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Correlates of Social Anxiety and Internet Addiction of Higher Education Students

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Abstract

The research examined the spread of internet addiction among tertiary institution students in Osun State and examine the connection between social anxiety and internet addiction. The research used descriptive survey research methodology. A sample of 1,430 students were picked to be involved in the research using multi-stage sampling methodology. Information were gathered using an instrument titled "Social Anxiety and Internet Addiction Questionnaire (SAIAQ). Information gathered were analyzed using descriptive and inferential statistics. Specifically, research questions one, two and three were answered using percentages and frequency counts. Research hypotheses one, two and four were tested using Pearson product moment correlation while hypotheses three, five and six were tested using ordinal logistic regression, multiple regression analysis respectively. The outcome indicated that majority of participants (56.78%) exhibited little degree of internet addiction, while 23.63% and 15.01% exhibited moderate and severe levels of internet addiction respectively. The research also revealed a significant positive relationship between social anxiety and internet addiction among the students ($r=0.261$, $p=0.000$). The research inferred that social anxiety is potent factor that could trigger internet addiction of students and exhibition of internet addiction would reduce more with students' age.

Introduction

One of the problems that has been identified as a psychological and mental issue in the last two decades is internet addiction which surfaced due to advancement in technological innovations particularly internet facilities and use of computers, smartphones and other related devices. Although, internet facility has been established as an essential technological tool for efficient achievement of academic goals to students at all levels of education (Gisele, Erico & Karen, 2020), the possible detrimental effects of internet use on students' academic and social lives have long worried professionals (Odaci & Celik, 2017).

Previous studies on internet addiction have associated many problems with online addiction especially among students of tertiary institutions. Some of the internet addiction associated problems alongside others are low self-esteem (Younes, et al., 2016; Kumar & Mondal, 2018), low academic performance (Zenebe, et al., 2021), substance and drug taking (Nemati, & Matlabi, 2017), depression, (Xie, et al., 2023), interpersonal relationship

deficits (Hao et al., 2022). According to magnitude and trend, a meta-analytic research published as of 2014 reported a projected world-wide occurrence of 6.0% (Cheng & Li, 2014) and by 2022, it has increased to 8.23% (Meng et al., 2022).

In Sub-Sahara Africa, a study conducted in one of the Nigeria universities in 2017 reported a prevalence of internet addiction to be 14.1% (Omoyemiju & Popoola, 2018). However, by 2022, the rate of internet addiction has increased with the estimated 30.0% (Endomba et al., 2022). With this trend and figures, it is an indication that internet addiction is growing very faster in not only in Africa but all over the world. This increase in the magnitude of internet addiction may be attributed to many factors such as free internet access, quality of life, loneliness and social anxiety.

Studies have established that many people that have social skill and interpersonal relationship deficit have subscribe to using social media platforms like Facebook, WhatsApp, Instagram, telegram, yahoo messenger, TikTok, etc. as alternatives to cover their inefficiencies in the real life interpersonal relationship skills. As reported in the previous studies with special focus on students, there was a strong connection linking internet addiction and social anxiety (Jaiswal et al., 2020; Ye et al., 2021; Nwufu et al., 2022; Xie et al., 2023). If social is used excessively by students at the expense of other academic activities, it may impact negatively not only on their real life interpersonal relationship with others, but also academic outcomes. Although, students of higher institutions depend greatly on internet for productive academic activities such as class and research works, and submission of assignments, yet, many of them spending their productive period on internet for unproductive activities, misuse internet in different measures under the disguise of social life (Akanbi, et al., 2018) and thereby get addicted to internet.

This internet problematic behaviour may keep students engaged mostly in the middle of the night, cause students to have sleepless night which results to students having low academic performance (Fatehi, et al., 2016). Could this unproductive internet use be attributed to students' social skill and interpersonal relationship deficit? Could it be attributed to social anxiety? These are some of the questions that need to be empirically answered. Apart from this, if the issues related to internet use among students are not properly addressed it may further increase the degree of relationship breakup, loneliness, depression, low academic outcomes, and physical health problems (Machado, et al., 2018). Empirical evidence on the terms connecting internet addiction and social anxiety is required for counseling psychologists understanding in providing therapeutic help and appropriate policy directions for education policy makers.

