

Social Media Addiction and Academic Performance: A Bibliometric Analysis Approach

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Abstract

Social media addiction (SMA) has become a significant concern affecting students in higher education institutions, with both positive and negative implications. As a result, scholars and practitioners have directed their attention to examining its impact on academic performance. However, existing research in this area has largely relied on non-visualized approaches, potentially limiting their ability to holistically understand the development of this complex phenomenon. To bridge this gap, our study adopts visualized bibliometrics to offer comprehensive insights into the relationship between SMA and students' academic performance, as reflected in research journals. Utilizing the R package bibliometric and VOSviewer application, we analyze the distribution of publications on SMA and academic performance, average annual citation rates, the most productive countries in this field, and the top globally cited documents and journal article sources per year. Our findings emphasize the importance of prioritizing SMA control to mitigate its adverse impact on students' educational achievements.

Keywords: Addiction, Academic Performance, Bibliometric Analysis, Social Media, Student

Introduction

In the fast-growing and evolving landscape of academic research, understanding the current state of knowledge, identifying research trends, and uncovering literature gaps are pivotal. The propagation of research publications, especially in the digital age, has made it increasingly challenging to comprehensively assess the scope and evolution of a specific field. In this context, the use of bibliometric analysis emerges as a powerful and systematic approach to illuminate the landscape of scholarly communication in social media (SM) and academic performance. Furthermore, SM effectively facilitated communication among students with various individuals, such as friends, family, classmates, and lecturers (Tayo et al., 2020).

The widespread use of SM, exemplified by Facebook's 2.45 billion daily users and Instagram's 1 billion monthly active users, has drawn significant scholarly attention (Dixon, 2022). However, concerns arise due to students' excessive engagement with SM, which adversely affects academic performance (Casale & Banchi, 2020; Atish, 2019). Various platforms, including Facebook, Twitter, LinkedIn, and Instagram, are commonly used by students in higher education institutions (Nwazor & Godwin-Maduiké, 2015). Scholars have recognized the challenges posed by excessive SM use, linking it to Internet addiction and interference with other aspects of daily life (Brooks, Wang, and Schneider, 2020) (Hou et al., 2019) (Idubor, 2015). Furthermore, while SM applications serve as valuable information systems (IS) tools, they have also been associated with negative consequences, such as addictive behavior and decreased academic performance (Hou et al., 2019).

Addressing SM addiction's impact on students' academic performance requires further research and measures. The impact of SM on students is notable, with studies showing that excessive use of SM applications can result in a 20% decrease in grades among teenage students (Brooks et al., 2020; Idubor, 2015). This underscores the urgency of addressing social media addiction (SMA) among university students, who are increasingly reliant on social media accounts (Nwazor & Godwin-Maduiké, 2015). To effectively manage SMA, future research should explore both preventive and therapeutic techniques (Fatokun, 2019). It is imperative that collaborative efforts involving government, parents, SM service providers, application developers, and educational institutions are undertaken to mitigate the impact of SMA (Nasiru & Smaha, 2017). Therefore, collaboration among the government, parents, SM service providers, application developers, and educational institutions is crucial to addressing SMA's impact (Nasiru and Smaha, 2017). Similarly, SMA has been found to have negative effects on academic performance. Hence, studies have shown that SMA is significantly related to lower grade point averages (GPA) (Hyacinth, 2021; Qureshi et al., 2023). It has also been found to have a negative impact on students' psychological well-being, which in turn affects their academic performance. Therefore, as the academic interest in SMA continues to surge, the adoption of reliable analytical methodologies becomes imperative for assessing related articles (Tiwari et al., 2018). Hazen et al (2016), argued that, over time, the intensity of academic interest in SMA has grown, while Tiwari et al (2018) also emphasized the need necessitating the use of robust analytical techniques to comprehensively analyze associated publications.

