

The Impact of Social Media Use on Mental Health of the Adult Population: A Systematic Literature Review

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Health and Social Care in Practice

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ABSTRACT

Background: The pervasive use of social media has raised concerns about its potential impact on adult mental health.

The overarching aim of this study is to analyse and synthesize existing literature to provide insights into the relationship between social media use and mental health outcomes among adults.

Methods: A systematic literature review was conducted using electronic databases such as PubMed, EBSCO Host and ProQuest central. The search encompassed studies conducted from the earliest date to 2023. A comprehensive search strategy was employed to identify relevant studies. Data extraction and evaluation were conducted using predetermined criteria to assess the quality and relevance of the included studies. Thematic analysis was utilized to synthesize the findings from both qualitative and quantitative studies.

Results: The review identified a diverse range of studies conducted globally, highlighting the widespread interest in understanding the impact of social media on mental health. The systematic review identified 26 studies meeting the inclusion criteria, encompassing various research designs, including 21 cross-sectional, one cohort, one qualitative, and one mixed-methods studies. The thematic analysis revealed several overarching themes, including the positive and negative associations between social media use and mental health outcomes, the influence of specific platforms, mediating factors such as stress and acculturation, gender differences in susceptibility, and qualitative insights into users' experiences. The systematic review identified 26 studies meeting the inclusion criteria, encompassing various research designs, including 21 cross-sectional, one cohort, one qualitative, and one mixed-methods studies.

Conclusion: The findings underscore the nuanced relationship between social media use and mental health among adults. While some studies reported detrimental effects, others found no significant associations or even positive outcomes. Factors such as

platform diversity, stress mediation, acculturation, and gender differences further complicate the relationship. These insights have implications for interventions and future research directions aimed at promoting mental well-being in the context of social media use among adults.

Keywords: Social media, mental health, adults, systematic literature review

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ABBREVIATIONS

SM: Social Media

SLR: Systemic Literature Review

GAD: Generalized Anxiety Disorder

MDD: Major Depressive Disorder

PRISMA: Preferred Reporting Items for Systemic Reviews and Meta-Analysis

PICO: Population, Intervention, Comparison, Outcome

CASP: Critical Appraisal Skills Programme

MMAT: Mixed Methods Appraisal Tool

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction to The Topic

The widespread usage of social media platforms has sparked significant interest in their effects on mental health, particularly among adults. Understanding the social media environment entails acknowledging its various platforms and the unique situation of adults who have been exposed to these platforms since their creation. While social media has obvious advantages, its impact on mental health has become a source of growing worry, particularly among adults (Scott et al., 2017). This systematic literature review seeks to study the complex relationship between social media use and adult mental health. The goal is to synthesize existing studies to investigate how social media affects adult mental health. This research is critical considering the rapid growth of social media in modern life and its possible impact on mental health. Exploring this intricate relationship can lead to a better grasp of the difficulties. Exploring this complicated link helps to gain a better understanding of the difficulties adults have when negotiating social media's influence on their mental health, as well as informing evidence-based interventions to enhance psychological resilience and wellbeing.

1.2 Background and Current Context

1.2.1 Overview of Social Media Platforms

Social media platforms have grown at an exponential rate since their creation, with billions of people worldwide engaging in various types of online communication and engagement (Steckman et al., 2017). Originally conceived as means for connecting people and sharing content, social media platforms have evolved into multidimensional ecosystems with a wide range of activities, including networking and entertainment, news dissemination, and activism (Reuter et al., 2015). The rise of social media has radically altered how people interact with information, make relationships, and create identities in the digital world (Reed, 2018).

The growing use of social media has spurred scholars and mental health professionals to investigate its potential impact on psychological well-being (Edwards et al., 2021). While early studies focused mostly on teenagers and young adults (Marchant et al., 2017), recent research has switched to better understand how social media use affects adult psychological health (Hussain et al., 2021).

Adults, defined as people aged 18 and above, are a demographic sector that has seen the fast spread and integration of social media into their daily lives (Haythornthwaite et al., 2002).

As a result, knowing the impact of social media on adult mental health is critical for tackling the increasing difficulties and opportunities presented by digital communication technologies.