Objectives of the Study

- i. Examine the occurrence of internet addiction in students of tertiary institutions in Osun State,
- ii. examine the connection between social anxiety and internet addiction among students of tertiary institutions in Osun State; and
- iii. Investigate the relationship between demographic characteristics (age, sex, institutions, types, and ownership type) on social anxiety of students.

Research Questions

In achieving the study objectives, under listed research questions were developed for the study;

- i. What is the of internet addiction among students in higher institutions in Osun State?
- ii. What are the levels of social anxiety among students of tertiary institutions in Osun State?

Research Hypotheses

The research hypothesis were developed and tested in the study:

- i. There is no significant relationship between social anxiety and internet addiction among students in tertiary institutions in Osun State.
- ii. There is no significant relationship between social anxiety and demographic characteristics among students in tertiary institutions in Osun state.

Methods

The research adopted the cross-sectional survey research methodology. The study size included all tertiary institution students in Osun State. Study sample comprised of 1,497 students which were picked using multi-stage sampling procedure. Simple random sampling method was adopted to identify three private institutions (one university, polytechnic and college of education) and three public institutions (one university, polytechnic, and college of education) making a total of six tertiary institutions for the study. Simple random sampling methodology was adopted to pick students across all the chosen faculties in each of the tertiary institutions. The demographic attribute of sampled participants is presented in Table 1. The results were stated in Table 1.

From Table 1, the demographic characteristics showed that 53.6% (766) of the participants are male while 46.4% (664) are female. Furthermore, most of the participants were within the age range of 16 through 24 (78%, 1121) and were Christian (72.4%, 1035). However, 31.6% (452) attended private institutions while 68.4% (978) attended public institutions respectively. Finally, 61.4% (878) were university undergraduates, 31.1% (445) were polytechnic students while 107 (7.5%) were colleges of education students.

For the collation of data from respondents, an instrument titled Social Anxiety and Internet Addiction Questionnaire, (SAIAQ)" was used. It comprised three section with two subscales namely: Social Anxiety Scales (SAS), and Internet Addiction Scale (IAS) which measures independent variables. Section A, contained general information about the respondents. These include sex, age religion, ethnicity, family type, birth other, marital status, institution type, and institution ownership. The section B of the instrument comprised of 20 items on internet addiction. Section C contains 25 items on social anxiety. Internet addiction items were adopted from Young (1998), quality of life items were adopted from WHO (2020), while the social anxiety items were adopted from Liebowitz (1987) and APA (2013). Internet addiction items described the six attribute of online addiction, which are; salience, extreme use, and disregard of responsibility, feelings of extreme anticipation, low self-control, and disregard of one's social life. The tool was made to determine how frequently using the internet results in

undesirable circumstances. The actual model of the tool by Young (1998) is 20 in number. This is an indication that all of them were adopted and utilized for the research. In this segment, the respondents were told to answer the questions using a five-point Likert rating scale from “Does Not Apply”, to “Always”. The answers were rated from 0, 1, 2, 3, 4, and 5. “For Does Not Apply”, “Rarely”, “Occasionally”, “Frequently”, “Often” and “Always” accordingly.

Table 1. Demographic Attribute of Sampled Participants

Variable	Frequency	Percentage
<i>Sex</i>		
Male	766	53.6
Female	664	46.4
<i>Age</i>		
16-24	1121	78.4
25-33	277	19.4
34-41	32	2.2
<i>Religion</i>		
Christianity	1035	72.4
Islam	371	25.9
Traditionalist	14	1
Others	10	0.7
<i>Institution ownership</i>		
Private	452	31.6
Public	978	68.4
<i>Institutional type</i>		
University	878	61.4
Polytechnic	445	31.1
College of Education	107	7.5

The added-up scores, the lowest rating for a respondent is zero while the highest is 100. These were used to classified respondents into four levels of addiction. In other words, respondents who had result of 0-30 points were categorized as normal internet users. While respondents whose scores ranged from “31-49”, “50-79”, and “80-100” were categorized as exhibited “mild”, “moderate”, and “severe” levels of internet addiction respectively. This means that when there is increase the ratings of an individual, the higher the severity of internet addiction. The person that exhibit normal use of internet may spend time online but have ability to control his use of internet.

