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A STUDY TO CORRELATE THE ACADEMIC PERFORMANCE AND FAMILY INTERACTION AMONG ADOLESCENTS IN SELECTED SCHOOLS OF KARNATAKA

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ABSTRACT

Electronic gadgets are great tools for learning efficiently, but there are negative effects if we overuse of electronic gadgets cause students to have difficulty concentrating in their studies because most of their time is spent on these devices which leads to have a poor academic performance. The research approach adopted for this study was quantitative research approach. The research design adopted for this study was exploratory. The study was conducted at selected schools of Karnataka. In the study accessible population consists of adolescents in selected schools. The sample of the study consists of adolescents in selected schools. The sample size consists of 100 adolescents. The sampling technique adopted in the present study was convenient sampling technique.

Key Words: *Electronic gadgets, students, difficulty concentrating, time, poor academic performance.*

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INTRODUCTION

Today's parents tend to be digitally inclined to be experienced and skillful digital users, who enjoy engaging in digital media consumption themselves and with their children (Plowman et al. 2008). Consequently, modern "digital natives" (Prensky, 2001) parents tend to vary in their attitudes and beliefs towards device usage and amount of consumption, depending on context and environment, ultimately lacking consistency and reliability. For example, even with high educational attainment, modern parents who set limitations and control children's screen-time exposure become permissive to digital media use at home, by utilizing mobile tablets and other devices as "babysitters" for their children, so parents can have time to work from home, complete other household tasks, or have personal leisure time (Brito, Francisco, Dias, & Chaudron, 2017). Physical health effects: excessive screen time is associated with poor sleep and risk factors for cardiovascular diseases such as high blood pressure, obesity, low HDL cholesterol, poor stress regulation (high sympathetic arousal and cortisol dysregulation), and Insulin Resistance. Other physical health consequences include impaired vision and reduced bone density. Psychological effects: internalizing and externalizing behavior is related to poor sleep. Depressive symptoms and suicidal are associated to screen time induced poor sleep, digital device night use, and mobile phone dependency. (Lissak G. Adverse physiological and psychological effects of screen time on children and adolescents: Literature review and case study) ADHD-related behavior was linked to sleep problems, overall screen time, and violent and fast-paced content which activates dopamine and the reward pathways. Early and prolonged exposure to violent content is also linked to risk for antisocial behavior and decreased prosocial behavior. Psychoneurological effects: addictive screen time use decreases social coping and involves craving behavior which resembles substance dependence behavior. Brain structural changes related to cognitive control and emotional regulation are associated with digital media addictive behavior. A case study of a treatment of an ADHD diagnosed 9-year-old boy suggests screen time induced ADHD-related behavior could be inaccurately diagnosed as ADHD. Screen time reduction is effective in decreasing ADHD-related behavior.

There are well-documented associations between sleep duration and screen time. Increased screen time among children is associated with an elevated risk of subsequent sleep problems, including shorter sleep durations, disturbed sleep, and frequent night wakings. (Garisson MM et al 2011) Increased screen time could limit sleep duration by reducing the time available for sleep (consistent with the displacement hypothesis[13]) and/or by interfering with circadian rhythms and promoting physiological arousal.[7] Although most research has focused on the potential influence of screen time on sleep duration, the relationships may be reciprocal. This is because a lack of sleep promotes greater daytime sleepiness and tiredness, which could translate into more sedentary behaviors as children feel less motivated to engage in active play. (Bartlett FB et al 2012) Few studies have examined the potential bidirectional associations between screen-time behaviors and sleep. In a longitudinal study of adolescents, Johnson et al[17] found that the amount of screen time predicted sleep duration, but this association did not hold in the opposite direction. However, Bartlett et al found that sleep duration was inversely associated with subsequent television viewing, which provides some support for a reciprocal relationship. With the tremendous advances in technology over the past decade, consumers have grown to expect a new gadget or an upgrade to an existing one on the market every few months. Gadgets like mobile phones, iPod, mp3 players and game consoles are the most sought after type of gadgets nowadays. In addition, these games have effects on the learning experiences of the students (Rheingold, 1993). According to Ally (2009), teachers nowadays know that most of their students own at least a hand phone or other mobile devices such as an MP3 player, a laptop and they are surrounded with technological gadgets which keep on changing at a very fast rate. In relation to this, nowadays students learned how to use the modern technology.

