

Original Research Article

Exploring the link between internet addiction and aggression in Mysore's adolescents: a gender perspective

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ABSTRACT

Background: Internet addiction has become a major concern affecting adolescents' personal, social, and academic lives. This study aimed to examine the relationship between internet addiction and aggression across genders, focusing on gender-specific patterns.

Methods: The study included 480 adolescents from educational institutions in Mysore, Karnataka, selected through convenience sampling. Internet addiction was assessed using the Internet Addiction Test, while aggression patterns were evaluated using the validated Buss and Perry Aggression Questionnaire.

Results: There were no significant differences in overall internet addiction and aggression levels between male and female adolescents, linear regression analysis indicated a stronger correlation between internet addiction and aggression in males ($R = 0.350$, $p < 0.01$) compared to females ($R = 0.213$, $p < 0.01$). Additionally, binary logistic regression showed that verbal aggression was significantly associated with internet addiction ($p = 0.003$, $\text{Exp}(B) = 1.105$), particularly in females.

Conclusions: The findings suggest that, although male and female adolescents exhibit similar levels of internet addiction and aggression, it can be observed that males show slightly higher levels of internet addiction and aggression, it is shown that internet addiction is a stronger predictor of aggression in males and that females have higher aggression levels regardless of their internet addiction usage. It was also found that verbal aggression is notably associated with higher internet use. These insights underscore the importance of gender-specific interventions aimed at managing problematic internet use and mitigating its influence on aggressive behaviors in adolescence.

Keywords: Adolescents, Aggression, Gender attributes, Internet addiction

INTRODUCTION

Internet addiction, as defined by Beard and Wolf (2001), involves excessive internet use that disrupts an individual's academic, social, and professional functioning, alongside their psychological state—both mental and emotionalized as a pathological problem akin to obsessive-compulsive disorder, internet addiction leads to compulsive and relentless engagement with technology.¹ This behavior has become increasingly

common and challenging to manage due to the dual factors of associated pleasure and negative impacts on daily life.^{2,3}

The internet into academic, professional, and social lives has raised concerns regarding adverse health effects.⁴ Excessive internet use is linked to poor academic performance, hindered emotional development, and strained family relationships, especially in young people. When marked by symptoms such as tolerance and

salience, these issues are often classified under Internet Addiction (IA).^{5,6}

Adolescents, who have intense curiosity and knowledge-seeking behaviors, are especially susceptible to internet addiction. Exposure to unverified or harmful content on the internet may evoke emotional responses, heightening tendencies toward impulsive or aggressive behavior.^(7,8) These behaviors can have serious psychological and physical consequences, potentially fostering violent conduct among some adolescents.⁹

The internet has brought much advancement, but unequal access raises concerns about social, economic, and political inequalities. Those with internet access gain benefits, such as better social connections, educational opportunities, and economic prospects.¹⁰ However, studies show that women generally use the internet less than men, revealing gender differences in digital use.¹¹ Understanding how different genders use the internet is the key to address these inequalities.¹²

Aggression, defined as behavior intended to cause harm to others, is predominantly exhibited by males, who are often both perpetrators and victims of violence. However, girls also display various forms of aggression, often in response to societal and gender-based constraints. Within school environments, boys are frequently the primary actors in violence and bullying.¹³

With internet addiction on the rise and its potential link to aggression—especially in adolescents—understanding these behaviors through a gendered perspective becomes essential. This study delves into how internet addiction and aggression interact among adolescent boys and girls, shedding light on patterns that may differ by gender. Our primary goal is to uncover the relationship between internet addiction and aggression in both boys and girls, while also identifying any gender-specific differences in these patterns. The objectives were 1) To find the association between internet addiction and aggression among adolescent girls and boys 2) To study differences in internet addiction among adolescent boys and girls 3) To study aggression among adolescent boys and girls 4) To assess the strength of the relationship between internet addiction and aggression among male and female adolescents 5) To identify the specific components of aggression (physical, verbal, anger, hostility) that are significantly associated with internet addiction.

METHODS

The study design was a cross-sectional study conducted in Schools and Pre-universities of Mysuru district. The study population consisted of adolescents in the age group of 10-19 years, both males and females from Schools with Pre-Universities in Mysuru, Karnataka. The study duration was for a period of six months.

Inclusion criteria

Adolescents aged 10 to 19 years, both boys and girls, adolescents currently enrolled in school or college, adolescents who have used the internet, adolescents who provide assent to participate in the study, parental/guardian consent and school principal's consent obtained for the adolescent's participation were included.