The Liebowitz Social Anxiety Scale (LSAS) is a research instrument designed by Liebowitz (1987) to measure degree of social anxiety. The social anxiety scale used was comprised of 25 items. The first 20 items were adopted from Liebowitz Social Anxiety Scale while the rest five items were adopted from The American Psychiatric Association (APA) to measure the severity of social anxiety disorder in the respondents. The 25 questions are scored on a 5-point Likert scale, they are “Not At All”, to “Extremely”. The answers were scored from 0, 1, 2, 3, and 4. For “Not At All”, “Slightly”, “A moderately”, “Very much”, “extremely” respectively with total score being derived by summing the ratings.

Respondents who had a score of 0-29 in SAS were classified under not suffering from social anxiety. Respondents that scored 30-49 got classified as exhibiting “Mild Level of Social Anxiety”. Those who scored 50-64 were classified as manifesting “Moderate Social Anxiety”. Any participant whose score fell under this category was often having issues of social anxiety. The respondents that scored 65-79 were classified to be experiencing “Marked social anxiety”. However, those who scored 80-90 were classified as exhibiting “severe Level of social anxiety”. 91-100 were grouped as experiencing very “severe social anxiety”. At this level an individual social anxiety creates major life issues. Once the score of an individual increase, the level of the person’s social anxiety also increases.

In determining the instrument’s validity, the instrument was given to the supervisor to critically scrutinize it in order to obtain content validity. Many researchers had tested and used the IAT in related researches and had been found reliable. Some of the studies conducted in and outside Africa have affirmed the empirical evidence for the IAT as a proven and effective questionnaire in accessing internet addiction (Dhir et al., 2015; Tafur-Mendoza et al., 2020). While the section C of the instrument was made up of 25 items on social anxiety which was adopted from existing test scale by Liebowitz (1987). The scale was used to access the degree of social anxiety among students of higher institutions in Osun State.

A total of 1500 questionnaires were administered for the study, out of which 1430 were retrieved from the field. The others were either not returned or not properly filled so it was discarded. However, the questionnaire administration exercise was a successful one because a larger percentage of the questionnaires were recovered. The data collection process lasted for three weeks. The information retrieved from respondents went through testing using descriptive and inferential statistics. Research question one and two were answered using percentages and frequency counts. The two hypotheses one and two were tested using Pearson product moment correlation and multiple regression analysis. The hypotheses were examined at the 0.05 degree of significance.

Results

Research Question One: What are the levels of internet addiction, social anxiety and standard of living of tertiary institutions students in Osun state?

In answering this question, responses to items on internet addiction were coded ‘1’ for ‘Do not Apply’, ‘2’ for ‘Rarely’, ‘3’ for ‘Occasionally’, ‘4’ for ‘Frequently’, and ‘5’ for ‘Often’ and ‘5’ for ‘Always’. The coded responses for each student were computed as a single measure of internet addiction. On the scale, the total number of

respondents was 1,430, while the lowest and highest scores obtained were 20 and 100 accordingly, and the standard deviation was 18.65. The computed scores were further categorized into ‘low’, ‘moderate’ and ‘severe’ levels of internet addiction. The categorizations were subjected to frequency counts and percentages and the level of internet addiction were shown in Table 2.

Table 2. Descriptive Statistics showing Level of Internet Addiction

Levels of Internet Addiction	Frequency	Percentage
Normal Internet Use	64	4.47
Mild	812	56.78
Moderate	338	23.63
Severe	216	15.01

The results in Table 2 showed the level of internet addiction. According to the table, majority of those surveyed had mild degree (56.78%) of internet addiction while 23.63% and 15.01% had moderate and severe level of internet addiction respectively. Only 4.47% of the participants demonstrated normal use of internet.