1.2.2 Types of Social Media Platforms

Modern communication and interaction are heavily influenced by social media platforms, which provide users with diverse functionalities and features (Polanska, 2014). The most popular social media platforms in terms of active users include Facebook, YouTube, Instagram, LinkedIn, Snapchat, and Twitter (Villalobos-Lopez et al., 2022).

Facebook Founded in 2004, is one of the oldest and most popular social networking sites, allowing users to connect with friends, share updates, and join interest groups (Young, 2011).

Twitter founded in 2006, is a microblogging platform that allows users to exchange brief text-based updates (tweets) with their followers and engage in real-time conversations about a variety of topics (Dijck, 2011).

Instagram Founded in 2010, is a photo and video-sharing network that focuses on visual material, allowing users to share images, videos, and stories about their experiences and interests (Aerni, 2014).

LinkedIn, founded in 2003, is a professional networking platform that focuses on career development and networking (Dach, 2015). Users can establish profiles, communicate with colleagues, and research career prospects in their field (Florenthal, 2015).

Snapchat is a multimedia messaging application that allows users to send photographs, videos, and text messages that disappear after a certain amount of time. It was launched in 2011. Its fleeting nature makes it more popular among younger generations (Charteris et al., 2014).

YouTube, founded in 2005, is a video-sharing platform that allows users to publish, view, and share videos on a variety of themes such as entertainment, education, and instructional (Burgess et al., 2018).

WhatsApp, launched in 2009, revolutionized instant messaging, enabling users to exchange

texts, calls, and media seamlessly across the globe (Anderson, 2016).

Each social media platform has its own set of features and caters to diverse user tastes, demographics, and interests, making it possible to interact, share information, and have fun.

1.2.3 Prevalence of Social Media Usage

Social media platforms popularity and accessibility have expanded tremendously in recent years, with billions of users worldwide actively engaging with them on a daily basis: In 2012, Facebook had 1 billion users while, twitter has 517 million users (Bhagwat, 2013). As of 2021, there were approximately 4.48 billion active social media users worldwide, which is around 57% of the global population (Nayyar et al., 2023). Over 98% of active users access social media platforms via mobile devices (Rumsfeld et al., 2016). On average, people spend around 2 hours and 25 minutes per day on social media platforms (Emala et al., 2020).

These figures demonstrate the extensive use and importance of social media in creating modern communication patterns, social interactions, and cultural dynamics.

1.2.4 Situation Within the Current Topic Area

Within the wider topic of digital health and mental well-being, the relationship between social media use and adult mental health is essential. Existing research has looked into a variety of facets of this interaction, from the possible benefits of social support and connection to the dangers of cyberbullying, social comparison, and online addiction (Zhou et al., 2022). While some research imply that social media use improves social connectedness and provides opportunities for self-expression and support, others show that it has a negative impact on mental health outcomes such as depression, anxiety, and stress (Malaeb et al., 2021).

Furthermore, the dynamic nature of social media platforms and their growing features present problems for researchers and practitioners attempting to comprehend and manage the influence of social media on adult mental health (Fergie et al., 2016). New developments, such as the rise of volatile content, influencer culture, and algorithm-driven content curation, require new considerations when examining the psychological consequences of social media use (Van Driel et al., 2021). Furthermore, the COVID-19 epidemic has highlighted the importance of digital connectivity and its potential role in reducing social isolation and loneliness in adults, underlining the necessity for further precise research into the interaction between social media and mental health (Peng et al., 2022).

While much research in this area has concentrated on detecting links between social media use and mental health outcomes, more recent studies have begun to investigate the underlying processes and modifiers of these interactions. Research looking at the impact of social support on mental health outcomes discovered that online social support networks can mitigate the negative impacts of stress and adversity, emphasizing the importance of social context in influencing the psychological implications of social media use (Lin et al., 2016).

In conclusion, the impact of social media on adult mental health lies at the connections of digital technology, public health, and psychological science. Understanding the complexity of this relationship necessitates a multidisciplinary approach that draws on concepts from sociology, communication studies, psychology, and public health. This work intends to add to a deeper knowledge of the opportunities and problems provided by social media in enhancing adult mental health and well-being by contextualizing it within the larger research landscape.