Analytical techniques encompass an array of methods aimed at identifying solutions by providing precise predictions for different problems (Cancino et al., 2019). In the realm of IS, bibliometrics emerges as a valuable resource, offering tools and methodologies to quantitatively analyze the bibliographic data of articles. Leveraging information technology (IT), bibliometric techniques process and analyze both quantitative and qualitative data derived from bibliographic information, yielding valuable insights (Takahashi and Kajikawa, 2017). Scholars have characterized bibliometrics as a research area within IS that employs quantitative methodologies to examine bibliographic data (Gaviria-Marin et al., 2018). Despite being introduced over five decades ago, bibliometrics has garnered immense popularity among academics, primarily due to significant advancements in IT that have streamlined calculations (Ding et al., 2014; Cancino et al., 2019). However, previous research in this field has largely utilized non-visualized approaches, limiting their capacity to illustrate the overall progression of a specific area. This study attempts to fill this gap by employing visualized bibliometrics to analyze papers and corresponding references, offering comprehensive insights into SMA and students' academic performance in research journals.

Utilizing the powerful R package bibliometric and VOSviewer application, we aim to gain deeper insights into the complexities of SMA and its impact on student's educational journey. This paper seeks to address the following questions:

RQ1: What key insights and trends can be extracted from the analysis of cited papers in the context of social media addiction and academic performance?

RQ2: How can the analysis of cited papers contribute to a deeper understanding of social media addiction and academic performance?

This paper is organized as follows: The Literature Review section offers a concise literature review on SMA and its impact on students' academic performance. Followed by the Methodology section outlines the methodology, encompassing data collection and the search strategy. The results of the data analysis and visualization are presented in the Results section. The ensuing discussion is presented in the Discussion section. Lastly, the Conclusion section presents the conclusions, limitations, and recommendations for future research.

Literature Review

SM platforms have demonstrated both positive and negative effects on youths and students (Idubor, 2015). However, excessive use of these applications, referred to as SMA, has become a significant concern for parents and higher education authorities. Casale and Banchi (2020) highlighted in their systematic literature review on narcissism and problematic SM use that Internet addiction has been recognized in psychiatric literature as a mental illness with the potential to affect millions of users. Similarly, prior research by Nwazor et al (2015) revealed that social networking addiction can interfere with various aspects of daily life, including health, recreation, and education. Moreover, SM has been associated with several "dark side" effects, such as addictive behavior, negative emotional states like sadness, and poor academic performance (Hou et al., 2019). Consequently, the overuse of SM applications can have adverse effects on academic achievement, attributed to factors like fear of missing out, peer and family pressure, easy internet access, and the widespread use of mobile phones (Brooks et al., 2020). Educational institutions widely employ these platforms, and academics benefit from using them as new media channels for collaboration and knowledge acquisition (Tayo et al., 2019). Brooks et al (2020) recognized Internet addiction as a mental disorder, a classification with far-reaching consequences for the field of psychiatry, as it may have significant implications for the diagnosis and treatment of potentially millions of users struggling with excessive internet use and its associated mental health challenges.

However, Nwazor et al (2015) describe SMA as the excessive use of SM platforms like Facebook, Twitter, and WhatsApp, leading to health, recreation, and education disruptions. Researchers have linked SM use to negative phenomena, including addictive behavior, unfavorable emotional states like sadness, and diminished academic performance (Brooks et al., 2020). Indeed, previous studies have shown that students who multitask between social networking and homework are likely to have 20% lower grades compared to those who do not have SM sites running in the background while studying (Fatokun, 2019). In recent times, it has become a common practice for university undergraduates of all ages to start their day by checking SM applications (Idubor, 2015; Nazir, & Maya, 2017).

Comparatively, substance addiction has also been found to have a negative impact on academic performance. Studies have shown that school-based treatment of substance use disorders is associated with improved academic outcomes (Mario et al., 2019). Additionally, abstinence from substance use is also linked to better academic achievement, with lifetime

non-users reporting higher academic self-efficacy and emotional academic engagement compared to past-year users in confirmation of SMA's negative impact on student's academic performance (Brittany, 2019). As the prevalence of SMA grows, it is essential to consider its implications and the need for effective measures to manage its impact on students' academic performance. Reliable analytical methodologies, such as bibliometric analysis, can be employed to assess related articles and gain deeper insights into the complexities of SMA and its effects on students' educational journey.

