Effect of Artificial Intelligence (AI) on Mental Health of College Students

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ABSTRACT

Artificial intelligence (AI) is a rapidly developing technology in modern society, revolutionising education, health, communication and entertainment. The role of AI-based technologies such as social media algorithms, smartphone applications, online gaming platforms, Chat-bots and digital learning tools has increased significantly, particularly in the lives of adolescents and young adults. Adolescence is a sensitive developmental stage, characterized by rapid mental emotional, and social changes, Consequently, AI can have both positive and negative impacts on adolescent mental health. The presents study aims to analyse the impact of AI on the mental health of college students. The sample included 300 college going graduate students aged 15-22 years. The DSS-Mental Health Scale was used for data collection. The data was analysed using percentage and mean methods. The results revealed that balanced and educational use of AI enhances students' confidence, learning and social interaction, while excessive and uncontrolled AI use is associated with stress, anxiety, depression, sleep deprivation and social isolation. The study concludes that digital literacy, parental monitoring and counselling are crucial for protecting adolescents' mental health when using AI.

Keywords: *Artificial Intelligence, Mental Health, Stress, Anxiety, Digital Technology.*

Introduction

In the present times, while change is being witnessed in every sector, some of these changes are proving beneficial, while others are having a negative impact. One such area is information and technology, where new inventions are constantly emerging. Artificial intelligence is one such invention that is demonstrating its influence in various fields, affecting people of all age groups. This study aims to examine the impact of AI on the mental health of college students and to explain, based on various studies, how its negative effects can be mitigated. They have reached young adulthood in terms of age and physical development and are citizens of their respective countries who are now capable of making independent decisions. From a biological perspective, their age generally falls between 15 and 20 years. This age group is largely familiar with Artificial Intelligence (AI). Therefore, in this era of AI, every young person wants to become a user of it. Whether it's their social or academic life, today's graduate students are relying on AI in all areas, from education to entertainment, and they prefer to engage in social activities and sports online. On one hand, AI-powered learning tools and gaming sites are allowing them to achieve better results with less effort, while on the other hand, AI-based content, social media algorithms, data-driven systems, and tracking are also emotionally affecting students. Screen time among young people is increasing daily, leading to sleep deprivation, cyber bullying, and pressure to maintain a perfect image, all of which contribute to increased stress and depression.

In the context of Indian colleges, the impact of AI affects the social, cultural, and educational dimensions of students. Therefore, if used in a balanced manner, it can prove to be a powerful tool for promoting mental health. However, its uncontrolled use can exacerbate psychological problems.

Need for the Study

In the present time, every individual is using AI, social media, or other digital tools in some form. Therefore, this study is crucial for creating a better future, and the reasons are as follows:

- There is a need to evaluate the psychological effects and coping mechanisms.
- It will be helpful in understanding the mental health of college students.
- This study is important for teachers, counsellors, and parents.
- The study will reveal the impact of the increasing use of AI on mental health.

Objectives

- To identify the positive and negative effects of AI.
- To assess the mental health status of college students.
- To analyse the relationship between AI use and mental health.
- To study the level of AI use among college students.

Hypotheses

- There is a significant link between excessive AI use and adolescent mental health.
- There is no significant link between excessive AI use and adolescent mental health.
- Sensible AI use has a positive impact on adolescent mental health.
- Excessive AI use increases stress, anxiety and depression.

Review of Literature

According to WHO (2022)- digital stress and screen time are among the leading causes of mental health problems in adolescents.

- **Mental health and wellbeing** — According to Twenge et al.,2018; gupta & sharma, 2023, AI-driven mental-health chat-bots and screening tools are increasingly used on campus for early support and triage; systematic reviews find promise for reducing mild-to-moderate anxiety and increasing help-seeking, but evidence on long-term clinical impact and safety/ethics is still emerging. Studies emphasize human oversight and clear referral pathways.

- **Academic integrity and ethics** — According to Misra and Pandey (2021), Generative AI (e.g., large language models) has introduced new cheating vectors and challenged traditional plagiarism detection; systematic reviews call for rethinking assessment design (authentic, oral, process-based tasks) and updating academic-integrity policies. Institutions face tension balancing pedagogical benefits with fairness and detection limits.

- **Student attitudes and adoption** —According to Gupta & Sharma (2023) Mixed-methods studies show many students welcome AI for study help and mental-health support, yet express anxiety about originality, surveillance, and fairness; adoption is influenced by perceived usefulness, ease of use, and instructor guidance.