1.3 Rationale for Research or Problem Statement

The existing body of research falls significantly short of completely analysing the association between diverse social media usage and various mental health issues, particularly among adults. While numerous studies have thoroughly studied this association in adolescents and young adults, there is a striking lack of extensive literature specifically addressing this problem among adults. This gap in the literature underscores the importance of doing comprehensive systemic literature review to determine the potential impact of various social media activities on the mental well-being of adult users, which encompasses a wide range of mental health disorders. Furthermore, understanding how diverse demographic characteristics interact with social media use to influence adult mental health outcomes is critical for designing targeted therapies and support mechanisms. This research pursuit has the potential to dramatically influence public health policy, educate treatment approaches, and define future options for study in this area.

1.4 Research Question

- What is the comprehensive relationship between overall social media use and mental health outcomes?
- How does specific social media use correlate with distinct mental health problems, and what are the underlying associations between them?
- What is the implication of findings of the current state of knowledge of the relationship between social media use and mental health outcomes?

- What recommendations can be proposed for further research and improvements in understanding and addressing the impact of social media use on mental health based on the current state of knowledge?

1.5 Research Aim

To comprehensively investigate the impact of social media use on mental health outcomes of adults from existing literature.

1.6 Research Objectives

- To comprehensively investigate the relationship between social media use and mental health outcomes.
- To investigate the relationship between specific social media use and specific Mental health problems.
- To provide a comprehensive overview of the current state of knowledge by critically examining the implications of the findings.
- To provide recommendations for further research and improvement.

1.7 Chapter Summary

Chapter 1 starts with a deep dive into the impact of social media on individuals' mental well-being, by recognising the dynamic nature of this relationship. It emphasizes the importance of a thorough understanding of this complex dynamic, laying the groundwork for the next systematic research evaluation. The chapter outline the research questions, aim and objectives, and gaps in existing knowledge. Chapter 2 will describe the literature review for this research.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction to the Literature Review Chapter

This chapter presents an in-depth review of the literature on social media's impact on adult mental health. It begins by reviewing the epidemiology of mental health diseases, including its definition, prevalence, risk factors and consequences. This chapter then addresses the association between social media use and mental health outcomes, reviewing major findings from prior studies, evaluating their strengths and flaws, and identifying gaps and limits in the present literature.

2.2 The Epidemiology of Mental Health

2.2.1 Definition and Clinical Symptoms of Mental Health Disorder

Mental health disorders include a variety of problems that impact mood, cognition, and behaviour, resulting in substantial suffering or impairment in functioning (Zimmerman et al., 2018). Clinical symptoms of mental health differ depending on the disorder, but may include persistent sadness or irritability, excessive worry or fear, changes in sleep patterns (insomnia or hypersomnia), appetite changes (overeating or loss of appetite), difficulty in concentrating or making decisions, and thoughts of self-harm or suicide (Zun et al., 2018). Moreover, Individuals with mental health illnesses may also have physical symptoms including headaches, stomach aches, or unexplainable aches and pains (Garralda, 2011).

2.2.2 Types of Mental Health Disorders

Mental health disorders encompass a wide spectrum of conditions, each with its unique manifestations and impact on individuals' lives (Caspi et al., 2018). Understanding the diverse array of mental health disorders is crucial for effective identification, treatment, and support (WHO, 2001). Anxiety disorders, including generalized anxiety disorder (GAD), panic disorder, phobias, and social anxiety disorder, are among the most prevalent mental health conditions globally (Baxter et al., 2014).

Generalized anxiety disorder (GAD) is characterized by persistent and excessive worry across various domains of life, often accompanied by physical symptoms such as restlessness, fatigue, muscle tension, and difficulty concentrating (Moss, 2002). Individuals with GAD may experience ongoing feelings of apprehension and dread, even in the absence of specific triggers, significantly impairing their quality of life and functioning (Moss, 2002).

Panic disorder is marked by recurrent panic attacks, sudden episodes of intense fear or

discomfort, and a sense of impending doom or loss of control (Stamper, 1982). These panic attacks can be debilitating and may lead individuals to avoid situations or environments where they fear another attack could occur (Michael, 2000). Physical symptoms such as palpitations, sweating, trembling, and shortness of breath are common during panic episodes, contributing to the distress experienced by affected individuals (Attacks, 1996).