Research Question Two: To what degree is the social anxiety of students of tertiary institutions in Osun state?

In answering this question, responses to items on social anxiety were encoded ‘1’ for ‘Not at all’, ‘2’ for ‘Slightly’, ‘3’ for ‘Moderately’, ‘4’ for ‘Very much’, and ‘5’ for ‘Extremely’. The computed scores were further categorized into ‘low’, ‘moderate’ and ‘high’ levels of social anxiety. The categorizations were subjected to frequency counts and percentages and the degree of social anxiety were shown in Table 3.

Table 3. Descriptive Statistics showing the Level of Social Anxiety

Levels of social anxiety	Frequency	Percentage
Low	469	32.79
Moderate	794	55.51
High	167	11.67
Total	1430	100.00

The results in Table 4.4 showed the degree of social anxiety. From the table, majority of the respondents had little level of social anxiety (55.51%), while 32.79% and 11.67% had high and low level of social anxiety respectively.

Research Hypothesis one: Among respondents, there is no significant relationship between internet addiction and social anxiety of tertiary institutions in Osun State.

To tests this research hypothesis, the computed scores of each respondents for both social anxiety and internet addiction were subjected to Pearson product moment correlation. Table 4 displayed the outcomes of the Pearson product moment correlation.

Table 4. Correlations Coefficient showing Connection of Social Anxiety and Internet Addiction among Respondents of Tertiary Institutions in Osun State

	N	Mean	SD	R	p-value
Social Anxiety	1430	78.46	21.27	0.261	0.000*
Internet Addiction	1430	74.87	18.65		

* <0.05 (significant)

The Pearson product moment correlation table shown in Table 4.8 indicated an existence of significant positive relationship ($r=0.261$, $p\text{-value}=0.000 < 0.05$) of social anxiety and internet addiction of the respondents. Hence, there is a rejection of null hypothesis and it was therefore concluded a significant relationship between social anxiety and internet addiction exists among respondents of tertiary institutions in Osun State.

Hypothesis Two: There is no significant relationship between demographic characteristics (age, sex, institution type, and institution ownership) and social anxiety among the respondents of tertiary institutions in Osun State.

To tests this research hypothesis, the computed scores of students on social anxiety was used as the dependent variable while the age, sex and institutional type and ownership of each respondent were used as the independent variable. Given that the dependent variable is nominal in nature and independent variable is over one, the linear multiple regression was used and the shown in Table 5.

Table 5. Multiple Regression Analysis of Influence of Demographic Characteristics on Social Anxiety among the Respondents of the Schools in Osun State

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
R=0.420					
R ² =0.177					
Adj.R ² = 0.174					
F-Value= 76.478					
P-Value= 0.000					
(Constant)	29.593	3.977		7.441	0.000
Sex	0.109	1.037	0.003	0.105	0.917
Age	-1.601	1.093	-0.036	1.465	0.143
Institution Type	11.841	0.841	0.351	14.085	0.000*
Institution Ownership	10.894	1.727	0.158	6.308	0.000*

NB: Dependent Variable: *Social Anxiety*

* < 0.05 (significant)

From Table 5, given the Beta weight value of 0.351, p-value $0.000 < 0.05$ for institution type and Beta weight value of 0.158, p-value $0.000 < 0.05$ for institution ownership, the results of the multiple regression shows that institution type and ownership was positively and significantly related social anxiety. Both sex and age of the students were not statistically significant but there was an increase in social anxiety with respect to sex ($B = 0.109$; $t = 0.105$, p

> 0.05). For age, there was inverse relationship between age and social anxiety ($B = -1.601$, $T = 1.465$, $p > 0.05$). For every 1-unit of increase in the age, the social anxiety decreases by 1.6. However, there was statistically significant relationship between institution type ($B = 11.841$, $t = 14.085$, $p < 0.05$), institution ownership type ($B = 10.894$, $t = 6.308$, $p < 0.05$) and social anxiety of students. Meanwhile, for a unit increase in institution type and institution ownership type, the social anxiety increases by 0.3 and 0.2 accordingly. A conclusion might be arrived at by saying there is a strong relationship between demographic characteristics and social anxiety among participants of the schools in Osun State, hence, null hypothesis was rejected.

