



(RESEARCH ARTICLE)



Impact of problematic internet use on the academic stress and academic performance among adolescents in selected school, Kochi Kerala, India

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Abstract

The internet is recognized as a medium for information exchange, in various fields such as in academic research, entertainment, communication and commerce, across the world. Continuous use of internet results in a lot of psychological and mental disorders like anxiety, depression, stress and obsessive-compulsive disorder; as observed in many of the studies carried out recently. Recently, Problematic Internet Use has become a global phenomenon that causes serious problem to the affected individual leading to impairment in psychological well-being by causing excessive stress and affecting the individual's academic performance. The present study aimed to assess the Problematic Internet Use and its relationship with Academic Stress and Academic Performance among adolescents in selected schools, Kochi, Kerala, India. The study was conducted in Private Aided School, in Muvattupuzha Taluk of Ernakulam Dist, Kerala. A cross-sectional design with a quantitative approach was selected, and the study was conducted in July 2018 among 125 adolescents and participants were selected using random sampling technique. The samples were provided with a self-administered questionnaire after obtaining written consent from their parents and the students. The findings of the study revealed that 59.20% had mild Problematic internet addiction. 65% of the adolescents reported moderate stress and 32% had mild stress. Academic performance-wise, 60% of the adolescents were found to be average in the studies. Karl-Pearson coefficient indicated a significant relation between Academic Stress ($r=-1$ and $p<0.001$). Based on the findings one can conclude that the adolescents who were having internet addiction were found to have detrimental effects both in their Academic Performance and academic stress to some extent. As a result, the use of internet in normal limits or in moderation may not cause potential harm to their adolescents.

Keywords: Academic Performance; Academic Stress; Adolescents; Problematic Internet Use

1. Introduction

Extreme or poorly controlled pre-occupations characterize Internet Addiction. Internet addiction is defined as the inability to control one's urge to use the internet, which eventually causes psychological, social, school, and/or work difficulties in one's life. As the Individuals addicted to the internet may use the internet for prolonged periods detaching themselves from other social contacts and concentrate almost entirely on the internet rather than the broader life events. Adolescents with Problematic internet addiction usually suffer from problems with their daily routines, school performance, family relationships and moods.

Globally the prevalence of Problematic Internet Use considerably varies from one country to another. In a prevalence study carried out in Europe in 2014, it was observed that adults had a prevalence of 7.9% and adolescents 4.4%. 1.6% of Korean adolescents reported internet addiction with 38% of them at risk for internet addiction in future. Further in recent studies, prevalence was found to be up by 26% in adolescents.

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Many study findings conclude that stress and internet addiction are closely related. Previous researchers such as Ah and Jeong, Cho, Suh and Lee have revealed that stress is one of the crucial antecedents of Internet addiction for adolescents. Therefore, adolescents who use more internet are more stressed than normal adolescents.¹⁻⁴ According to General Strain theory, a variety of stress experienced by adolescents might cause negative emotions, which subsequently causes problem behaviors. Among the various types of stress, Academic Stress is the most salient and prevalent stressor for adolescents.

Substantial research has consistently shown that Academic Stress is related to psychological problems such as depression, anxiety, and insomnia for adolescents. However, less is known regarding the psychological mechanism associated with Academic Stress and its link with Internet addiction. Alavi et al. in a study examined the relationship between psychiatric symptoms of Internet addiction in Isfahan University students; showed that there is a significant positive correlation between psychiatric disorders such as depression, anxiety, stress, hypochondriasis, compulsion, interpersonal sensitivity, aggression, and paranoia, phobias, psychosis and Internet addiction. Jafari and Fathizade also in their study observed that there was a significant positive relationship between Internet addiction and each of the clinical variables of depression, anxiety, stress and social phobia.⁵

Also, Internet addiction has been linked to stress and negative emotions among adolescents causing emotional instability among adolescents. It was further reported that these adolescents often had difficulties in balancing classes, tests, assignments, extra-curricular activities, and social life. Inability to handle these challenges affected their physical, mental, emotional, cognitive, and behavioral functions; leading to considerable amount of anxiety and stress. They were not able to handle stress well ⁶ which led them to lose their motivation to engage in their studies ⁷. Consequently, their Academic Performance deteriorated ^{8,9,10} and performed badly in their exam.