Methodology

This review utilizes bibliometric analysis tools to investigate the organization of the literature on SMA and academic performance. By employing bibliometric analysis, the productivity and achievements of academic journals, authors, and researchers are evaluated (Niknejad et al., 2021). Bibliometric analysis offers valuable insights into various aspects, such as relationships between authors, subjects, topics, methodologies, and other writers (Zhao, 2021). Researchers can employ bibliometric analysis to map study areas and explore their intellectual structures, assess academic implications and information sources, track the dissemination of ideas and knowledge flows, aid in information retrieval, organization, and representation, and investigate the users and applications of scholarly papers (Zhao, 2021). Through this approach, a comprehensive understanding of the literature on SMA and academic performance is achieved, shedding light on the research landscape and its scholarly contributions.

Data Collection and Search Strategy

The Scopus database, known for its comprehensive peer-reviewed studies, was selected as the primary source for this study on SMA and academic performance. To identify relevant studies, a specific search string (Social media addiction AND academic performance) was devised and applied to titles, abstracts, and keywords, and 458 data were retrieved on December 27, 2022, with the exclusion of papers published in 2023 (n = 458). Restricting the string to keywords to "Social media addiction AND Academic performance" (n = 246). Hence, (n = 246) was filtered by selecting documents published in English and focusing on conference papers, articles, and book chapters resulting in 80 relevant documents included in the research retrieved. Utilizing the VOSviewer software and the R package bibliometric, visualizations and bibliometric mapping were constructed based on the accessed papers. This PRISMA methodology has also been employed in a similar study by Niknejad, Ismail, and Bahari et al (2021) in their research on blockchain technology in agriculture. In summary, the use of their methodology was employed because it enhances the validity, comparability, and efficiency of the research process while building on existing knowledge and benefiting from prior peer review and validation. Additionally, Microsoft Excel was utilized to generate graphical representations of selected data on SMA and academic performance. The combination of these analytical tools and methods allowed for a comprehensive analysis and visualization of the literature related to SMA and its connection with academic performance. Figure 1 shows the PRISMA flowchart of data collection and strategy used in this study.