Discussion

The study has determined the prevalence of internet addiction and established the connection of internet addiction and social anxiety of tertiary institution students in Osun State. The high degree of internet addiction is the first result of the survey which is estimated at 15.01%. It is reported that there is a prevalence of internet addiction as of the year of the survey. Based on the previous estimated values of 14.1% reported by Omoyemiju and Popoola in 2018 and with current 15.01% prevalence of internet addiction, it is an indication that internet addiction has increased among adolescents and young adults in Nigerian tertiary institutions. This finding is in tandem with finding from other related studies that internet addiction is increasing not particular to Nigeria but general to the world. Related to this from other studies in Nigeria, 3.3% was reported by Adiele and Olatokun in 2014, 6.0% was reported as a global estimation by Cheng and Li (2014) and by 2022, it has increased to 8.23% (Meng et al., 2022). This is pointing to the fact that issues related to the use of internet among active population need to be looked into so as to minimize negative consequence of it in the society.

Another finding from this study was the establishment of social anxiety among tertiary institution students. With approximately one out ten students reported exhibition of severe level of social anxiety while more than half of the sampled students reported exhibition of moderate level of social anxiety. This by implication means that the exhibition of social anxiety of the respondents was low in the state. The reported 11.67% level of social anxiety was greater than 9.4% previously reported in study conducted in Nigeria (Ezenwaji et al., 2021). Although, Ayeni (2012) and Ugwuanyi (2022) and have reported a very high degree of social anxiety. The wide disparity findings of this study and that of Ayeni (2012) and Ugwuanyi (2022) may be attributed the instrument used for data collection, scope and nature of sampled participants. For instance, this study factored-in all students in colleges of education, polytechnics and universities including those in the private institutions while Ugwuanyi (2022). Apart from this, majority of the sampled participants selected for this study were young adults but not adolescent as reported by Ayeni (2012). These factors may be responsible for the disparities in the figures reported. However, the current study has re-established that social anxiety was prevalent among students in the state.

The research revealed a strong positive relationship between social anxiety and internet addiction of respondents. The implication of the finding is that as the magnitude of internet addiction increase, social anxiety also increases with similar directions. This is pointing to the fact that due to social skill and interpersonal relationship deficit, concerned students would be fiddling with their to escape from the reality of shame and abuse from others using smartphones with the availability of internet to chat on social media platforms like Facebook, WhatsApp,

Instagram, telegram, yahoo messenger, TikTok, etc. The result of the survey is in line with the results of existing surveys (Jaiswal et al., 2020; Ye et al., 2021; Nwifo et al., 2022; Xie et al., 2023) that social anxiety is strongly related to internet addiction of students.

In exploring the students' demographic factors, the study revealed a strong relationship between demographic characteristics and social anxiety in institutions with positive interaction of institution types and ownership and inverse relationship of age with social anxiety. This is an indication that social anxiety reduces with increase in students' age and this corroborate the submission of Jefferies and Ungar (2020) that Social anxiety symptoms vary depending on age rather than between sexes.

The result of this research has strengthened knowledge on internet addiction probably it would increase the chance of being included in the next edition of Diagnostic and Statistical Manual (DSM) for Mental Disorder of American Psychological Association (APA). The study's scope is another strength due to the spread of sampled participants which include students from colleges of education, polytechnics and universities across private and public ownership. However, the study was limited in its ability to report the responses of all the selected 1,497 participants due to due invalid responses supplied in some of the returned questionnaires.