Phobias are characterized by irrational and excessive fears of specific objects, situations, or activities (Craske et al., 2006). Unlike normal fears, which are adaptive and protective, phobias trigger intense anxiety and avoidance behaviours that interfere with daily functioning (Thorpe et al., 1995). Common phobias include fear of heights (acrophobia), fear of enclosed spaces (claustrophobia), and fear of spiders (arachnophobia), among others (Craske et al., 2006). Individuals with phobias may go to great lengths to avoid encountering their feared stimuli, leading to significant limitations in their personal and professional lives (Bourne, 2011).

Social anxiety disorder, also known as social phobia, involves an intense fear of social situations and scrutiny by others (Kashdan, 2007). Individuals with social anxiety may avoid social interactions, public speaking, or situations where they feel they may be judged or scrutinized (Leary et al., 1997). The fear of embarrassment or humiliation can be crippling, affecting relationships, academic performance, and career advancement (Craske et al., 2006).

Mood disorders represent disturbances in emotional regulation, affecting how individuals feel and experience the world around them (Hammen, 2003). Major depressive disorder (MDD) is one of the most common mood disorders, characterized by persistent feelings of sadness, hopelessness, and loss of interest in previously enjoyable activities (Ritschel et al., 2013). People with MDD may experience changes in appetite or weight, sleep disturbances, fatigue, and feelings of worthlessness or guilt. Suicidal ideation is also a significant concern in individuals with MDD, highlighting the severity of the condition and the urgent need for intervention and support (Franchini et al., 2022).

Bipolar disorder, formerly known as manic-depressive illness, involves alternating periods of depression and mania or hypomania (Sole et al., 2017). During manic episodes, individuals may experience elevated mood, increased energy, impulsivity, and a decreased need for sleep (Harvey et al., 2009). They may engage in risky behaviours and have inflated self-esteem or grandiose beliefs (Bunch, 2010). In contrast, depressive episodes resemble those of MDD, with profound sadness, fatigue, and a loss of interest in activities (Franchini et al., 2022) (Bunch, 2010).

Suicidal thoughts are a critical aspect of mental health, reflecting profound despair and hopelessness in individuals experiencing emotional distress (Miranda et al., 2013). Suicidal ideation ranges from fleeting thoughts of death to detailed plans for self-harm or suicide attempts (Adinkrah, 2014). Factors contributing to suicidal ideation include untreated mental illness, substance abuse, trauma, chronic stress, and social isolation (Schriver et al., 2020). Immediate intervention and support through crisis hotlines, therapy, medication, and the presence of caring individuals are essential in addressing suicidal ideation and preventing tragic outcomes (Weber et al., 2017).

2.2.3 Prevalence and Incidence of Mental Health Disorders

The prevalence and incidence of mental health disorders vary globally, influenced by factors such as socioeconomic status, cultural norms, and access to healthcare. Depression and anxiety disorders are among the most common mental health conditions worldwide, contributing significantly to the global burden of disease.

Over 900 million people worldwide are affected by mental health illnesses, with anxiety and depressive disorders the most prevalent, thereby contributing to a significant burden of disease (World Health Organisation 2024). According to the World Health Organization, 280 million people living with depression in 2019, underscoring the urgent need for effective prevention and treatment strategies. Similarly, anxiety disorders, including GAD, panic disorder, and social anxiety disorder, affect approximately 284 million individuals globally (Lopes et al., 2019). These conditions can have profound effects on individuals' daily functioning, relationships, and overall quality of life.

In the United Kingdom, mental health issues represent a significant public health challenge, with approximately one in every four individuals experiencing a mental health problem each year (Gov.uk, 2023). Despite efforts to reduce stigma and improve access to mental health services, disparities in prevalence rates persist among different demographic groups and geographic regions (Goetter et al., 2020). Factors such as socioeconomic inequality, discrimination, and limited resources can exacerbate existing mental health disparities, highlighting the need for comprehensive and equitable mental health care policies and interventions.

2.2.4 Risk Factors of Mental Health

A variety of factors contribute to the development of mental health issues, including genetic predisposition, environmental stresses, traumatic experiences, and socioeconomic status

(Agid et al., 2000). Furthermore, lifestyle habits such as substance misuse, social media use, poor food, a lack of physical activity, and sleep disorders can raise the risk of mental health issues (Merlo et al., 2022). Furthermore, societal determinants of health, such as poverty, prejudice, social isolation, and limited access to mental health treatments, have a substantial impact on mental health outcomes (Compton et al., 2015).