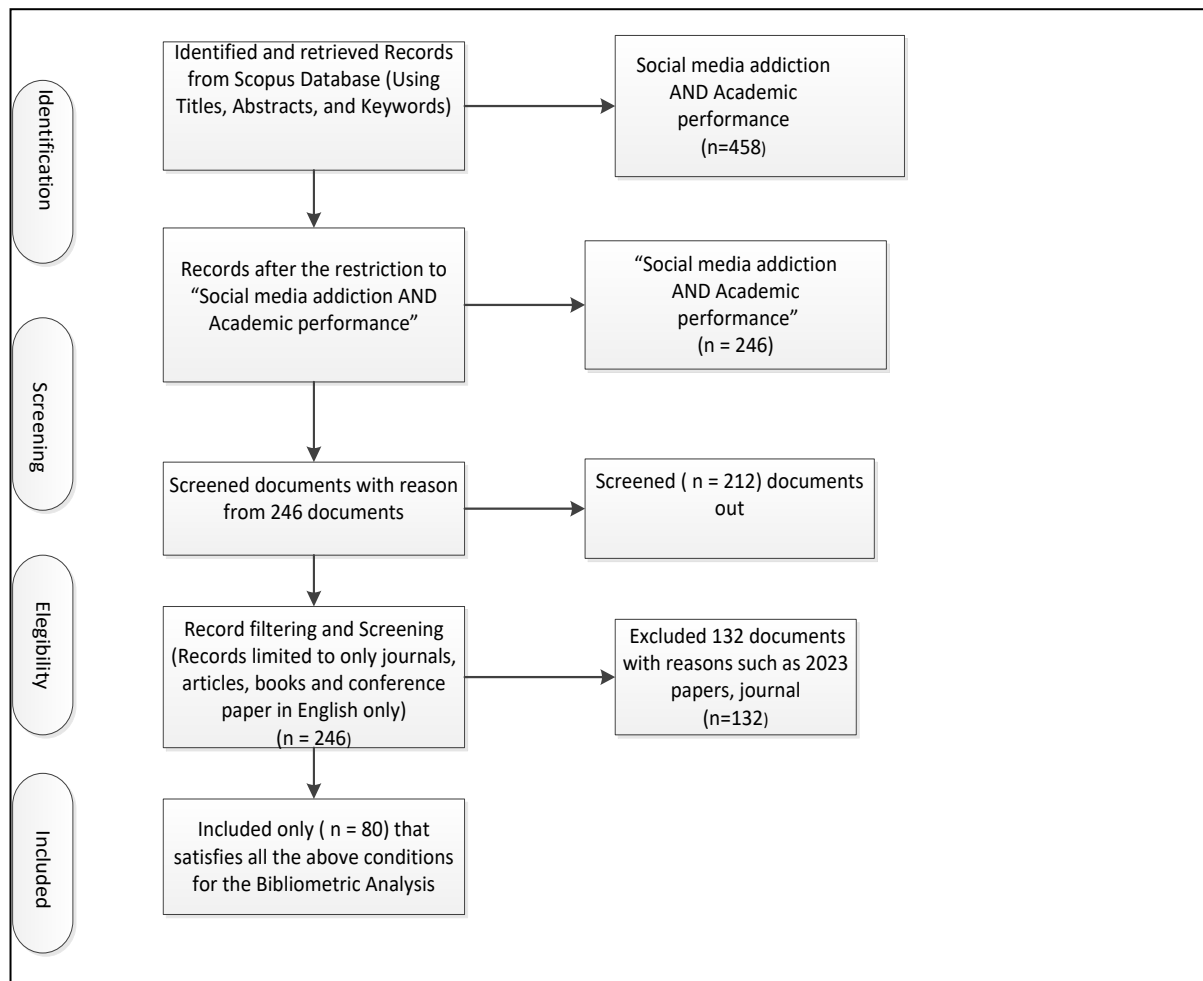


Figure 1. PRISMA flowchart of Data Collection and Strategy

Results

The Scopus database exported 80 unique papers on the targeted subject, with 196 authors appearing on 196 occasions. The authors have applied 152 author keywords and 457 distinct keywords to the various categories of their investigations using an evaluation of the dataset. Additionally, there were 10.25% citations per manuscript on average. While the average number of citations per document each year was 2.14%. Although this result shows there were few papers, with a good quantity of citations considering the number of scholarly papers from the database. Additionally, the dataset on SMA and academic performance had 192 multi-authored documents as opposed to 4 single-authored documents. The fractionalized number of documents per author was 0.281, while that of authors per document, and co-author per document were 3.56 each and their collaborative index was 3.75. This result indicates that there was a significant collaborative effort among the researchers in SMA and AP.

Annual Growth of Articles

The analysis of annual article growth reveals a consistent and progressive increase in publications related to SMA and academic performance over the past decade. In 2012 and 2013, one article was published each year, followed by no publications in 2014. However, from 2015 to 2017, there were two articles published each year. The trend changed

significantly in 2018, with a sudden surge in publications, reaching a total of 7 articles. The growth continued to accelerate, with 16 articles published in 2019. In 2020, a slight decline to 11 papers was observed, possibly attributed to the impact of the global Covid-19 pandemic. Nonetheless, the interest of researchers remained robust in 2021 with 13 articles and reached its peak in 2022 with 22 articles (see Table 1). This data indicates a continuous and escalating interest of scholars in SMA, demonstrating its growing significance as a research area over the past decade (Tayo et al., 2020).