REVIEW OF LITERATURE

Ms. Diksha Bhagat et al 2023 conducted a study on the prevalence of excessive electronic gadgets use and its impact on academic performance among adolescents. Results: The study revealed that the majority of samples 128 (51.2%) moderately used electronic gadgets, whereas 110 (44%) samples had excessive use of electronic gadgets, and 12 (4.8%) samples had mild use of electronic gadgets. The majority of samples 97(88.18%) had average academic performance, whereas 7(6.36%) had poor academic performance and 6 (5.45%) had good academic performance and were using excessive electronic gadgets. The study also found that there was a positive correlation between cell phones and academic performance(r=0.263), and video games and academic performance (r=0.342). There was a negative correlation between academic performance and Television (r= -0.039), and the Internet (r= -0.083). There was a significant association found between excessive use of

electronic gadgets with Types of family (8.472) and social gatherings (20.94). A significant association was found between academic performance and with no. of siblings in the family (20.83)

Noratikah Othman, 2020 conducted a study on the Impact of Electronic Gadget Use on Academic Performance among Secondary School Students. 233 school students were involved in this study and the majority of them (59.2%) were Malay. For gender, 53.2% were male and 46.8% were female. In total 48.1% of students were spending time more than 6 hours on electronic gadgets and the remaining 51.9% of students spent less than 5.99 hours on electronic gadgets. Based on the findings, the result showed that there were significant associations between race, gender, parent income, level of dependency, academic performance health status, and the total time spent on electronic gadgets but opposing, but there was no significant association between years started using electronic gadget and total time spent on an electronic gadget. Yadav MS, Kodi SM, Deol R, 2021 conducted a study on Impact of mobile phone dependence on the behavior and academic performance of adolescents in selected schools of Uttarakhand, India. The study shows that 156 (54.70%) participants had a low mobile dependency, 191 (67%) participants had negative behavioral changes, and 125 (43.90%) participants had shown reduced academic performance due to overuse of the mobile phone. A significant relationship was seen between mobile phone dependency with behavioral changes ($P < 0.001$) and academic achievement ($P < 0.035$) among adolescents. Regression analysis predicted 49% of the differences among adolescents with selected variables due to the overuse of mobile phones. Esther Jennifer, S (2012) conducted a study on the *Influence of electronic gadgets' excessive use on academic performance and family interaction among adolescents* The study findings showed that 57% of the samples had average academic performance, 33% of the samples had good academic performance and only 10% of the samples had poor academic performance. The study findings elicited that 98% of the samples had poor family interaction and only 2% of the samples had moderately adequate family interaction. There is a negative relationship between electronic gadget use, family interaction, and academic performance. There was a significant association between television and demographic variables like age, standard, place of residence, and hobbies. For video games variables such as age, standard, education of mother, and outdoor activities had significant associations. For Internet variables such as age, standard, place of residence and hobbies had a significant association. There is no association between cell phones and demographic variables. Based on the study findings the investigator prepared a module and pamphlet with the motive of creating awareness to the adolescents and their parents regarding the effects of electronic gadgets excessive use and how to overcome it.

RESEARCH METHODOLOGY

The research approach adopted for this study was quantitative research approach. The research design adopted for this study was exploratory. The study was conducted at selected schools of Karnataka. In the study accessible population consists of adolescents in selected schools. The sample of the study consists of adolescents in selected schools. The sample size consists of 100 adolescents. The sampling technique adopted in the present study was convenient sampling technique.

DATA ANALYSIS AND INTERPRETATION

Objective 1: To correlate academic performance and family interaction

Chi-Square (χ^2) Test of Independence

Sample Size (N) = 100

Observed Frequency Table (O):

Academic Performance \ Family Interaction	High (19)	Moderate (43)	Low (38)	Row Total
High Performance (21)	10	9	2	21
Average Performance (46)	8	23	15	46
Low Performance (33)	1	11	21	33
Column Total	19	43	38	**100**

Step 1: Calculation of Expected Frequencies (E):

$$E_{ij} = \frac{(Row\ Total)_i \times (Column\ Total)_j}{N}$$

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Academic Performance \ Family Interaction	High (E)	Moderate (E)	Low (E)
High Performance (21)	3.99	9.03	7.98
Average Performance (46)	8.74	19.78	17.48
Low Performance (33)	6.27	14.19	12.54