Conclusion and Recommendations

Conclusively, social anxiety is a major factor that could be used to explain the exhibition of severe level of student internet addiction irrespective of the age and sex even though social anxiety reduces with age. As a result of the research and the submission of the survey, therefore, it is suggested that counseling interventions be applied in reducing the degree of social anxiety of students be applied by professional helpers. Apart from this, since it has been established in this study that significant number of internet addict suffering from social deficit, it is recommended counseling psychologists should factor social skill training and social support mechanism into their intervention programs for the victims of internet addiction.

Education policy makers should also be aware of the problems associated with internet addiction and employ more counseling psychologists to reduce the workload of the existing professional helpers. In addition to this, establishment of youth friendly rehabilitation centers in various higher institutions of learning would address some of the issues related to online addiction and social anxiety among students. Therefore, it is recommended that governments at all levels and development partners may intervene to facilitate the establishment of youth friendly rehabilitation centers in tertiary institutions.

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References

- Adiele, I., & Olatokun, W. (2014). Prevalence and determinants of Internet addiction among adolescents. *Computer in Human Behaviour, 31*, 100-110. <https://doi.org/10.1016/j.chb.2013.10.028>
- Akanbi, M. L., Sulaiman, K. A., & Adeyemi, I. O. (2018). Psychosocial consequences of intensive internet use among undergraduates of universities in Ilorin metropolis. *Library Philosophy and Practice (e-journal), 1761*. Retrieved April 4, 2023 from: <https://digitalcommons.unl.edu/libphilprac/1761>.
- Ayeni, E.A (2012), *Assessment and management of social anxiety among adolescents in Lagos Metropolis*. A thesis submitted to University of Lagos School of Postgraduate Studies Phd Thesis and Dissertation, 228pp.
- Cheng, C., & Li, A. Y. (2014). Internet addiction prevalence and quality of (real) life: A meta-analysis of 31 nations across seven world regions. *Cyberpsychology, Behaviour and Social Networking, 17(12)*, 755-760. Doi:10.1089/cyber.2014.0317
- Dhir, A., Chen, S., & Nieminen, M. (2015). Psychometric Validation of Internet Addiction Test With Indian Adolescents. *Journal of Educational Computing Research*. <https://doi.org/10.1177/0735633115597491>
- Endomba, F. T., Demina, A., Meille, V., Ndoadoumgue, A. L., Danwang, C., Petit, B., & Trojak, B. (2022). Prevalence of internet addiction in Africa: A systematic review and meta-analysis. *Journal of Behavioural Addiction, 11(3)*, 739-753. doi: 10.1556/2006.2022.00052.
- Ezenwaji, C. O., Aloh, H. E., Okeke, M. D., Osilike, C. C., Ekwealor, N. E., Koledoye, U. L., Ilechukwu, L. C., & Onwuadi, C. C. (2021). Managing social anxiety among undergraduate adult education and extra-mural studies students: An intervention study. *Medicine, 100(42)*.
- Fatehi, F., Monajemi, A., Sadeghi, A., Mojtahedzadeh, R., & Mirzazadeh, A. (2016). Quality of Life in Medical Students with Internet Addiction. *Acta Med Iran, 54(10)*, 662-66.
- Gisele, Erico, & Karen (2020). To evaluate the prevalence of internet addiction (IA) and its associated factors among student at an Educational Institution in Southern Brazil. Retrived April 5 from:
- Hao, Q., Peng, W., Wang, J., Tu, Y., Li, H., & Zhu, T. (2022). The correlation between internet addiction and interpersonal relationship among teenagers and college students based on Pearson's Correlation Coefficient: A systematic review and meta-analysis. *Frontiers in Psychiatry, 13*.
- Jaiswal, A., Manchanda, S., Gautam, V., Goel, A. D., Aneja, J., & Raghav, P. R. (2020). Burden of internet addiction, social anxiety and social phobia among University students, India. *Journal of Family Medicine and Primary Care, 9(7)*, 3607-3612. https://doi.org/10.4103/jfmpe.jfmpe_360_20
- Jefferies, P., & Ungar, M. (2020). Social anxiety in young people: A prevalence study in seven countries. *PLOS ONE, 15(9)*, e0239133. <https://doi.org/10.1371/journal.pone.0239133>
- Kumar, M., & Mondal, A. (2018). A study on internet addiction and its relation to psychopathology and self-esteem among college students. *Industrial Psychiatry Journal, 27(1)*, 61-66.
- Liebowitz, M. R. (1987). Social Phobia. *Mod Probl Pharmac psychiatry; 22*, 141-173.
- Machado, M. D. R., Bruck, I., Antoniuk, S. A., Cat, M. N. L., Soares, M. C., & Silva, A. F. D. (2018). Internet addiction and its correlation with behavioral problems and functional impairments-A cross-sectional study. *Journal Brasileiro de Psiquiatria, 67(1)*, 34-38. doi: 10.1590/0047-2085000000181.