Table 1
Average Annual Citation Per Year

Year	N	Mean TC per Art	Mean TCper Year	Citable years
2012	1	57	5.7	10
2013	1	57	6.3	9
2014	0	0	0	0
2015	2	16	2.3	7
2016	2	12.5	2.1	6
2017	2	5	1	5
2018	7	17.4	4.4	4
2019	16	12.6	4.2	3
2020	11	3.7	1.9	2
2021	13	1.4	1.4	0
2022	22	12.7	4.6	6

Publishing Countries

The bibliometric analysis of the Scopus database also revealed the top 10 publishing countries among the 25 countries studied with respect to articles on SMA and academic performance (see Figure 2). India emerged as the leading country in terms of the number of publications, followed by Malaysia, the USA, and Iran. Notably, this analysis highlights a trend where Asian nations, such as India, Malaysia, and Pakistan, are taking the lead in conducting research on this topic, surpassing several European nations, including France, Germany, the United Kingdom, and the Netherlands. This finding underscores the increasing significance of this research area in the context of Asian countries and sheds light on the growing interest and focus on SMA and its impact on academic performance research in these regions.

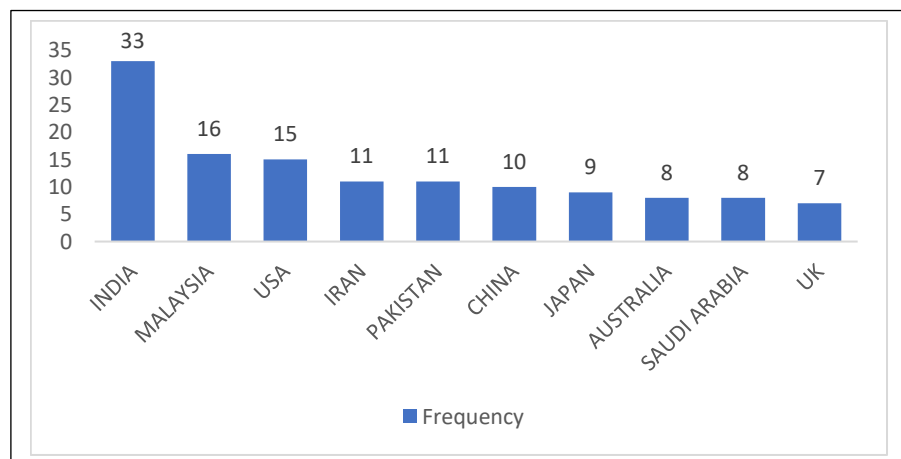


Figure 2. Top Publishing Countries on SMA and Academic Performance

Globally Cited Documents

The evaluation of the top globally cited documents per year is shown in Table 2.

Table 2

Top Globally Cited Documents Per Year

Paper Title	Author	Year	TC	TC/Year
1. Social media addiction: Its impact, mediation, and intervention	Hou	2019	63	15.7
2. The impact of heavy and disordered use of games and social media on adolescent, psychological, social, and school functioning	Van Den Eijnden	2018	58	11.6
3. Internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India	Yadav P	2013	57	5.7
4. The relationship between social networking addiction and academic performance in Iranian students of medical sciences: a cross-sectional study	Azizi	2019	41	5.1
5. Adolescent Internet Addiction in Hong Kong: Prevalence, Psychosocial Correlates, and Prevention	Chung	2019	32	8.0
6. Short abstinence from online social networking sites reduces perceived stress, especially in excessive users	Turel O	2018	29	5.8
7. The impact of WhatsApp use on academic achievement among Saudi medical students	Alkhalaf	2018	21	4.2
8. A Cross-Sectional Study on the Prevalence, Risk Factors, and Ill Effects of Internet Addiction Among Medical Students in Northeastern India	Nath K	2016	19	2.7
9. Epidemiology of technology addiction among school students in rural India	Jamir	2019	14	3.5

This table shows Hou Y's paper in 2019 is the most globally cited document, published in the *CyberPsychology* journal with a citation rate of 15.75%. It is followed by Van Den Edenden's paper in 2018, published in the *Behavioral Addiction* journal, with a citation rate of 11.6%. Additionally, the efforts of other authors, such as Yadav (2013); Yani-De-Sorriano (2012) Yan (2019); Azizi (2019); Turel (2018); Alkhalaf (2018); Nath (2016); Jamir (2019), were also noted as part of the top ten globally cited papers. This shows that authors have been consistent in their contributions to this field.

