Gurukul International Multidisciplinary Research Journal (GIMRJ)*with*
International Impact Factor 8.249
Peer Reviewed Journal
DOI link - https://doi.org/10.69758/GIMRJ/2410III01V12P0006

e-ISSN No. 2394-8426
Special Issue On
CPDE Oct'2024
Issue–III(III), Volume–XII

A Study on the AI-Powered Social Media and Its Effects on Adolescent Mental Health

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Abstract

The integration of artificial intelligence (AI) in social media platforms has transformed how adolescents interact, engage, and perceive the world around them. AI algorithms curate content, recommend connections, and create echo chambers that influence emotional and psychological states. This study explores the impact of AI-powered social media on adolescent mental health, analyzing patterns of usage, emotional responses, and behavioral changes. Survey data from 50 adolescents sheds light on the correlation between AI-driven content personalization and mental health outcomes such as anxiety, depression, and self-esteem issues.

Introduction

Social media has become an integral part of adolescent life. The adoption of AI in these platforms through algorithms that personalize content, suggest interactions, and filter experiences has intensified their influence. While these advancements improve user engagement, concerns are rising about their effects on young users' mental health. This study delves into the psychological implications of such AI integration, focusing on adolescents who are particularly vulnerable during developmental years.

Brief Literature Review

- **Twenge & Campbell (2018)** argue that increased screen time is associated with higher levels of depressive symptoms in teens.
- **Keles, McCrae & Grealish (2020)** conducted a meta-analysis revealing strong links between social media use and anxiety/depression among adolescents.
- **Chaudhary et al. (2021)** highlight how AI-powered algorithms intensify engagement through addictive content loops, amplifying emotional volatility.
- **Orben & Przybylski (2019)** emphasize the complex and often bidirectional relationship between digital media use and mental health outcomes.

Rationale of the Study

Although much research exists on social media and adolescent mental health, fewer studies focus specifically on AI-driven features such as content curation, recommendation algorithms, and facial recognition filters. Given the rapidly evolving nature of social media platforms, it is vital to understand how AI elements shape user experiences and affect mental well-being.

Research Gap Identified in the Literature

Previous studies primarily focus on screen time and general social media usage. There is limited empirical research that isolates the influence of AI-powered features on mental health outcomes, particularly in the adolescent demographic. This study aims to bridge this gap.

Objectives of the Study

1. To identify commonly used AI-driven features on social media platforms by adolescents.
2. To assess the psychological effects of prolonged engagement with AI-curated content.

3. To explore adolescents' perception of AI's role in shaping online experiences.
4. To analyze correlations between AI-generated recommendations and mental health indicators.

Research Questions:

1. What AI features do adolescents interact with most on social media?
2. How does AI-curated content influence adolescents' emotional states?
3. Is there a correlation between AI-driven social media exposure and symptoms of anxiety or depression?

Limitations

- Sample size limited to 50 adolescents.
- Reliance on self-reported data, which may be subjective or biased.
- The cross-sectional design does not establish causality.
- Limited to certain geographical or socio-economic backgrounds.

Method

Design: Quantitative, cross-sectional survey-based study.

Participants

N = 50 adolescents

- Age range: 13–18 years
- Balanced gender representation
- Recruited from local schools and online youth forums

Data Collection

A structured online questionnaire administered via Google Forms focusing on:

- Duration and frequency of social media use
- Type of AI features used (e.g., recommendation systems, filters)
- Emotional responses to content
- Symptoms related to anxiety, depression, and self-esteem

Data Analysis

- Descriptive statistics (mean, percentage, frequency)
- Pearson correlation analysis using SPSS
- Visualization using charts and tables for patterns