- Meng, S., Cheng, J., Li, Y., Yang, X., Zheng, J., Chang, X., Shi, Y., Chen, Y., Lu, L., Sun, Y., Bao, Y., & Shi, J. (2022). Global prevalence of digital addiction in general population: A systematic review and meta-analysis. *Clinical Psychology Review*, 92, 102128. <https://doi.org/10.1016/j.cpr.2022.102128>
- Nemati, Z., & Matlabi, H. (2017). Assessing behavioral patterns of Internet addiction and drug abuse among high school students. *Psychology Research and Behavior Management*, 10, 39-45.
- Nwufu, J. I., Ike, O. O., Nwoke, M. B., Eze, J., Chukwuorji, J. C., & Chineye Kanu, G. (2022). Social anxiety and internet addiction among adolescent students in a sub-Saharan African country: Does family functioning make a difference? *South African Journal of Psychology*. <https://doi.org/10.1177/00812463221140224>
- Odaci, H., & Celik, C. B. (2017). Internet dependence in an undergraduate population: the roles of coping stress, self efficacy beliefs, and sex role orientation. *Journal of Education Computing Research*, 55(3), 395-409. <https://doi.org/10.1177/0735633116668644>.
- Omoyemiju, M. A. & Popoola, B. I. (2021), Prevalence of internet addiction among students of Obafemi Awolowo University, Ile-Ife, Nigeria. *British Journal of Guidance and Counselling*, 49(1), 132-139.
- Tafur-Mendoza, A. A., Acosta-Prado, J. C., Zárate-Torres, R. A., & Ramírez-Ospina, D. E. (2020). Assessing the Psychometric Properties of the Internet Addiction Test in Peruvian University Students. *International Journal of Environmental Research and Public Health*, 17(16). <https://doi.org/10.3390/ijerph17165782>
- Ugwuanyi, C. S. (2022). Level of social interaction anxiety of undergraduate students of Nigerian University: A Quantitative Research Approach. *International Journal of Health Sciences*, 19(6), 448-497.
- Xie, X., Cheng, H., & Chen, Z. (2023). Anxiety predicts internet addiction, which predicts depression among male college students: A cross-lagged comparison by sex. *Frontiers in Psychology*, 13.
- Ye, S., Cheng, H., Zhai, Z., & Liu, H. (2021). Relationship Between Social Anxiety and Internet Addiction in Chinese College Students Controlling for the Effects of Physical Exercise, Demographic, and Academic Variables. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.698748>
- Younes, F., Halawi, G., Jabbour, H., El-Osta, N., Karam, L., Hajj, A., & Rabbaa-Khabbaz, L. (2016). Internet addiction and relationships with insomnia, anxiety, depression, stress and self-esteem in University students: A cross-sectional designed study. *PLoS One*, 11(9): e0161126.
- Young, K. S. (1998). *Caught in the net: How to recognize the signs of internet addiction and a winning strategy for recovery*. New York: John Wiley & Sons; 1998.
- Zenebe, Y., Kunno, K., Mekonnen, M. et al. (2021). Prevalence and associated factors of internet addiction among undergraduate university students in Ethiopia: a community university-based cross-sectional study. *BMC Psychol*, 9(4), <https://doi.org/10.1186/s40359-020-00508-z>

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