Authorship and Index Keywords

Figure 3 displays the network view map of co-authors in SMA and academic performance.

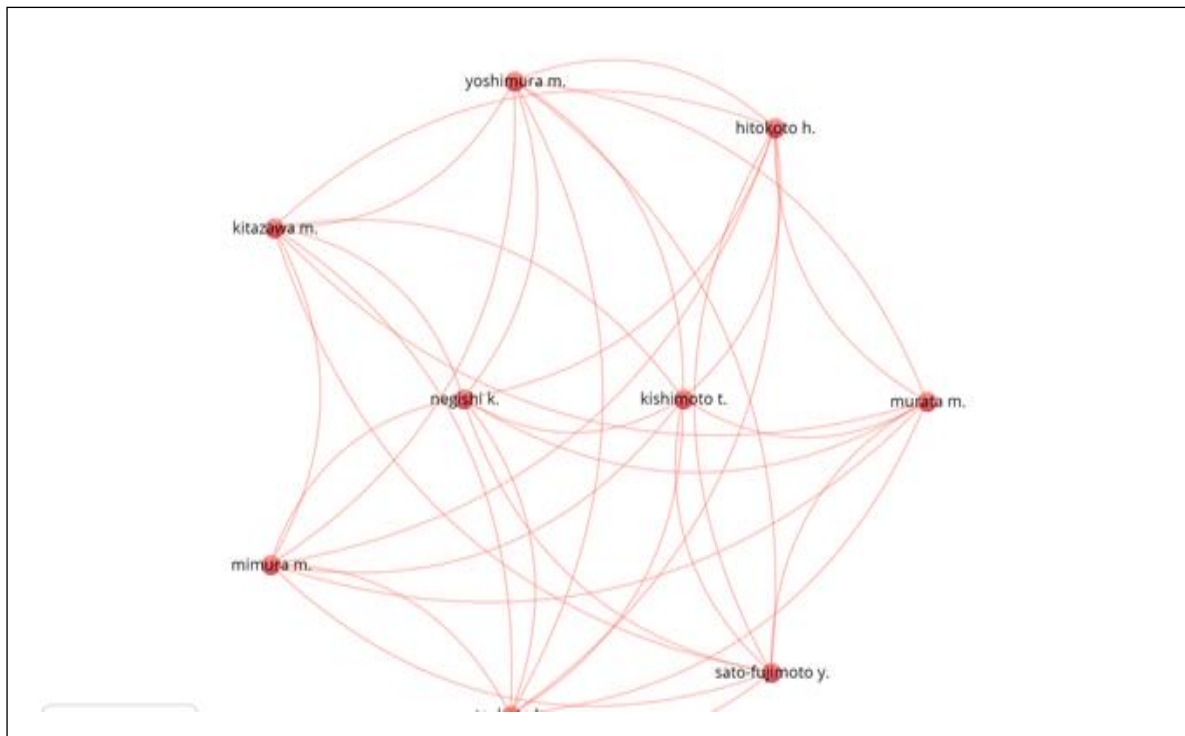


Figure 3. Co-authors in SMA and Academic Performance

The illustration depicts the interconnected relationships among co-authors hailing from different countries. It visually demonstrates the collaborative endeavors of authors worldwide in the field. Notably, Kitazawa M., Kishimoto T., and Murata M. are observed as co-authors of papers in both SMA and academic performance. Similarly, the collaborative efforts of Sato-Fujimoto Y., Kishimoto T., Hito Koto H., and others are evident through their co-authorship in various academic papers on SMA and academic performance within the specified year. The network visualization offers valuable insights into global cooperation and joint research initiatives in this domain.

