several cross-sectional studies have assessed the positive correlation between either internet, gaming, or porn addiction, and an increase in anxiety and depression. (6,10,13,15,18) However, to our knowledge, no single study has assessed these three addictive behaviors together with depression, anxiety, and stress in Arab countries.

Rational

Medical students, in particular, use the internet frequently. They use it in training, faculty assignments, research projects, and so on, which can make them depend greatly on the internet. This potentially can increase their addiction to the internet, subsequently increasing their addiction to video gaming and porn addiction. (19). In the Middle East, few studies have tried to assess the prevalence of internet addiction and its association with increased depression, anxiety, and stress(7,9,18) among medical students. Despite that, there is a lack of studies on gaming addiction and porn addiction.

We aim to assess the prevalence of internet addiction alongside video gaming and porn addiction among medical students and interns in the Middle East (MENA region). We also aim to assess the relationship of these three addictive behaviors with each other and their relationship with increased stress, anxiety, and depression among this population.

Research Questions

1. What is the prevalence of internet, gaming, and porn addiction among medical students in the MENA region?
2. What is the prevalence of stress, anxiety, and depression among this population?
3. What is the relation between these types of addictions and the level of stress, anxiety, and depression among this population?

Aim

To assess the prevalence of internet, gaming, and porn addiction among medical students in the Middle East region to help improve their quality of life.

Objective

1. To assess the prevalence of internet, gaming, and porn addiction among Medical students and interns in the MENA region
2. To assess the prevalence of anxiety, depression, and stress among this population.
3. To assess the relation between these addictions and depression, anxiety, and stress.

Methodology

Technical Design

1. **Study design**: Cross-sectional study
2. **Setting**: Medical students in some Middle East countries (Egypt, Sudan, Somalia, Libya, Morocco, United Arab Emirates, Jordan, Syria, Yemen, Iraq, and Palestine)
3. **Time**: From July 2025 to December 2025
4. **Population**: Arabic Medical students in the MEAN region
5. **Inclusion Criteria**
    - Arabic Medical students and interns
    - Studying medicine in the Middle East countries
    - Have access to online platforms
    - Agree to participate in the study
6. **Exclusion Criteria**

- Students or interns who refused to participate

7. **Sampling**

   We calculated the total sample size using Epi Info version 7.2.60(*Epi InfoTM | CDC*, n.d.) Assuming a 50% prevalence rate and a 5% error margin with a 95% confidence interval, the sample size required for each country is 383. After adding a 10% nonresponse rate, the final sample size is about 422 for each country, so the total sample size will be 4642

8. **Sampling Technique**: Convenience Sampling

Operational design

1. **Pilot**: We will perform a pilot study in each country before starting the study to assess the readiness of the questions and the reliability of the questions via the Cronbach's alpha test.
2. **Study field**: an online questionnaire will be shared via an online platform with the target population.
3. **Data collection method**

   An online questionnaire will be shared via social media platforms such as Facebook, WhatsApp, and Telegram.

   The questionnaire is composed of 8 sections as follows:

   - The first section provides a brief introduction to the topic, its importance in the research field, and consent to participate in the study.
   - In the second section, sociodemographic data will be collected, such as age, gender, type of university, smoking level, number of sleeping hours, difficulty in accessing the internet, and reason for using internet platforms
   - In the third section, we will ask about internet addiction. We will use the Internet Addiction Scale (IAT) (21,22) This scale is a 20-question Likert scale, and each question has six answer scales from 0 to 5 (Not applicable, rarely, occasionally, frequently, often, and always). This makes a range of scores from 0 to 100.

The participants can be classified into normal usage, mild, moderate, and severe levels of addiction if they score (0-30), (31-49), (50-79), and (80-100), respectively.

- In the fourth section, Gaming addiction will be assessed. We will use the Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) (23,24)

  This scale consists of a 9-question Likert Scale. Each question has five answers, scored from 1 to 5. Total score ranges from 9 to 45, with a higher score indicating a higher level of gaming disorder.
- We used the GAD-7 scale (25,26) in the fifth section to assess the level of anxiety. This scale consists of a 7-question Likert scale, each one has four answers scored from 0-3, making a range of scores from 0-21.