Samaha & Hawi, summed up that student with poor academic performance had higher level of stress.¹¹ Stress was considerably increased in students as the free time they got was consumed in using internet resulting in very less time for study. Similar findings were also observed by Safree, Yasin & Dzulkifi ¹² and Khan, Altaf and Kausar ¹³. Based on the above-mentioned facts regarding Problematic Internet Use and its possible side-effects on academic performance leading to considerable amount of academic stress, the researcher felt is as necessary to investigate these variables among school students. Thus, a study with an aim to assess the effect of Problematic Internet Use on stress and academic performance among adolescents was conducted.

Objectives

- Assess the degree of Problematic Internet Use, Academic Stress and Academic Performance among adolescents.
- Find a correlation between Problematic Internet Use and Academic Stress, Academic Performance among adolescents.
- Compare between problematic internet users and non-Problematic Users.
- Find an association between Problematic Internet Users and selected demographic variables

2. Material and methods

2.1. Study design and sample

The present descriptive correlation study involved 125 adolescents who had been selected using cluster sampling methods from among all the adolescents studying in 8th, 9th and 10th standard of private aided schools in Muvattupuzha Thaluk, Ernakulam.

2.2. Measurements

- Socio-demographic characteristic consists of Age, Gender, Std/ Class, Family Income
- Information on Internet Usage Pattern: consists of information pertaining to Usage of the internet, Place of internet access, Purpose of internet used, Application used, Average duration of access -Per week, per day, Time of the day when the internet is accessed most and Activities Preferred online

2.3. Problematic Internet Use Questionnaire

A standardized tool developed by Zsolt Demetrovics, Beatrix Szeredi, and Sándor RózsaD (2008)¹⁴ to screen internet addiction was used after obtaining among adolescents. Permission to use the tool from the author was also obtained.

The tool is a comprehensive measure used to assess essential aspects of Problematic Internet Use consisting of 18 items with three domains.

Obsession, neglect and control disorder. Cronbach's alphas for the standardized tool were found between 0.74 and 0.87 for all the three subscales. The score of questionnaires ranged from 18-90, the highest the score, the greater the dependence on the internet. The score ranged as No PIU: 18-36, Mild PIU: 36-84, Moderate PIU: 54-72 and Severe PIU: 72-90.

2.4. Student Stress Inventory (SSI)

Was developed by Mohammed Aziz Shah Mohammed Arip, 2015¹⁵ to measure the level of distress among students. It contained 40 items to measure four subscales: Physical (10 items), Academic (10 items), Inter Personal Relationship (10 items), Environmental factor (10 items). The scale ranged from Never to Always with a score of 1-4. Student Stress Scale had a good content validity with an overall rating of 80.5% and a high- reliability coefficient of 0.85. The scoring and interpretation were as follows: 40-80 mild stress, 81-120 moderate stress, 121-160 severe stress.

2.5. Academic Achievement

The overall marks obtained by the adolescents for various subjects in the previous two terms in the present academic session were collected from school records and the average of the terms were obtained. The students who had a score of 80 and above had Excellent Academic Achievement, 60-80 reflected a Good Achievement. 40-60 reflects Average Academic Achievement and those with less or equal to 40 had Poor Academic Achievement.

2.6. Data collection and Ethical considerations

The ethics committee of the Institution approved this study. The data were collected after obtaining initial permission from the Principal of the selected school. The subjects were requested for authorization to be signed by their parents as each of them were minor. Anonymity was guaranteed by assigning, subject code, and it was further explained to subjects that Participation in the survey was voluntary and they had the chance to withdraw from the study at any point of time. Data was collected during the free period, in the classrooms in the presence of the investigator. The tool was administered to the subjects, and the subjects took almost 45 minutes to complete the questionnaire. Doubts if any cleared at the end.

2.7. Statistical Analysis

Descriptive statistics like frequency, percentage were calculated for socio-demographic data, Mean and Standard deviation were used to assess Problematic Internet Use, Academic Stress and Academic Performance. Inferential statistics like Pearson correlation to assess the correlation between variables and the Chi-square was used to test the association of Problematic and Non- Problematic Internet Users with selected socio-demographic variables and independent t-test was used to compare the difference between Problematic and Non-Problematic Internet Users.