A keyword analysis is a primary method to identify current research topics and future orientation. Generally, in visual analysis the red cluster comprises journals focused on a specific research field, the green cluster can represent journals with a distinct research focus, and the blue cluster encompass journals or keywords emphasizing different research theme or words. Figure 4 depicts the usage of 39 index keywords related to SMA and academic performance, organized into three clusters denoted by different hues. The green cluster includes terms like addiction, male, human, and students. The blue cluster comprises words such as social media, students, and social networks. The red cluster contains terms like depression, sex, anxiety, and mental health, among others. The connections among these keywords are represented by 661 links or lines, illustrating the strength of their associations. The colors used in the visualization further indicate the interconnectedness between the words. Keywords that are closer to each other on the graph exhibit stronger relationships, while those farther apart indicate weaker connections.

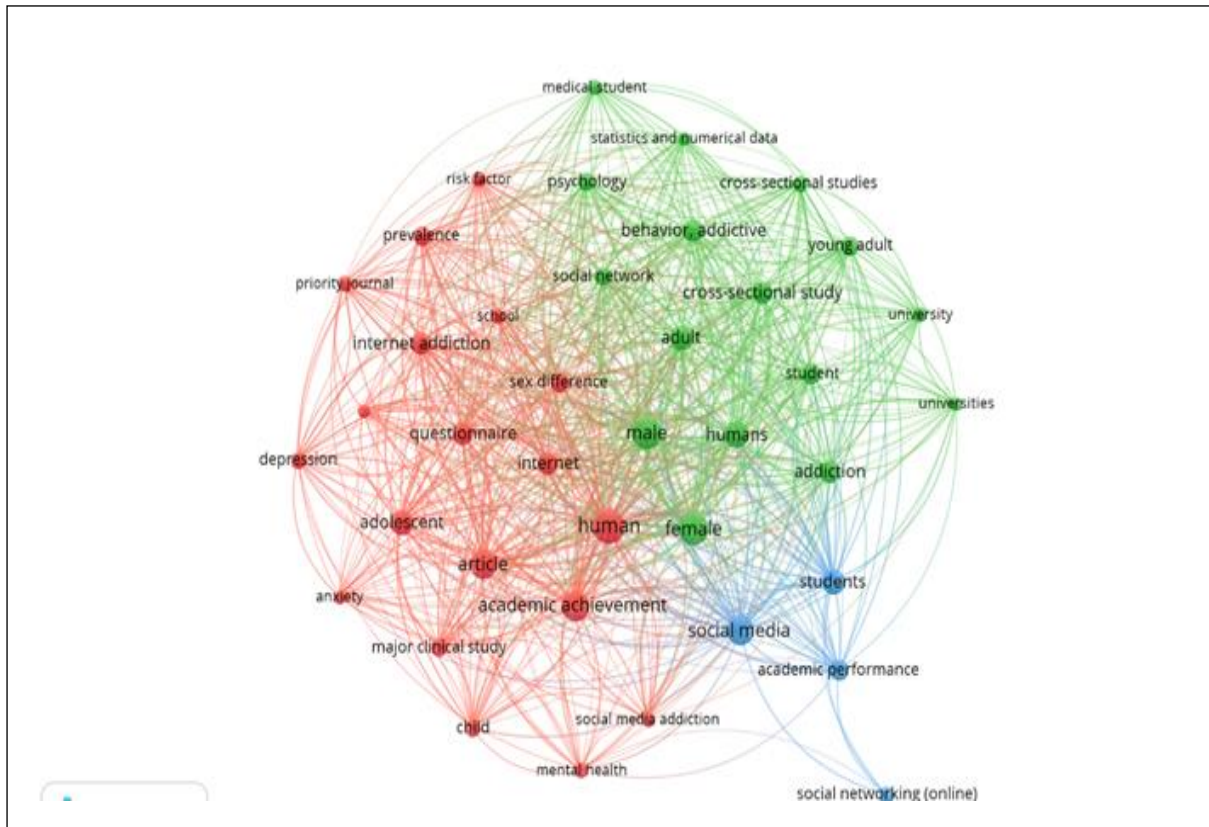


Figure 4. Co-occurrence of Indexed Keywords in SMA Academic Performance

Discussions

The gathered data indicates that research on SMA is still at a nascent stage, with relatively few articles focused on this area of study. During this investigation, we initially identified 458 papers using the search term "social media addiction," but the number reduced to 80 articles when refined to "social media addiction" AND "academic performance". To exemplify the significance of this research, some previous studies on SMA are highlighted. Masron et al. (2021) explored student behaviors on online social networks and proposed a framework for future studies in this domain. Similarly, Wan Pa et al (2021) investigated the impact of an SMA on academic performance among student-athletes during Malaysia's COVID-19 lockdown, revealing the susceptibility of student-athletes to SMA due to competing commitments.

It is evident that several studies have shown negative associations between students' SM use and their academic success. Azizi et al (2019) found a negative and significant relationship between SM use and academic achievement, urging universities to educate students about its detrimental effects. Deimazar et al (2019) examined the effects of online social networks on sleep quality, depression, and academic performance, revealing that social network usage during the day negatively influenced academic performance. Ishaq et al (2019) explored generational differences in the impact of SM on students' academic performance, highlighting the leading role of SM in online learning. On the other hand, Nasrullah and Firdouse (2019) observed a negative effect of SM on Saudi students' academic performance, as it encouraged them to focus on making new online friends rather than supporting their learning. Chung et al (2021) studied internet addiction among Hong Kong teenagers and