Exclusion criteria

Adolescents who do not provide assent or whose parents/guardians and/or school principals do not provide consent. Adolescents with a diagnosed psychological or neurological disorder that may affect aggression or internet usage were excluded.

Sample size

Assuming the prevalence of internet addiction as 29% (Ying et al), with a confidence interval of 95%, at an alpha level of 5%, a study would require a sample size of 317 adolescents to be studied which was increased to 480 for better data accuracy and representation. The formula used is $N = 4PQ/d^2$.

Sampling method

A convenience sampling method was used to complete the data collection as data had to be collected from the schools and colleges according to the availability and feasibility of the participants with respect to the institute's academic schedule and time frame provided to conduct the data collection.

Data collection tools

The data collection tool consists of three parts: Basic socio-demographic details (age, gender, education, religion, location, etc.), The Internet addiction questionnaire (20 items) by Kimberly Young is a six-point rating scale ranging from 0 (does not apply) to 5 (Always).¹⁵

The Internet addiction questionnaire has shown a high internal consistency in previous Indian studies, with Cronbach's alpha value being (0.88, $p < 0.01$).¹⁶

The Buss and Perry aggression questionnaire (29 items), a five-point rating scale ranging from 1 (least) to 5 (greatest), and its subscales including physical aggression, verbal aggression, anger, and hostility.¹⁷

The Buss and Perry aggression questionnaire has been shown to possess strong reliability and validity. In a previous study done by Ahmed et al the anger (Cronbach's alpha 0.86), verbal aggression (Cronbach's alpha 0.73), and physical aggression (Cronbach's alpha 0.78) subscales all demonstrated adequate internal consistency.¹⁸

Data collection

The study was conducted following approval from the Institutional Ethics Committee of JSS Medical College, Mysore, Karnataka, India. After obtaining written informed consent from the parents/guardians and assent from the adolescent participants, data were collected from those who voluntarily agreed to participate. The data collection was carried out through face-to-face interviews with the participants, ensuring privacy and confidentiality throughout the process.

Data analysis

The collected data was entered in the MS-Excel 2019 worksheet and analyzed using SPSS version 25 (License to JSS AHER). Descriptive statistics were summarized with percentages and frequencies. Mann-Whitney U test was performed to study the gender differences on the Internet Addiction Questionnaire and Buss-Perry Aggression Scales and to examine the effects of Internet addiction on the level of aggression. Correlation tests as well as regression analysis were used to examine the relationship and the strength of the relationship of the gender with internet addiction and aggression. Data has been represented in tables and graphs as relevant.

The normality of the data was assessed using Q-Q plots and the Shapiro-Wilk test. The Shapiro-Wilk test results for the Internet Addiction Total Score (Statistic = 0.981, df = 480, $p < 0.001$) and Aggression (Statistic = 0.987, df = 480, $p < 0.001$) both indicate significant deviations from normality, suggesting that the data was not normally distributed.

RESULTS

Table 1 presents the socio-demographic characteristics of the 480 participants. Among them, 52.5% were in the age group of 16-18 years, with an equal distribution of males and females. The predominant religious affiliation was Hindu (90.4%), followed by Muslim (7.9%) and Christian (1.7%). (63.2%) were from nuclear families. We used modified BG Prasad classification to assess the socio-economic status. (37.5%) had sports as a hobby whereas (0.6%) had no hobbies. (98.5%) used smartphones whereas (0.6%) and (0.8%) also used laptops and tablets respectively. (79%) had their own device and the maximum duration of use was approximately 1 hour by (63.5%) of participants (Table 1).

The scatter plot demonstrates a weak but positive correlation between internet addiction and aggression scores in males. A slight upward trend (an increase in internet addiction scores shows an increase in aggression scores) is observed, although the relationship is not as strong as evidenced by a low R^2 value of 0.1226. The above data shows that while there is a relationship between internet addiction and aggression in males, it's not a strong predictor on its own, suggesting aggression is

likely influenced by multiple factors beyond internet addiction (Figure 1).

Table 1: Socio-demographic characteristics of the study participants.