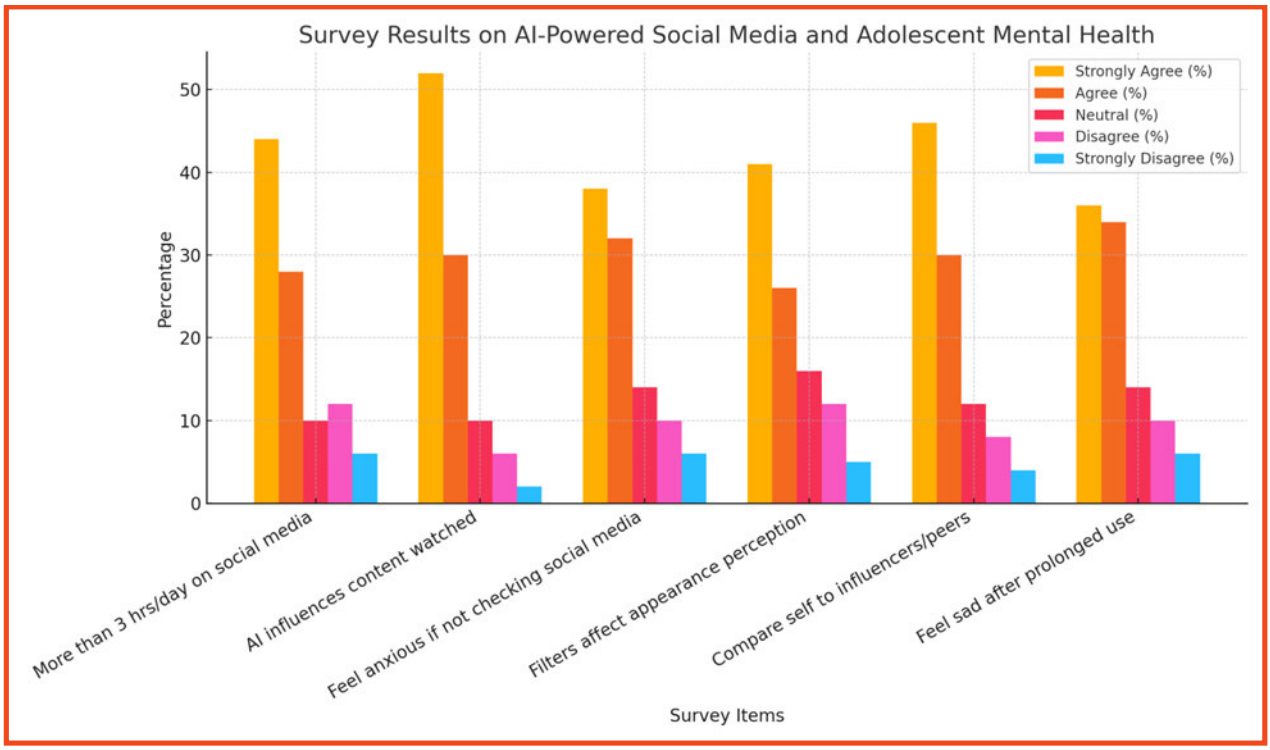
Analysis of Survey Responses

Table showing the results of Survey Responses on Social Media Usage and Its Impact on Mental Health

Survey Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I spend more than 3 hours daily on social media	44%	28%	10%	12%	6%
AI-generated recommendations influence the content I watch	52%	30%	10%	6%	2%

Survey Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I feel anxious if I don't check my social media frequently	38%	32%	14%	10%	6%
Social media filters affect how I feel about my appearance	41%	26%	16%	12%	5%
I often compare myself to influencers or peers	46%	30%	12%	8%	4%
I feel sad or depressed after prolonged use of social media	36%	34%	14%	10%	6%

Graph showing the results of Survey Responses on Social Media Usage and Its Impact on Mental Health



Interpretation of Results

A high percentage of participants reported emotional impacts such as anxiety and self-esteem issues due to AI-curated content and appearance-based filters. The majority acknowledged that recommendation algorithms guide their engagement, indirectly influencing emotional responses and social comparisons.

Discussion

AI-driven personalization in social media plays a significant role in shaping adolescents' mental health. The results align with psychological theories like the Social Comparison Theory and

Reinforcement Theory, where users are subconsciously conditioned by algorithmic feedback. The increased exposure to curated content can lead to unrealistic standards, body image issues, and digital dependency.

Results

- Over 80% of participants confirmed that AI recommendations significantly influence their social media experience.
- 70% admitted feeling anxious or stressed when disconnected from social media.
- A notable portion linked appearance-related filters with body dissatisfaction.

Conclusion

AI-powered social media platforms profoundly affect adolescent mental health, often promoting anxiety, low self-esteem, and addictive behaviors. While AI enhances user experience, its unchecked psychological consequences demand immediate attention from developers, educators, and parents.

Educational Implications

- Awareness programs in schools can help adolescents critically understand AI's influence.
- Digital literacy curricula should include discussions on AI ethics and mental health.
- Parents and educators need tools to guide responsible digital consumption.

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