3. Results and discussion

3.1. Study Sample Characteristics

Table 1 and Table 2 and figure 1, 2 and 3 consists of a summary of the sociodemographic and internet usage pattern summarized. Thirty -two percent of the adolescent belonged to age group 13-14yrs, 40% in the age group 14-15 yrs. And 28% in the age group of 15-16 yrs. Of 125 subjects, majority, 60% of them were male with 34% of them studying in 10th standard. More than 50% of the adolescents belonged to the high-income group. All the adolescents had access to the internet, with more than half (52%) of them using the internet in their own house and using the internet for academic purpose. 64% of the adolescents used the following application: e-mail, mass media, chat rooms, interactive games, online shopping, educational purpose, downloading or listening to music. 51% of the student's accessed the internet for an average of 24 hrs./wk., with 18% of them accessing the internet for more than 4 hrs/ day. Thirty-two percent of adolescents preferred to access the internet in the morning and 28% of them in afternoon. Activities preferred online by majority (62%) of subjects were gaming, instant messaging, social networking, watching Netflix, seeking information about education, online shopping and email.

Table 1 Percentage-wise distribution of Adolescents with Problematic Internet Use according to socio-demographic variables (N=125)

| Variables | F | % |
|----------------------|-----|------|
| Age (years) | | |
| 13-14 | 40 | 32 |
| 14-15 | 50 | 40 |
| 15-16 | 35 | 28 |
| Gender | | |
| Male | 75 | 60 |
| Female | 50 | 40 |
| Class | | |
| 8 th Std | 40 | 32 |
| 9 th Std | 42 | 33.6 |
| 10 th Std | 43 | 34.4 |
| Family income | | |
| > Rs. 126,360 | 69 | 55.2 |
| Rs. 63,182-126,356 | 23 | 18.4 |
| Rs. 47,266-63178 | 11 | 8.8 |
| Rs. 31,591-47262 | 21 | 16.8 |
| Rs. 18,953-31589 | 1 | 0.8 |
| Rs.6327-18949 | 0 | 0 |
| ≤Rs. 6323 | 0 | 0 |
| Total | 125 | 100 |

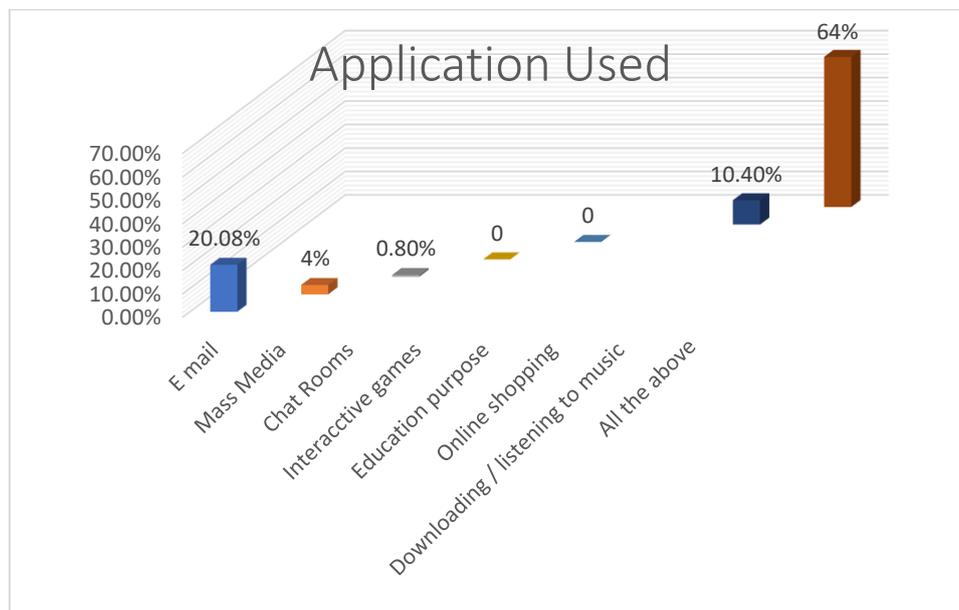


Figure 1 Bar diagram showing the Percentage distribution of Application used Online