Sociodemographic factors	Frequency (%)
Age (years)	
11-15	228 (47.5)
16-18	252 (52.5)
School/PU	
JSS high school	288 (60)
JSS PU	192 (40)
Residence	
Rural	188 (39.2)
Urban	292 (60.8)
Gender	
Male	240 (50)
Female	240 (50)
Religion	
Christian	8 (1.7)
Hindu	434 (90.4)
Muslim	38 (7.9)
Type of family	
Nuclear family	299 (62.3)
Joint family	149 (31.3)
Three generational family	32 (6.7)
Number of members	
1-5	378 (78.8)
6-10	91 (19)
>10	11 (2.3)
Socio economic class	
Upper class	172 (35.8)
Upper middle class	52 (10.8)
Middle class	148 (30.8)
Lower middle class	98 (20.4)
Lower class	10 (2.1)
Hobbies	
Sports	180 (37.5)
Art	133 (27.7)
Literature	121 (25.2)
Computer	19 (4)
Television	24 (5)
No hobbies	3 (0.6)
Devices used	
Smartphone	473 (98.5)
Laptop	3 (0.6)
Tablet	4 (0.8)
Own device	
No	379 (79)
Yes	101 (21)
Duration of internet use	
0-60 mins	305 (63.5)
60-120 mins	111 (23.1)
121-300 mins	50 (10.4)
> 301 mins	14 (2.9)

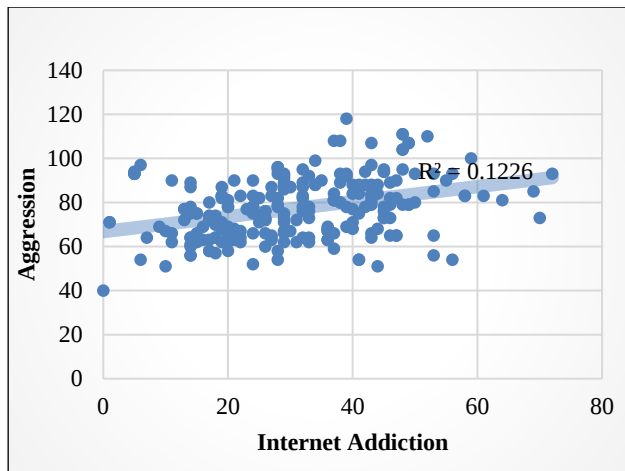


Figure 1: Scatter plot denoting the relationship between internet addiction and aggression in males.

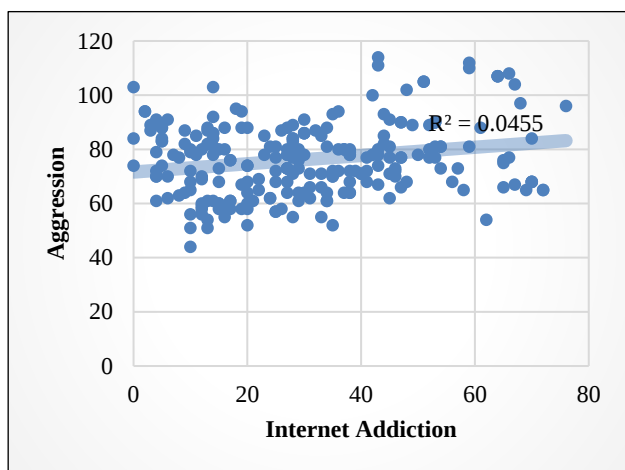


Figure 2: Scatter plot denoting the relationship between internet addiction and aggression in females.

The scatter plot reveals an extremely weak correlation between internet addiction and aggression scores in females. The regression line is seen to be horizontal and the value of R^2 (0.0455) suggests that internet addiction explains less than 5% of the variation in aggression scores among females. The data points show a more uniform distribution across the internet addiction scale, with relatively consistent aggression scores regardless of internet addiction levels (Figure 2).

The Mann-Whitney U test was used to assess whether there are differences in internet addiction scores between genders. The Mean Rank shows that males have a slightly higher rank (247.17) than females (233.83) for internet addiction scores. However, the Asymptotic Significance (p-value) of 0.292 suggests that this difference is not statistically significant. This means there is no strong evidence of a meaningful difference in internet addiction levels between males and females in this sample (Table 2).

The Mann-Whitney U test checks if there is a difference in aggression scores between genders. The Mean Rank shows that males have a slightly higher aggression rank (246.71) than females (234.29). However, the Asymptotic Significance (p-value) of 0.327 indicates that this difference is not statistically significant. This suggests there is no meaningful difference in aggression levels between males and females in this sample (Table 3).

The linear regression table presents model summaries for predicting aggression using Internet Addiction as the predictor. For females, the R-square is 0.213 and the standard error is 12.997, indicating modest predictive power. For males, the R-squared is 0.350 with a standard error of 12.726, suggesting IA is a stronger predictor of aggression for males than females, though the overall model fit is modest for both genders (Table 4).

Table 2: Comparison of internet addiction among males and females.

Test statistic	Value	Gender	N	Mean rank	Sum of ranks
Mann-Whitney U	27,199.50	Female	240	233.83	56,119.50
Wilcoxon W	56,119.50	Male	240	247.17	59,320.50
Z	-1.054	Total	480		
Asymp. Sig. (2-tailed)	0.292				

Table 3: Comparison of aggression among males and females.