  Students can be classified into minimal, mild, moderate, and severe levels of anxiety if they score (0-4), (5-9), (10-14), and (15-21), respectively.
- In the sixth section, we used the Patient Health Questionnaire-9 (PHQ-9) (26,27)to assess the level of depression.

  A 9-question Likert scale with four answers for each question. Scores range from 0-3, making the range of scores from 0-27.

  Students can be classified into minimal, mild, moderate, moderately severe, and severe levels of depression if they score (0-4), (5-9), (10-14), (15-19), and (20-27), respectively.
- In the seventh section, we asked about stress level through the Perceived Stress Scale-10 (PSS-10) (Ali et al., 2021; Cohen et al., 1983). A 10-question Likert Scale, and each question has 5 answers, which score from 0-4. A total score ranges from 0-40.

  Students can be classified into mild, moderate, and severe levels of stress if they score (0-13), (14-26), and (27-40), respectively.
- Finally, the eighth section will ask about porn addiction. The Problematic Pornography Consumption Scale (PPCS) (29) will be used, which consists of an 18-question Likert Scale. Each question consists of 7 answers, and

their scores range from 1-7. A total score ranges from 18-126, with higher levels indicating a higher level of porn addiction. A 76 score will be used as a cut-off value to indicate a high risk of porn addiction.

We used the Arabic version alongside the English version of the validated questionnaire because some Arabic countries did not teach medicine in English so the English will be a challenge for them.

4. **Statistical analysis**

First, data will be summarized according to its type. Categorical data will be summarized using frequency and percentage. Continuous data will be tested for normality. if the data is normally distributed, we will summarize it using mean and SD, and if not, median and IQR will be used. We will assess the difference between the population according to their sociodemographic data using a Chi-square and a Mann-Whitney U test. A p-value of <0.05 will be used as a cutoff point for statistically significant results. We will assess the correlation between all continuous data (internet addiction, gaming, porn addiction, stress, depression, and anxiety levels). Finally, a multiple linear regression test will be used to assess the relationship between the assessed variables.

Administrative design

1. **Ethical consideration**
    - The study protocol will be approved by the Institutional Review Board of Zagazig University, Faculty of Medicine
    - Study participants will be included after informed consent.
2. **Confidentiality and data retention**

    Data collected will be kept confidential.
3. **Risks and benefits of the participants**

    There is no cost for this study

Results

Collected data will be presented in tables and suitable graphs, and analyzed according to standard statistical methods.

Discussion

Discussion will be done on the results compared to the relevant literature and scientific Research

Reference

1. Data Drop: 5 Charts on Worldwide Social Network Users [Internet]. [cited 2025 Jul 12]. Available from: https://www.emarketer.com/content/data-drop-5-charts-on-worldwide-social-network-users
2. Upadhayay N, Guragain S. Internet use and its addiction level in medical students. Adv Med Educ Pract [Internet]. 2017 Sep 25 [cited 2025 Jul 12];8:641–7. Available from: https://www.dovepress.com/internet-use-and-its-addiction-level-in-medical-students-peer-reviewed-fulltext-article-AMEP
3. Shaw M, Black DW. Internet addiction: Definition, assessment, epidemiology and clinical management. CNS Drugs [Internet]. 2008 Sep 14 [cited 2025 Jul 12];22(5):353–65. Available from: https://link.springer.com/article/10.2165/00023210-200822050-00001
4. Cheng C, Li AYL. Internet addiction prevalence and quality of (real) life: A meta-Analysis of 31 nations across seven world regions. Cyberpsychol Behav Soc Netw. 2014 Dec 1;17(12):755–60.
5. Tsitsika A, Janikian M, Schoenmakers TM, Tzavela EC, Ólafsson K, Wójcik S, et al. Internet addictive behavior in adolescence: A cross-sectional study in seven European countries. Cyberpsychol Behav Soc Netw [Internet]. 2014 Jul 31 [cited 2025 Jul 12];17(8):528–35. Available from: /doi/pdf/10.1089/cyber.2013.0382?download=true
6. Sayili U, Kara B, Aydin SN, Siddikoglu E, Albayrak B, Erginoz E. Are depression, quality of life and life satisfaction associated with internet addiction? A cross-sectional study among Turkish university students. BMC Psychiatry [Internet]. 2025 Dec 1 [cited 2025 Jul 12];25(1):1–11. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-025-07097-4