2.2.5 Outcomes and Cost of Mental Health

Mental health disorders have profound effects that affect people, families, communities, and societies as a whole (McKenzie et al., 2006). A Lancet Commission report highlights that mental disorders are increasing in every country worldwide. By 2030, these disorders are projected to cost the global economy \$16 trillion (Bommer et al., 2018). The economic burden primarily arises from early onset of mental illness and lost productivity, with approximately 12 billion working days lost annually due to mental health conditions (Doran, 2013).

In the UK, mental health problems cost the economy at least £117.9 billion annually, equivalent to around 5% of the GDP (Hassard et al., 2023). Nearly 72% of this cost results from lost productivity among individuals living with mental health conditions and unpaid informal carers who provide significant support (Doran, 2013).

Untreated mental illness can cause diminished functioning, a lower quality of life, an increased risk of chronic physical health issues, and early death (De Hert et al., 2011). Furthermore, mental health illnesses have major economic consequences, such as increased healthcare costs, reduced productivity at work, disability payments, and social welfare expenses (Productivity Commission, 2019). Furthermore, the indirect costs of mental health issues, such as less academic achievement, higher criminal justice participation, and family caregiver stress, add to the overall economic burden (Deb et al., 2017).

2.3 Relationship Between Social Media Use and Mental Health

The complex relationship between social media use and mental health outcomes has developed as a major field of study, attracting the interest of scholars, politicians, and healthcare practitioners due to its far-reaching societal ramifications. While social media platforms provide several benefits in terms of communication, information distribution, and social interaction, their impact on mental well-being is complicated and multidimensional, needing careful examination to detect underlying patterns and mechanisms (Vannucci et al., 2016; Leimonis et al., 2008; Gao et al., 2020).

2.3.1 Synthesis of Existing Literature

The impact of mental health disorders, particularly in relation to social media usage, has been a subject of extensive research across various demographics and geographic regions. Studies examining this relationship, such as those conducted by Alonzo et al., (2021) and Santini et al. (2015), have highlighted a spectrum of effects. Conversely, excessive social media use has been linked to adverse mental health outcomes, including feelings of loneliness, depression, and anxiety, as observed in studies by Seabrook et al., (2016).

Moreover, investigations have revealed nuanced patterns, showcasing varying associations between different social media platforms and mental health outcomes. Factors such as socio-demographic characteristics, acculturation, and personality traits, as explored in studies by Santini et al. (2015), Alonzo et al., (2021) and Seabrook et al., (2016). further contribute to the complex interplay between social media usage and mental health.

2.3.2 Strengths and Weaknesses in Prior Research

The strengths of prior research lie in their methodological diversity, encompassing longitudinal designs, large-scale surveys, and objective measurements. Longitudinal studies, as demonstrated by Leimonis et al. (2008), provide temporal insights into the relationship between social media use and mental health outcomes. Similarly, studies employing objective measures, such as those by Vannucci et al. (2016), enhance the robustness of findings, while acknowledging limitations such as reliance on self-report measures introduced potential biases (Vannucci et al., 2016; Leimonis et al., 2008; Lin et al., 2016).

2.3.3 Addressing Gaps and Future Directions

Despite significant strides, gaps persist in the current literature on social media and mental health. Standardization of measurement tools and constructs, as suggested by Scott et al. (2020), could enhance comparability across studies and facilitate theory development. Additionally, there is a call for research to encompass diverse populations, including marginalized groups, as advocated by Brailovskaia et al. (2022). Future studies could explore nuanced mechanisms and moderators shaping the social media-mental health relationship, aligning with recommendations from Alonzo et al., (2021), Santini et al. (2015).

2.4 Chapter Summary

In summary, this chapter has provided an overview of the literature concerning the impact of social media on the mental health of the adult population. It began by discussing the epidemiology of mental health disorders, highlighting their prevalence, risk factors, outcomes,

and costs. Finally, it explored the relationship between social media use and mental health outcomes, summarizing key findings, assessing strengths and weaknesses of previous studies, and identifying gaps and limitations in the current literature. The subsequent chapter will delve into the methodology employed in this study to further investigate the intricate dynamics between social media engagement and mental health outcomes.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The chapter provides the methodology required to examine the impact of social media use on the mental health of the adult population. The methodology chapter serves as a comprehensive section for the systematic exploration of the research question (Okoli, 2015). The systematic approach required to achieve the study aim, objectives and answer the research question is thoroughly detailed here. This chapter delves into the intricacies of conducting a systematic literature review (SLR), including databases search, screening, study selection, inclusion/exclusion criteria, and search strategy used to retrieve the relevant articles.