suggested preventive initiatives such as education, skill development, behavior modification, and raising public awareness. Additionally, Raj et al. (2018) found that a significant portion of students were addicted to social networking sites, impacting their academic performance adversely.

Overall, these studies underscore the need to further investigate the complex relationship between SMA and academic performance, considering the different contexts and educational institutions. The impact of social media on students' academic success calls for attention from educators, policymakers, and students themselves to find a balance and mitigate the negative consequences.

Conclusions

This comprehensive study analyzed 80 papers on SMA and academic performance published between 2012 and 2022. The findings revealed a consistent rise in scholarly interest in the topic, although the global COVID-19 pandemic had a noticeable impact on the number of articles in 2020. Notably, India, Malaysia, the USA, China, Pakistan, Iran, and Saudi Arabia emerged as the leading countries in article publications on this subject.

The study identified key keywords frequently employed in this research area, including internet addiction, adolescence, students, social media, internet, network, behavioural addiction, Facebook, and depression. Through a network view map, the SMA and academic performance literature were categorized into four distinct clusters: red, green, and blue. The research also indicated that investigations into the relationship between SM use and academic achievement are on the rise, with Asian countries showing more prominence in this field compared to European countries. Despite the growing body of research, further studies are needed to mitigate SMA's negative impact on academic performance, particularly among teenagers. However, this study acknowledges certain limitations, such as solely relying on the Scopus database for data collection. Scopus database is known for its comprehensive coverage and reliability; however, it acknowledges potential limitations arising from this choice.

The paper highlights limitations in the current research, such as coverage variations, potential publication bias, and data consistency discrepancies, suggesting future studies should use multiple databases or alternative sources to improve comprehensiveness and credibility in combating SMA among undergraduate students. Due to the template's constraints, some essential information had to be condensed.

The study highlights the importance of bibliometric analysis in investigating social media addiction and academic performance. It suggests using ICT tools like website blockers and parental control apps to reduce SMA and improve student performance. Future research on SMA and academic performance should consider emerging platforms, demographics, and age groups. Longitudinal studies can reveal patterns and vulnerabilities, while cultural and cross-cultural analyses can reveal SMA manifestations. Interventions, technological solutions, and parental involvement are crucial.

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