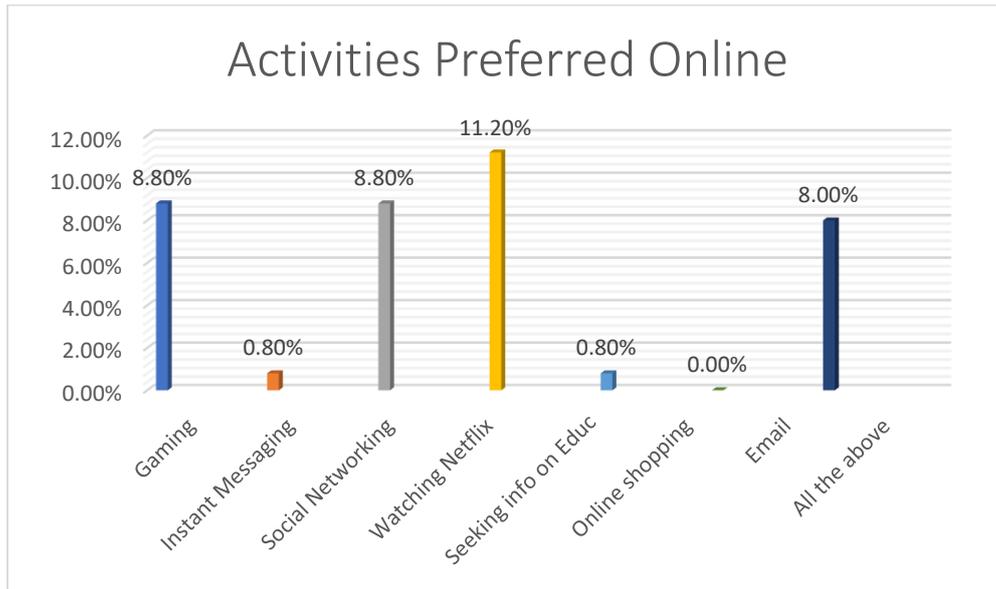


Figure 2 Bar diagram showing the Percentage distribution of Activities Preferred Online

Table 2 Percentage distribution of Adolescent with Problematic Internet Use according to information about internet use (n=125)

| Variables | N | % |
|---|-----|------|
| Internet usage | | |
| Yes | 108 | 86.4 |
| No | 17 | 13.6 |
| Place of internet access | | |
| Own house | 65 | 52 |
| Friend's house | 11 | 8.8 |
| Internet café | 1 | 0.8 |
| School Library | 23 | 18.4 |
| Public Places | 8 | 6.4 |
| Relatives Home | 1 | 0.8 |
| Combination of the above | 16 | 12.8 |
| ≤ 6 hours | 39 | 29.6 |
| 12 hours | 23 | 18.4 |
| 24 hours | 63 | 50.4 |
| The average duration of access per day | | |
| <30 min | 59 | 47.2 |
| 1-2 hour | 27 | 21.6 |
| 2-3 hour | 16 | 12.8 |
| ≥ 4 hours | 23 | 18.4 |
| Time of day when the internet is accessed most | | |
| Morning | 40 | 32 |
| Afternoon | 35 | 28 |
| Evening | 18 | 14.4 |
| Night | 13 | 10.4 |
| Combination of the above | 19 | 15.2 |