3.2 Systemic Literature Review

A systematic literature review (SLR) is a rigorous scientific methodology for identifying, evaluating, and synthesising existing research related to a certain research issue or topic (Del Amo et al., 2018). It entails carefully exploring different databases, screening and selecting relevant studies based on predetermined criteria, extracting data from selected studies, and synthesising findings to provide a thorough grasp of the research topic (Hannes et al., 2011).

To achieve a comprehensive SLR, several key steps must be followed including formulating a clear research question, developing inclusion and exclusion criteria, conducting a systematic search across multiple databases, screening retrieved studies based on predefined criteria, extracting relevant data from selected studies, assessing the quality of included studies, synthesizing findings through narrative or statistical methods and reporting findings transparently and rigorously (Khan et al., 2003).

The goal of doing a SLR is to produce a robust and unbiased synthesis of available evidence on a specific topic, which can help influence decision-making, identify knowledge gaps, and lead future research directions (Williams et al., 2021). It seeks to provide a complete review of current research, with the ultimate goal of contributing to evidence-based practice and policy formation (Wainwright et al., 2018).

3.3 Search Strategy

A search strategy in research is a designed technique to identify relevant literature on a given topic (Atkinson et al., 2018). The systematic literature review (SLR) on the influence of social

media use on the mental health of the adult population (aged 18+) was conducted using systematic retrieval methods across different databases. The search was led by the PICO (Population, Intervention, comparison, outcome) framework. This framework is a structured technique to developing focused research questions that identifies the population, intervention/issue, comparison/context, and outcome (Schiavenato et al., 2021). It assists researchers in developing search queries targeted to obtain relevant literature, hence improving evidence-based decision-making (Eckstein et al., 2001). Boolean operators and truncation were used to balance specificity and sensitivity, resulting in a comprehensive retrieval of relevant research article within the search parameters (Gusenbauer et al., 2020). This method enabled a thorough search of current evidence on the subject, allowing for a robust examination of the association between social media use and adult mental health. The search for the relevant articles for this SLR was conducted from the earliest date of each database to 31st March, 2024.

3.4 Search Term

Search terms are specific words, synonyms or phrases needed to retrieve relevant material from databases or search engines when conducting academic or professional research (Rumsey, 2008). The use of synonyms is critical for providing broad coverage, overcoming linguistic hurdles, and enhancing retrieval systems to prevent missing essential resources (Krallinger et al., 2017). By including synonyms into search queries, researchers can broaden the scope of their search results, increase the likelihood of discovering relevant information, and ultimately improve the quality of research outcomes in a variety of subjects (Rumsey, 2008).

To conduct the search effectively, the PICO framework was integrated into the search strategy, incorporating suitable Boolean operators (AND, OR) and synonyms for each aspect.

Table 3. 1: PICO Framework

Component	PICO Element
Population/ Problem	Adult (over 18 years)
Intervention/ Issue	Social media
Context	Worldwide
Outcome	Impact

The research question for this SLR using the above PICO framework is:

What is the impact (O) of social media use (I) on young adult mental Health (P) globally (C)?
The database search approach used to obtain relevant articles included the Boolean operators "OR" and "AND" to combine search terms/synonyms.

- Search 1 (P): Mental Health OR Psychological well-being OR Depression OR Anxiety OR Stress OR Suicidal Thought
- Search 2 (I): Social media OR Social Networking OR Online Social Network OR Digital Platforms OR Internet
- Search 3 (C): Worldwide OR global OR international
- Search 4 (O): Impact OR Influence OR Change
- Search 5: Search 1 AND Search 2 AND Search 3 AND Search 4

The ultimate search entails combining Search 1 (P), Search 2 (I), and Search 3 (O) following the Combined Search Strategy (PICO). This process involved merging synonyms for each component using the "OR" Boolean operator within each search, and then consolidating the results using the "AND" operator to identify articles meeting all criteria. This search approach quickly collects articles relevant to the research topic by considering multiple terms for each PICO element and their combinations. Synonyms guarantee a thorough search, improving the likelihood of Retrieving all relevant articles.