Step 2: Calculation of Chi-Square Value (χ^2)

$$\chi^2 = \frac{(O-E)^2}{E}$$

$$\chi^2 = \frac{(10-3.99)^2}{3.99} + \frac{(9-9.03)^2}{9.03} + \frac{(2-7.98)^2}{7.98} + \frac{(8-8.74)^2}{8.74} + \frac{(23-19.78)^2}{19.78} + \frac{(15-17.48)^2}{17.48} + \frac{(1-6.27)^2}{6.27} +$$

$$\chi^2 = \frac{36.01}{3.99} + \frac{0.0009}{9.03} + \frac{35.76}{7.98} + \frac{0.5476}{8.74} + \frac{10.37}{19.78} + \frac{6.15}{17.48} + \frac{27.77}{6.27} + \frac{10.18}{14.19} + \frac{71.23}{12.54}$$

$$\chi^2 = 9.03 + 0.0001 + 4.48 + 0.06 + 0.52 + 0.35 + 4.43 + 0.72 + 5.68$$

$$\chi^2 = \mathbf{25.32}$$

Step 3: Degrees of Freedom (df)

df=(r−1)(c−1)=(3−1)(3−1)=4df = (r - 1)(c - 1) = (3 - 1)(3 - 1) = 4df=(r−1)(c−1)=(3−1)(3−1)=4

Step 4: Critical Value (χ^2_critical) at 0.05 Level

From the chi-square distribution table:

χcritical2(df=4,α=0.05)=9.488\chi^2_{\text{critical}}(df = 4, \alpha = 0.05) = 9.488χcritical2(df=4,α=0.05)=9.488

Step 5: Result

χcalculated2=25.32>χcritical2=9.488\chi^2_{\text{calculated}} = 25.32 > \chi^2_{\text{critical}} = 9.488χcalculated2=25.32>χcritical2=9.488

The calculated value exceeds the critical value. Hence, the result is statistically significant.

There is a significant association between academic performance and family interaction among adolescents. This suggests that students who report better interaction with their families tend to perform better academically, while those with poor family interactions tend to perform worse.

Table of Chi-Square Results

Variables Tested	χ^2 Value	df	χ^2 Critical (0.05)	Result
Academic Performance × Family Interaction	25.32	4	9.488	Significant

Detailed Inference

The present study aimed to examine the correlation between academic performance and family interaction among adolescents in selected schools of Karnataka. Using a Chi-Square Test of Independence, the relationship between these two categorical variables was analyzed based on a sample size of 100 participants.

The calculated Chi-Square value (χ^2 = 25.32) was found to be substantially higher than the critical value (χ^2_critical = 9.488) at 4 degrees of freedom and 5% level of significance. This clearly indicates a statistically significant association between academic performance and family interaction among adolescents.

The data revealed that:

- A majority of students with high academic performance (10 out of 21) reported high levels of family interaction, indicating frequent communication, emotional support, and quality time with family members.
- Conversely, students with low academic performance (21 out of 33) were predominantly found in the low family interaction category, reflecting limited involvement and poor quality of familial engagement.
- The moderate family interaction group primarily included students with average academic scores, suggesting a neutral or transitional effect.

This pattern highlights a clear inverse relationship between low family interaction and poor academic achievement, and a positive association between high family interaction and better academic performance.

From a psychological and behavioral standpoint, the results reinforce the well-established theory that family

support, involvement, and consistent communication play a critical role in motivating adolescents, helping them manage academic stress, and providing a conducive environment for learning. Adolescents who feel emotionally connected and supported by their families are more likely to exhibit self-discipline, focus, and academic consistency.

DISCUSSION

Objective 1: To correlate the academic performance and family interaction

Using the chi-square test, a statistically significant association was found between academic performance and family interaction ($\chi^2 = 25.32$, df = 4, $p < 0.05$). Students with high family interaction were more likely to perform better academically, while those with low family interaction reported lower scores.

This relationship is supported by Rodríguez et al. (2019), who conducted a study in Spain examining family environment and academic achievement. They concluded that strong family support positively influenced academic motivation, self-discipline, and overall grades in adolescents. The parallels in the findings suggest that fostering communication and involvement at home may buffer the negative academic impact of external distractions like electronic gadgets.

CONCLUSION

The findings of the study clearly demonstrate a statistically significant association between academic performance and family interaction among adolescents in selected schools of Karnataka. With a Chi-Square value ($\chi^2 = 25.32$) significantly exceeding the critical threshold (χ^2_critical = 9.488) at 4 degrees of freedom and a 5% level of significance, it can be concluded that family interaction plays an important role in influencing students' academic outcomes. These results highlight the importance of fostering positive and supportive family environments to enhance academic performance during adolescence.

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