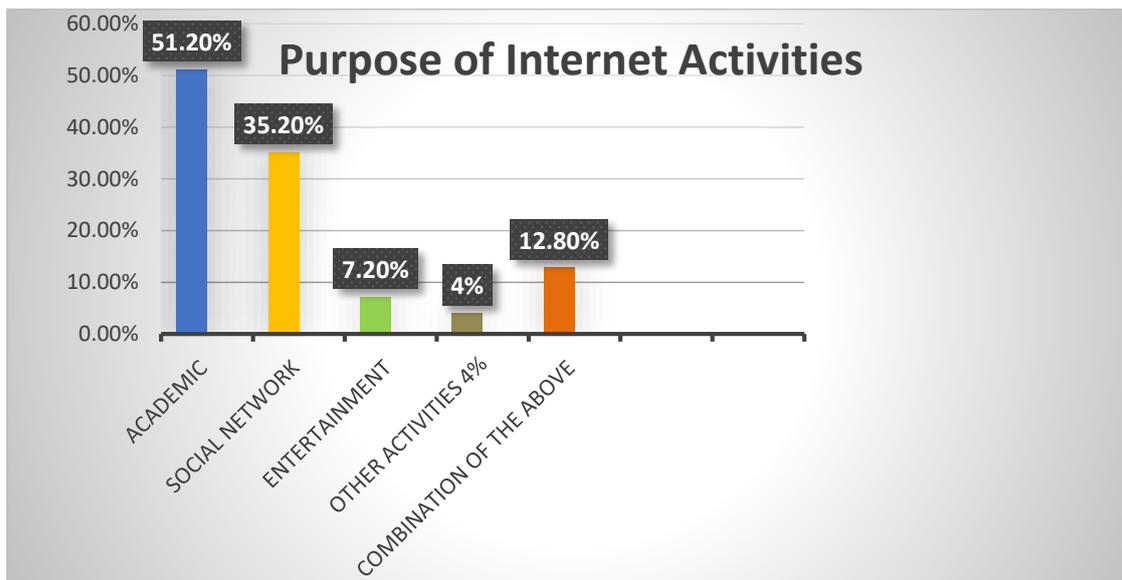


Figure 3 Pie diagram showing Purpose of Internet Activities

Table 3 Degree and Mean, SD of Problematic Internet Use, Academic Stress and Academic Performance among adolescents with Problematic Internet Use (N=125)

| Variables | Range of Score | N | % | Mean±SD |
|---------------------------------------|----------------|----|-------|------------|
| Problematic Internet Use (PIU) | | | | |
| No PIU | 18-36 | 78 | 62.40 | 33.9 ±14.2 |
| Mild PIU | 36-54 | 35 | 28.00 | |
| Moderate PIU | 54-72 | 11 | 08.80 | |
| Severe PIU | 72-90 | 01 | 00.80 | |
| Academic stress | | | | |
| No stress | ≥40 | 01 | 00.80 | 86.5 ±13.8 |
| Mild stress | 40-80 | 41 | 32.80 | |
| Moderate stress | 80-120 | 81 | 64.80 | |
| Severe stress | 120-160 | 02 | 01.60 | |
| Academic Performance | | | | |
| Excellent | ≤80 | 04 | 03.20 | 60.5 ±10.2 |
| Good | 60-80 | 46 | 36.80 | |
| Average | 40-60 | 75 | 60.00 | |
| Poor | ≥40 | 00 | 00.00 | |

Table 3 depicts the degree and mean & standard deviation of Problematic Internet Use, Academic Stress and academic performance. Of the 125 adolescents, only 1(0.80%) reported Mild PIU, 11(08.80%) had moderate PIU, and 35 (62.40%) had severe PIU with an overall mean and SD were 33.9 ±14.2 Most of the adolescents 81 (64.80%) had moderate Academic stress, and 41 (32.80%) had mild stress, and the Mean and SD was 86.5 ±13.8.

On assessing the academic performance, only 4 (3.20%) had excellent academic performance, 46 (36.80%) had reported good Academic Performance and 75 (60%) average performance. The Mean and SD were 60.5 ± 10.2 .

Table 4 Comparison between non- Problematic Internet Users and Problematic Internet Users with the Academic Stress and Academic Performance among adolescents with Problematic Internet Use using independent t-test. (N=125)

| Variable | No Problematic Internet User (Mean \pm SD) | Problematic Internet User (Mean \pm SD) | p-value |
|----------------------|---|--|---------|
| Academic stress | 83.45 \pm 11.75 | 91.79 \pm 15.43 | 0.001* |
| Academic Performance | 61.76 \pm 10.93 | 58.6 \pm 8.60 | 0.094 |

* Significant difference at 0.001

On comparing non-Problematic users and Problematic users with variables Academic Stress using independent t-test, there was a significant difference seen for Academic Stress ($P < 0.001$). However, no difference was seen on comparing Problematic Internet Users and Non-Problematic Internet Users with the variable academic performance. (Table 4)

Table 5 Correlation of Problematic Internet Use, Academic Stress and Academic Performance scores among Adolescents with Problematic Internet Use (N-125)

| Variable | Problematic Internet Use | Coefficient r | p-value |
|----------------------|--------------------------|---------------|---------|
| Academic Stress | 91.79 \pm 15.43 | 0.307 | 0.001* |
| Academic performance | 58.6 \pm 8.60 | -0.174 | 0.052 |

* Statistically significant at 0.001

On Correlating Problematic Internet Use with Academic Stress and Academic Performance using Karl Pearson correlation coefficient, a meaningful positive relationship was seen between Problematic Internet Use and Academic Stress ($r=0.307$, $p=0.001$). Therefore, it can be inferred based on the findings that with a significant increase in Excess Internet Use among adolescents, adolescents may experience significant academic distress.

On correlating Problematic Internet Use with academic performance, a negative relation ($r=-0.174$) was seen, but the difference was not statistically significant. (Table 5). From the findings, it is inferred that with surplus use of internet leads to a decline in Academic Performance.