- **A 2025 systematic review focusing on the effect of generative AI (e.g. Chat GPT) on higher-education-**Kaplan &Henlein (2019),Higher education students found that AI can enhance critical thinking and independent judgment by giving quick access to diverse perspectives and facilitating analysis and argument construction.

- **On the risk side**: According to Sharma and Verma (2022), increased AI usage may contribute to "techno-stress," feelings of loneliness or social isolation (due to reduced human interaction), digital fatigue, and decreased interpersonal/social-communication skills.

- **To address these issues, some researchers propose frameworks such as** According to Twenge et al. (2018) an "AI-Aided Assessment Scale" (ranging from "No AI" to "Full AI") to help educators structure assessments that balance AI assistance with human evaluation.

- **Recent reviews investigating the impact of AI on student well-being highlight both potential benefits and risks**. On the benefit side: According to a report by the World health organization(WHO, 2022), AI tools can offer support for mental health (e.g. chat-bots), help with communications, and reduce certain stressors — which can be especially useful when human support is limited.

AI - Positive Impact

- Mental health and emotionalsupport through AI - based mental health apps and chatbots.
- Enhanced Academic support and feedback .
- Personalized & Adaptive Learning AI- powered adaptive learning systems (like intelligent tutoring systems and recommendation algorithms) help tailor content to each student's pace, strengths, and weaknesses.
- Generative AI (e.g., Chat GPT) can support brainstorming, multiple-perspective evaluation, and analytical reasoning.
- Career Guidance & Skill Development AI-driven career systems analyze skills, interests, and job trends to guide students toward suitable career paths.

AI- Negative Impacts

- Generative AI makes it easier to produce essays, reports, and answers that bypass original thinking. Research shows a significant rise in AI-assisted cheating and difficulty for institutions in detecting AI-generated content.
- Students totally dependence on AI tools for writing, problem-solving, and idea generation can weaken students' independent thinking and analytical ability
- AI use may increase digital fatigue, dependence on non-human interaction, and feelings of social isolation. Students often experience anxiety, distraction, and cognitive overload due to constant engagement with AI tools.
- AI- generated ideas can lead to uniform, less original assignments. Overuse reduces students' ability to produce unique arguments or creative expressions.
- AI mental-health chat-bots can offer initial help, but excessive reliance may reduce real human connection and delay professional support.
- Social isolation and reduced face- to- face interaction.
- Cyber-bullying amplified by AI.

Methodology

- **Type of Research:** Mixed Method Research
- **Research Design:** Descriptive methods/ Survey- based.
- **Sample:** B.A., Bsc., BEd. students age - 16 to 20 year.
  Total students – 300
  Boys - 150
  Girls - 150
- **Research Area:** Urban and semi- urban colleges.
- **Tools:** AIusage Digital Stress Scale (DSS).
- **Data Collection:** Online and Offline.

Description of DSS Tools

Inthis study used the Digital Stress Scale (DSS) to measure stress related to AI and digital technology in adolescents. The DSS is a standardized scale used to assess psychological stress related to digital devices, social media, AI-based application and online activities.

Key features of the DSS: Total items : 20
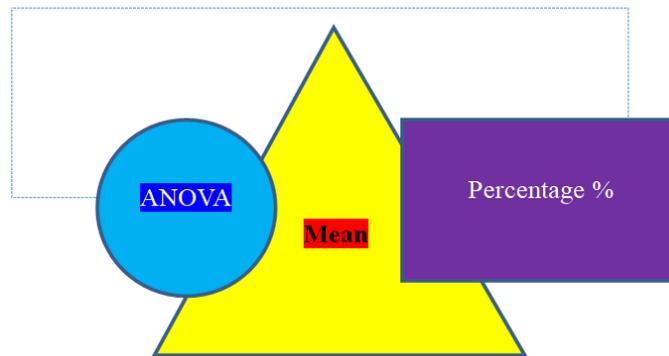
Scale Type- 5- point Likert Scale.

Dimensions Measured

- Digital Overload
- Techno-Anxiety
- Social media Pressure
- Emotional Exhaustion

Data Analysis

The data obtained were analysed using the following statistical methods:

Sample Size: 300 college students (16-25 year age)

Table 1: Digital Stress Level based Analysis

Digital Stress Level	No. of Students	Percentage %
Low stress	73	24%
Moderate stress	142	47.7%
High stress	85	28.3%
Total students	300	100%

Interpretation

This table showing that 47% of college going students experienced moderate levels of digital stress, while 28.3% experienced high levels of digital stress. This indicates that AI and digital technology are significantly impacting adolescent mental health.