3.5 Key Words

Key words are unique terms or phrases that reflect the key concepts or variables of a study issue (Wood et al., 2006). Keywords are essential in conducting a systematic literature review (SLR) since they help to efficiently locate relevant research inside different databases. Choosing appropriate keywords improves the search process and assures comprehensive retrieval of relevant literature (Pan et al., 2016).

Primary Term used: "Social media", "Social networking", "Online social networks", "Digital platforms", "Internet use", "Mental health", "Psychological well-being", "Depression", "Anxiety", "Stress", "Suicidal Thought" these keywords encompass various aspects of social media use and mental health among adults, facilitating a thorough exploration of the topic.

3.6 Databases

Searching suitable and multiple databases is crucial for conducting thorough research and gathering diverse perspectives on study topics.

Different databases provide specialised information, allowing users to browse a wide range of literature. This help to avoid disregarding important sources and biases (Rumsey, 2008).

Various views, languages, and disciplines are discussed, which improves understanding and reduces publication bias (Dawn et al., 2008). Interdisciplinary subjects benefit from merging information from other domains. Multiple sources limit the possibility of incomplete SLR results, which improves research rigour (Johnson et al., 2020). Evidence supports this technique, demonstrating enhanced relevancy with multiple database searches (Fearon et al., 2005). Overall, using numerous databases ensures complete, unbiased research, hence improving the quality and validity of scholarly contributions across fields.

To be able to retrieve relevant article to answer the research questions for the chosen research topic, appropriate databases including PubMed, ProQuest central, EBSCO Host were searched. These databases were chosen for their broad coverage of literature in health, medicine, psychology, and behavioural sciences, therefore, aligning with the study's multidimensional approach.

3.7 Inclusion/ Exclusion Criteria:

In systematic literature reviews, inclusion and exclusion criteria are crucial to guarantee that only relevant and high-quality studies are included. These criteria assist researchers in defining the features that publications must have before being considered for review, assuring uniformity, transparency, and speed in the selection process (Okoli et al., 2015). Establishing defined criteria allows researchers to keep focus, manage the scope of the review, and improve its overall quality (Mohamed et al., 2021). This encourages transparency, facilitates repeatability, and enables the systematic identification and evaluation of studies that effectively address research objectives (Okoli et al., 2015). In conclusion, inclusion and exclusion criteria are critical components of systematic reviews, assuring rigor and reliability in the review process.

3.7.1 Inclusion Criteria

The inclusion criteria for this research were thoroughly set to guarantee that the studies included are relevant to the research aims. These include

- Studies conducted worldwide.
- Studies that focus primarily on adult population.
- Studies that specifically focus on mental health issues such as depression and anxiety in adults (18 years and older).
- Studies that used various research methods, such as cross-sectional, cohort, qualitative and Mixed methods.
- Studies published in the English language.

- No publication deadlines

3.7.2 Exclusion Criteria

To ensure a focused and appropriate synthesis of evidence, the following exclusion criteria were developed for this review. These include

- Studies that focus primarily on children or adolescents.
- Non-English language papers will also be rejected due to language proficiency restrictions among the study team members.
- Studies that do not directly address the association between social media use and mental health outcomes.
- Studies that focus on other themes.
- Studies with severe methodological faults or insufficient rigor, as assessed by quality assessment.

3.8 Search Results

This systematic review utilized a comprehensive approach to identify relevant studies, following the guidelines outlined by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart methodology. The search was conducted across multiple databases, including PubMed, Proquest, and EBSCOhost, resulting in the initial identification of 103,934, 234,178, and 2,240 records respectively.