Table 6 Association between Problematic Internet Use and Non-Problematic Internet use among adolescents with Problematic Internet Use elected demographic variables (N-125)

| Variables | No Problematic Internet Use n (%) | Problematic Internet Use n (%) | p-value |
|---------------------------------------|-----------------------------------|--------------------------------|---------|
| Family income | | | |
| > Rs. 126,360 | 50 (72.5) | 19 (27.5) | 0.042* |
| Rs. 63,182-126,356 | 12 (52.2) | 11 (47.8) | |
| Rs. 47,266-63178 | 7 (63.6) | 4 (36.4) | |
| Rs. 31,591-47262 | 8 (38.1) | 13 (61.9) | |
| Rs. 18,953-31589 | 1 (100) | 0 | |
| Purpose of internet activities | | | |
| Academic | 41 (64.1) | 23 (35.9) | 0.022* |
| Social network | 30 (68.2) | 14 (31.8) | |
| Entertainment | 1 (11.1) | 8 (88.9) | |
| Other activities | 4 (80) | 1 (20) | |
| Combination of above | 2 (66.7) | 1 (33.3) | |

*Statistically significant at $p < 0.01$

Table 7 Association of the level of Problematic Internet Use among adolescents with selected demographic variables (N=125)

| Variables | No Problematic Internet Use n (%) | Problematic Internet Use n (%) | p-value |
|---|-----------------------------------|--------------------------------|---------|
| Applications used | | | |
| Email | 22 (84.6) | 4 (15.4) | 0.001* |
| Mass media | 5 (100) | 0 | |
| Chat room | 0 | 1 (100) | |
| Downloading/ listening to music | 11 (84.6) | 2 (15.4) | |
| Combination of the above | 40 (50) | 40 (50) | |
| The average duration of access per week | | | |
| ≤ 6 hours | 32 (82.1) | 7 (17.9) | 0.001* |
| 12 hours | 17 (73.9) | 6 (26.1) | |
| 24 hours | 29 (46) | 34 (54) | |
| The average duration of access per day | | | |
| <30 min | 48 (81.4) | 11 (18.6) | 0.001* |
| 1-2 hour | 15 (55.6) | 12 (44.4) | |
| 2-3 hour | 8 (50) | 8 (50) | |
| ≥ 4 hours | 7 (30.4) | 16 (69.6) | |
| Time of day when the internet is accessed most | | | |
| Morning | 31 (77.5) | 9 (22.5) | 0.003* |
| Afternoon | 14 (40) | 21 (60) | |
| Evening | 14 (77.8) | 4 (22.2) | |
| Night | 10 (76.9) | 3 (23.1) | |
| Combination of the above | 9 (47.4) | 10 (52.6) | |
| Activities preferred online | | | |
| Gaming | 10 (90.9) | 1 (9.1) | 0.002* |
| Instant messaging | 0 | 1 (100) | |
| Social networking | 10 (90.9) | 1 (9.1) | |
| Watching Netflix | 11 (78.6) | 3 (21.4) | |
| Seeking information about education | 1 (100) | 0 | |
| Email | 9 (90) | 1 (10) | |
| Combination of the above | 37 (48.1) | 40 (51.9) | |

*Statistically significant at $p < 0.01$

On associating the Problematic Internet Use and Non-Problematic Internet Use score with selected demographic variable using Chi-square and Fisher's test a significant association was seen for family income ($p < 0.042$), purpose of internet activities ($p < 0.022$), applications used ($p < 0.001$), average duration of access per day and per week ($p < 0.001$), time of the day when internet is accessed most ($p < 0.003$) and activities preferred online ($p < 0.002$) (Table 6 & 7).

4. Discussion

Young people, especially adolescents, use the internet much more than any other age group for various purpose such as entertainment, communication with friends, strangers. They are more prone to Problematic Internet Use. This present study was carried by the researcher to explore the impact of Problematic Internet Use among high school students' Academic Performance Additionally; the researchers also intended to shed light on the Academic Stress resulting from Problematic Internet and poor academic performance on adolescents.