7. Mahmoud Ahmed Effat S, Mustafa Azab H, Yousef Aly H, Abd Alreheem Mahmoud O. The Relationship between Anxiety, Depression, and Problematic Internet Use among a Sample of university students in Egypt. Sohag Medical Journal [Internet]. 2019 Jan 1 [cited 2025 Jul 12];23(Issue 1):154–65. Available from: https://smj.journals.ekb.eg/article_41384.html

8. Hassan T, Alam MM, Wahab A, Hawlader MD. Prevalence and associated factors of internet addiction among young adults in Bangladesh. Journal of the Egyptian Public Health Association [Internet]. 2020 Dec 1 [cited 2025 Jul 12];95(1):1–8. Available from: https://jepha.springeropen.com/articles/10.1186/s42506-019-0032-7

9. Abdel-Salam DM, Alrowaili HI, Albedaiwi HK, Alessa AI, Alfayyadh HA. Prevalence of internet addiction and its associated factors among female students at Jouf University, Saudi Arabia. Journal of the Egyptian Public Health Association [Internet]. 2019 Feb 26 [cited 2025 Jul 12];94(1):1–8. Available from: https://jepha.springeropen.com/articles/10.1186/s42506-019-0009-6

10. Ibrahim AK, Fouad I, Kelly SJ, El Fawal B, Ahmed GK. Prevalence and determinants of Internet Addiction among medical students and its association with depression. J Affect Disord [Internet]. 2022 Oct 1 [cited 2025 Jul 28];314:94–102. Available from: https://pubmed.ncbi.nlm.nih.gov/35817304/

11. Sayed M, Naiim CM, Aboelsaad M, Ibrahim MK. Internet addiction and relationships with depression, anxiety, stress and academic performance among Egypt pharmacy students: a cross-sectional designed study. BMC Public Health [Internet]. 2022 Dec 1 [cited 2025 Jul 28];22(1). Available from: https://pubmed.ncbi.nlm.nih.gov/36163012/

12. Fam JY. Prevalence of internet gaming disorder in adolescents: A meta-analysis across three decades. Scand J Psychol [Internet]. 2018 Oct 1 [cited 2025 Jul 12];59(5):524–31. Available from: https://pubmed.ncbi.nlm.nih.gov/30004118/

13. Pitanupong J, Sukhabote J, Sathaporn K. Internet gaming disorder associated with depression among Thai medical students: A university-based cross-sectional study. Yu D, editor. PLoS One [Internet]. 2025 Jul 11 [cited 2025 Jul 12];20(7):e0327820. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0327820

14. Shouman A, Elez WA, Ibrahim IMA, Elwasify M. Internet gaming disorder and psychological well-being among university students in Egypt. BMC Psychol [Internet]. 2023 Dec 1 [cited 2025 Jul 28];11(1). Available from: https://pubmed.ncbi.nlm.nih.gov/37924133/

15. Karim NAHA, Osman MA, Abdelmonaem YMM, El-Ashry AM. Effects of porn addiction on mental health and personality of nursing students: a cross-sectional study in Egypt. BMC Nurs [Internet]. 2025 Dec 1 [cited 2025 Jul 12];24(1):1–13. Available from: https://bmcnurs.biomedcentral.com/articles/10.1186/s12912-025-02918-z