Test statistic	Value	Gender	N	Mean rank	Sum of ranks
Mann-Whitney U	27,310.00	Female	240	234.29	56,230.00
Wilcoxon W	56,230.00	Male	240	246.71	59,210.00
Z	-0.981	Total	480		
Asymp. Sig. (2-tailed)	0.32				

The binary logistic regression reveals that verbal aggression has a significant association with internet addiction ($p=0.003$, $\text{Exp}(B)=1.105$), suggesting that verbal aggression is more likely to occur in adolescents with higher internet addiction levels (Table 5).

Table 4: Linear regression.

Gender	R	R square	Adjusted R square	Standard error of estimate	F	Significance
Female	0.213	0.45	0.41	12.997	11.333	<0.01*
Male	0.350	0.123	0.119	12.726	33.242	<0.01*

*Indicates $p < 0.01$ **Table 5: Binary logistic regression.**

Variable	Wald	Significance	Exp (B)
Internet addiction	0.831	0.362	0.881
Aggression	0.031	0.859	0.945
Physical aggression	1.026	0.311	0.974
Verbal aggression	8.548	0.003**	1.105
Anger	0.383	0.383	1.018
Hostility	0.726	0.726	0.394

**Indicates $p < 0.01$

DISCUSSION

The present study found that males exhibited more internet addiction and also exhibited more aggression when compared to a study done in China by Zhang et al, and another study done by Jamil et al, where the results showed that the predictor variable that is internet addiction had a highly significant positive effect on the outcome variable of the study which was aggression where it was found that adolescent males had higher internet addiction and aggression when compared to adolescent females.¹⁹ Here we can see through these studies that internet addiction plays a major role in the aggression factor, especially in the males than their female counterparts.¹⁷

A study by Sahin et al, found that internet dependence and aggressive behaviour were prominent among males when compared to females which is similar to the results of the present study on the internet addiction aspect, where males were found to have more internet addiction compared to females. Here we see through the present study that males leaned slightly higher toward internet addiction as compared to females which shows that internet addiction was a significant predictor of males exhibiting more aggression than females.²⁰

Giridharan and Lavanya conducted a study among school-going adolescents, which found that females had higher internet addiction which contradicts the findings of the present study. The present study findings showed that the internet addiction patterns of the males had a higher value than the females which influenced their aggression patterns and also it was found that males exhibited higher internet addiction and aggression patterns.²¹

A study by Owens and Macmullin et al, found that boys and girls could be aggressive and that there were certain qualitative differences between genders. The present

study focused on addiction to the internet being one of the factors contributing to the aggression factor of the genders and was able to determine that aggression levels in boys are significantly higher as compared to girls which is similar to the mentioned study.¹³

A study by Lim et al, found that male adolescents had higher internet addiction which shows that depression among the males with higher aggression predicted internet addiction, and in the present study it was found that aggression was higher among males when compared to females. In similarity to the mentioned study, it was found that internet addiction was found to be higher in males, even though the mentioned study had depression as a co-factor among males that predicted higher aggression levels.²²

A study by Ko et al found stronger gender-based correlations $R=0.482$ for males, $R=0.395$ for females similar to what was found in the present study, $R=0.350$ for males, $R=0.213$ for females, therefore the current study shows correlation values in males are higher as compared to the females which is similar to previous study suggesting a similar pattern in contemporary internet use among both the genders which may also be attributed to the fact of varying sample sizes and demographics.²³

A study done by Mehroof et al found a significant relationship between internet gaming addiction and aggression, the study reported Wald statistics between 10.2 to 15.8 as compared to the present study. The previous study also shows that anger and hostility were significant predictors whereas the present study shows that verbal aggression was the only significant predictor, these differences may be attributed to the fact that the previous study was done in different sample populations along with different cultural and social factors also including sample size variations.²⁴

CONCLUSION

The study confirms that internet addiction and aggression was found to be higher in males and that internet addiction predicts aggression positively particularly among males, aligning with findings from multiple previous studies. However, some research, like Giridharan and Lavanya's, contradicts this, showing higher internet addiction in females. Differences in findings may be due to cultural and demographic factors. Overall, males tend to exhibit higher aggression linked to internet addiction.