The study assessed the degree of PIU, Academic Performance and Academic Stress among adolescents aged 13-16 yrs. And the study findings have revealed 62.20 % as Normal internet users, 28% mild PIU users, 8.8 % moderate PIU and 0.80 % were severe PIU users. The pattern of findings was in line with previous reports where it was showed that severe and moderate Internet addictions were reported among 1.9% and 49.5% of the students, respectively, whereas the remaining 48.6% of the adolescents were normal internet users. The mild to the moderate prevalence of Internet addiction revealed in the present study was also justified by Young, 2004, who said that university adolescents have much unstructured time and they use it for leisure activities through internet; instead of utilizing it for academic purpose. Thus, they face stress and have poor performance in exams. In another study conducted by Ismail among adolescents in Zagazig, Egypt, 2007, revealed that the overall prevalence of Internet addiction was 54.6%, 5.3% in another study conducted in Riyadh city in Saudi Arabia¹⁶. Also, a study conducted by Alshehri and his colleagues found that the prevalence of moderate and severe Internet addictions were 45.3% and 4%, respectively, among Taif University students in Saudi Arabia^{17,18,19}. Severe Internet addiction was found among 13% of Menoufia University students in Egypt, 2015. In another in South Asia, the prevalence of severe PIU/Internet addiction ranged from 0% to 47.4%²⁰. In another study by Abdel-Salam et al,(2019) it was observed, most of the selected sample of 61 (50.8%) adolescents had moderate levels of internet addiction, followed by 30.8% of them had high levels of internet addiction and remaining 18.4% of them had low levels of addiction. It was also concluded based on the study findings of earlier studies that the most noticeable and troubling negative effect of the internet on the adolescent is Problematic Internet Use¹⁸. Furthermore, it was also seen that compared with other segments of society, adolescents appear to be more vulnerable to Problematic Internet Use due to psychological and developmental variables of adolescents as it relates to easy access to the internet as well as expectations, they have to pertain to internet use.

In the present study, the adolescents with Problematic Internet Use had Academic Stress ranging from mild to severe; mild -32.80%, moderate-64.80%, severe-1.60% and no academic stress (0%) and Academic Performance ranging from Average (60%), Good (36.80%) and Excellent 3.20%. In the case of academic stress, overall, of 125 selected students, majority 63 (52.5%) of them had moderate Academic Stress and, 51(42.5%) of them experienced high academic stress. Further, similar findings were reported in study findings by Lancy D'Souza, Manish S and Shravan Raj M.S, 2018 where the majority had moderate to high academic stress, and none of them had low levels of academic stress.

In the present study, a positive relationship was seen for Problematic Internet Use with Academic Stress ($r=0.30$, $p<0.01$). The findings were supported by studies of previous findings that internet addiction scores were significantly and positively related to most of the factors of academic stress.²¹

The researchers hypothesized the impact of internet addiction on the Academic Performance of adolescent high school students. The current study extended findings of preceding studies that found negative associations between Academic Performance and Problematic internet use ($r=-0.174$). These findings of the study are strongly supported by the study by Griffith (2000).²² This negative correlation between internet addiction and academic achievement can be simply explained by the fact that adolescents addicted to the internet tend to spend much time on the computer and as a result of which they have less time to study by Mishra et al, Akhter, and Frangos^{23,24,25}. However, the findings of the study are contrary to the study reports findings of a number of other studies in the literature.²³⁻³⁰

Conclusion

Findings from the present study revealed that effect of PIU on academic stress was significant and it further lead to poor academic performance. Based on the findings it can be concluded, if the internet use is done by the students in normal limits, it may boost the academic performance of the students; thus enhance their mental health.

Implications of the study

Several implications are suggested based on the findings of the present study.

- Early prevention should be considered for adolescents with PIU having academic stress and low academic performance by means of: group counselling, conducting Awareness Programme, distributing flyers and organizing Seminars.
- Awareness regarding the effects of excessive internet use among adolescents should be carried
- Parents and Schools also should be made aware of excessive internet use, its impact on the student's academic performance and further distress it causes.

Limitations of the study

- The study was conducted in a small suburb school of Kochi. Therefore, the generalization of the findings to the total population of the higher secondary school is limited.
- Further, the study investigated only the impact of Problematic Internet Use on Academic Stress and academic performance.
- More variables that could effect on Problematic Internet Use can be looked into.

Compliance with ethical standards

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Highlights / Key Findings:

- One-fourth of adolescents had Problematic Internet Use
- PIU was associated with excess Academic Stress and low academic performance

Disclosure of conflict of interest

The authors declare they have no competing interests.

Statement of informed consent

Informed consent was obtained from parents after explaining the study in brief and also from the subject to ensure the participation of subject. It was also ensured to the subjects that participation in the study was voluntary.

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