16. Bőthe B, Nagy L, Koós M, Demetrovics Z, Potenza MN, Kraus SW, et al. Problematic pornography use across countries, genders, and sexual orientations: Insights from the International Sex Survey and comparison of different assessment tools. Addiction [Internet]. 2024 May 1 [cited 2025 Jul 12];119(5):928–50. Available from: /doi/pdf/10.1111/add.16431

17. Eljawad MA, Se'eda H, Ghozy S, El-Qushayri AE, Elsherif A, Elkassar AH, et al. Pornography Use Prevalence and Associated Factors in Arab Countries: A Multinational Cross-Sectional Study of 15,027 Individuals. J Sex Med [Internet]. 2021 Mar 1 [cited 2025 Jul 12];18(3):539–48. Available from: https://dx.doi.org/10.1016/j.jsxm.2020.12.011

18. Latifeh Y, Alkhatib Y, Hmidouch M, Swed S, Hafez W, Sawaf B, et al. Prevalence of internet addiction among Syrian undergraduate medical students. Medicine (United States) [Internet]. 2022 Dec 9 [cited 2025 Jul 12];101(49):E32261. Available from: https://journals.lww.com/md-journal/fulltext/2022/12090/prevalence_of_internet_addiction_among_syrian.21.aspx

19. Gedam S, Ghosh S, Modi L, Goyal A, Mansharamani H. Study of internet addiction: Prevalence, pattern, and psychopathology among health professional undergraduates. Indian J Soc Psychiatry. 2017;33(4):305.

20. Epi Info™ | CDC [Internet]. [cited 2025 Jan 13]. Available from: https://www.cdc.gov/epiinfo/index.html

21. Chang MK, Man Law SP. Factor structure for Young's Internet Addiction Test: A confirmatory study. Comput Human Behav [Internet]. 2008 Sep 17 [cited 2025 Jul 12];24(6):2597–619. Available from: https://www.sciencedirect.com/science/article/pii/S0747563208000514#app3

22. Hawi NS. Arabic validation of the internet addiction test. Cyberpsychol Behav Soc Netw. 2013 Mar 1;16(3):200–4.

23. Pontes HM, Griffiths MD. Measuring DSM-5 internet gaming disorder: Development and validation of a short psychometric scale. Comput Human Behav [Internet]. 2015

Apr 1 [cited 2025 Jul 12];45:137–43. Available from: https://www.sciencedirect.com/science/article/pii/S0747563214007213

24. Baiumy S, Elella EA, Hewedi D, Elkholy H. Internet Gaming Disorder Scale: Arabic version validation. Middle East Current Psychiatry. 2018;25(1):13–5.

25. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. Arch Intern Med [Internet]. 2006 May 22 [cited 2025 Jul 12];166(10):1092–7. Available from: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/410326

26. AlHadi AN, AlAteeq DA, Al-Sharif E, Bawazeer HM, Alanazi H, AlShomrani AT, et al. An arabic translation, reliability, and validation of Patient Health Questionnaire in a Saudi sample. Ann Gen Psychiatry [Internet]. 2017 Sep 6 [cited 2025 Jul 28];16(1):1–9. Available from: https://annals-general-psychiatry.biomedcentral.com/articles/10.1186/s12991-017-0155-1

27. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606–13.

28. Ali AM, Hendawy AO, Ahmad O, Al Sabbah H, Smail L, Kunugi H. The Arabic Version of the Cohen Perceived Stress Scale: Factorial Validity and Measurement Invariance. Brain Sciences 2021, Vol 11, Page 419 [Internet]. 2021 Mar 26 [cited 2025 Jul 28];11(4):419. Available from: https://www.mdpi.com/2076-3425/11/4/419/htm

29. Bőthe B, Tóth-Király I, Zsila Á, Griffiths MD, Demetrovics Z, Orosz G. The Development of the Problematic Pornography Consumption Scale (PPCS). J Sex Res [Internet]. 2018 Mar 24 [cited 2025 Jul 12];55(3):395–406. Available from: https://pubmed.ncbi.nlm.nih.gov/28276929/