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REFERENCES

- Vondráčková P, Gabrhelík R. Prevention of Internet addiction: A systematic review. *J Behav Addict*. 2016;5(4):568-79.
- Daniilidou K, Triantafyllou P, Resta M, Dimitriadou M, Christoforidis A. Level of Internet use among Greek adolescents with type 1 diabetes. *Int J Adolesc Med Health*. 2017;31(1).
- Griffiths M. 8-INTERNET AND VIDEO-GAME ADDICTION. In: Essau CA, editor. *Adolescent Addiction*. San Diego: Academic Press; 2008:231-67.
- Pontes HM, Patrão IM, Griffiths MD. Portuguese validation of the Internet Addiction Test: An empirical study. *J Behav Addict*. 2014;3(2):107-14.
- Tsitsika A, Critselis E, Louizou A, Janikian M, Freskou A, Marangou E, et al. Determinants of Internet addiction among adolescents: a case-control study. *Sci World J*. 2011;11(1):866-74.
- Gür K, Yurt S, Bulduk S, Atagöz S. Internet addiction and physical and psychosocial behavior problems among rural secondary school students. *Nurs Health Sci*. 2015;17(3):331-8.
- Tan C, Dong S, Dong Q. A Study on the Relationship Between Problematic Internet Use, Emotional Regulation Difficulties and Aggressive Behavior of Vocational High School Students. In *Atlantis Press*; 2021:350-4.
- Smokowski PR, Guo S, Evans CBR, Wu Q, Rose RA, Bacallao M, et al. Risk and protective factors across multiple microsystems associated with internalizing symptoms and aggressive behavior in rural adolescents: Modeling longitudinal trajectories from the Rural Adaptation Project. *Am J Orthopsyc*. 2017;87(1):94-108.
- Cohn MD, Veltman DJ, Pape LE, van Lith K, Vermeiren RRJM, van den Brink W, et al. Incentive processing in persistent disruptive behavior and psychopathic traits: a functional magnetic resonance imaging study in adolescents. *Biol Psych*. 2015;78(9):615-24.
- Surveying the digital future. Available at: https://www.digitalcenter.org/wp-content/uploads/2013/02/2008_digital_future_report-year7.pdf. Accessed 06 May 2024.
- Kraut R, Scherlis W, Mukhopadhyay T, Manning J, Kiesler S. The HomeNet field trial of residential Internet services. *Commun ACM*. 1996;39(12):55-63.
- Helsper EJ. Gendered internet use across generations and life stages. *Commun Res*. 2010;37(3):352-74.
- Owens LD, MacMullin CE. Gender differences in aggression in children and adolescents in south Australian schools. *Int J Adole Youth*. 1995;6(1):21-35.
- World Health Organization. Adolescent health. Available at: <https://www.who.int/health-topics/adolescent-health>. Accessed 20 February 2023.
- Spoorthy MS, Singh LK, Tikka SK, Hara SH. Exploratory factor analysis of young's internet addiction test among professionals from India: an online survey. *Indian J Psychol Med*. 2021;43(1):65-9.
- Krishnamurthy S, Chetlapalli SK. Internet addiction: prevalence and risk factors: a cross-sectional study among college students in Bengaluru, the silicon valley of India. *Ind J Publ Health*. 2015;59(2):115.
- Jamil R, Khatoon B, Akhtar A, Rahman A. The study of relationship between internet addictions and aggression among teenagers. *J Management Info*. 2017;3:7-13.
- Ahmad M, Faheem I. Anger and Aggression among Youth: An Empirical Investigation. *IJHSS*. 2017;III(IVI):355-363.
- Zhang Y, Hou Z, Wu S, Li X, Hao M, Wu X. The relationship between internet addiction and aggressive behavior among adolescents during the COVID-19 pandemic: Anxiety as a mediator. *Acta Psychol*. 2022;227:103612.
- Şahin M. Üniversite öğrencilerinde internet bağımlılığı ve saldırganlık. *Dusu Adam*. 2014;27(1):43-52.
- Giridharan M, Lavanya DT. Internet addiction on aggression among school going adolescents. *J Posit School Psychol*. 2022;4732-8.
- Lim JA, Gwak AR, Park SM, Kwon JG, Lee JY, Jung HY, et al. Are adolescents with internet addiction prone to aggressive behavior? the mediating effect of clinical comorbidities on the predictability of aggression in adolescents with internet addiction. *Cyberpsychol Behav Soc Netw*. 2015;18(5):260-7.

23. Ko CH, Yen JY, Liu SC, Huang CF, Yen CF. The associations between aggressive behaviors and internet addiction and online activities in adolescents. *J Adolesc Health*. 2009;44(6):598-605.
24. Mehroof M, Griffiths MD. Online gaming addiction: the role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychol Behav Soc Netw*. 2010;13(3):313-6.

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