Analysis by DSS Dimensions

Table 2: Mean Scores for Different DSS Dimensions

DSS Dimensions	Mean Score	Stress Level
Digital overload	17.8	High
Technological anxiety	14.2	medium
Social Media Pressure	16.5	Medium-High
Emotional exhaustion	19.2	high

Interpretation

- In this dimensions scores of digital overload and emotional exhaustion were found to be high, suggesting that excessive AI and digital use is mentally exhausting of college students.
- Social media pressure reflects adolescents' concern for comparison and approval (likes/comments).

Analysis to relationship between AI usage time and digital stress-

Table 3: DSS scores by AI usage time

AI (Hours/Day)	DSS Mean Score	Stress Level
1-2 hours	38.4	Low
3-4	53.1	Medium
Above hours	67.8	high

Interpretation

- In this table clearly shows that as daily use of AI- based technologies increases, so does improve digital stress.
- Higher digital stress was clearly observed among adolescents who used AI for 5 hours or more.

Analysis DSS result of Gender

Table 4: Digital Stress Among Boys and Girls Gender

Gender	DSS Mean Score	Stress Level
Boys	55.3	Medium
Girls	59.7	Medium – high

Interpretation

- In this table shows that girls were found to have relatively higher levels of digital stress.
- This could be due to social media comparisons, online social pressure and emotional sensitivity.

Findings

- The following key finding emerged from this test:
- Most adolescents experienced moderate to high levels of digital stress.
- Higher stress and emotional exhaustion were evident among adolescents with excessive AI use (5+ hours).
- Social media – based AI algorithms increase comparison, self- doubt, and anxiety among adolescents.
- Adolescents with moderate and limited AI use experienced relatively lower levels of digital stress.
- Girls reported higher levels of digital stress than boys.

Discussion and Conclusion

Result of this research through the DSS indicating that AI-based digital technologies are significantly impacting the mental health of adolescents. While AI aids learning and information acquisition, its excessive use is increasing stress, anxiety and emotional exhaustion among college students.

This study concludes that AI has both positive and negative impacts on college students mental health, balanced, purposeful and guided AI use supports students mental development, while excessive use poses mental health risks.

Therefor digital literacy, parental monitoring and counselling are essential.

Future Suggestion

- **Development of AI- Based Intervention Programs**

Future AI- based mental health intervention programs should be developed that help reduce digital stress, enhance emotional balance and develop self-control, empirical studies on the effectiveness of these programs are essential.

- **College Based Digital Counselling Models**

AI- assisted counselling and digital wellness programs should be implemented at the college level. Future research could examine the effectiveness of such programs in reducing DSS scores.

- **Gender and Sociocultural Comparisons**

Future research should compare difference in digital stress by gender, socio-economic status and cultural background, allowing for more inclusive policies.

- **Research for Policy Making and Educational Reform**

Research related to AI use and digital stress should be integrated into national education policy and adolescent mental health plans. Policy- oriented research is needed in the future.

The future suggestions above indicate that the topic of AI and adolescent mental health is a multifaceted and constantly evolving field. If research, policy and practical intervention are integrated, AI can be developed as a helpful tool for adolescent mental health, not a source of stress.

Conclusion

The objective of the present study was to empirically analyse the impact of artificial intelligence (AI)- based digital technologies on adolescent mental health. Analysis of data collected through the Digital Stress Scale (DSS) clearly demonstrates the dual impact of AI-based technologies on adolescent mental health.

The study's results revealed that balanced, purposeful and educational use of AI can enhance adolescent learning, self- confidence, problem-solving skills and social interaction. AI-based learning platforms and digital resources provide adolescents with opportunities for self- study and knowledge acquisition.

On the other hand, the findings of the Digital Stress Scale also revealed that excessive and uncontrolled AI use increases digital overload, techno- anxiety, social comparison, emotional exhaustion, and mental stress in adolescents. In particular, social media algorithms and constant online presence adversely affect adolescent's' self-esteem, sleep patterns and emotional stability, adolescents with higher DSS scores were found to have higher levels of stress and anxiety, indicating mental health risks.

The study concludes that the problem isn't artificial intelligence itself, but rather its excessive, unbalanced and unguided use, which poses a challenge to adolescent mental health. If AI is used within appropriate timeframes, purposeful activities, and guided environments, it can be a positive tools for adolescent development.

Suggestion

- Promoting positive AI use.
- Screen –time control by parents.
- Counselling services provide at the college and school level.
- Digital literacy programs in college and school.

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