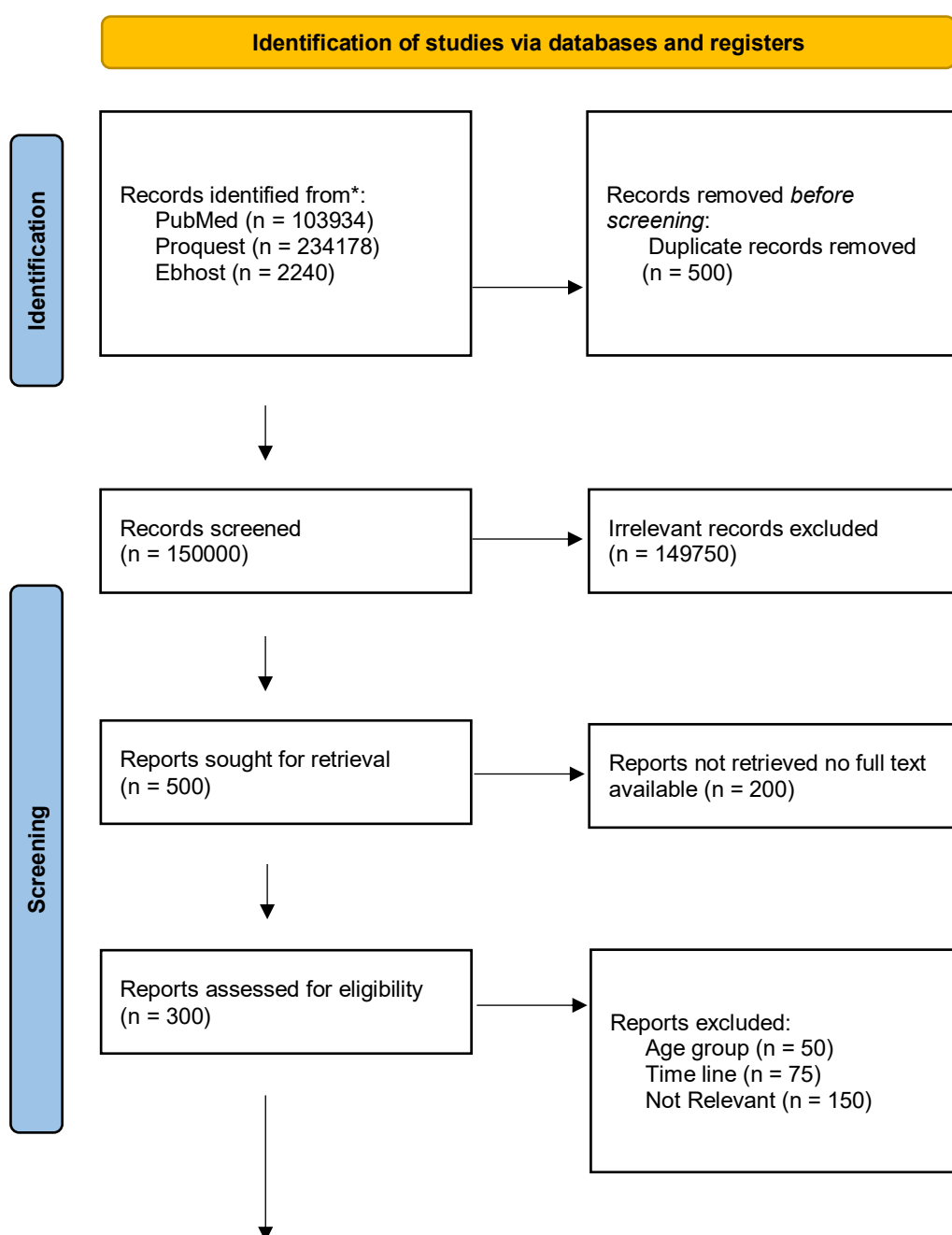
Prior to the screening process, duplicate records (500) were removed, ensuring the integrity of the dataset. Subsequently, during the screening phase, the retrieved records underwent rigorous evaluation to assess their relevance to the review's objectives. Out of the 150,000 records screened, 149,750 were excluded as irrelevant, leaving 250 records for further consideration.

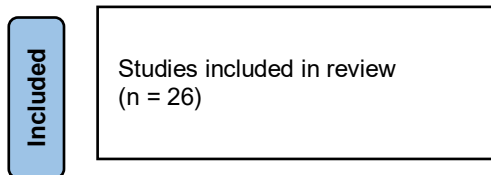
Of the 250 records sought for retrieval, 200 reports were not retrieved due to the unavailability of full text. The remaining 50 reports were assessed for eligibility based on predefined inclusion criteria. During this assessment, 50 reports were excluded due to age group mismatches, 75 were excluded due to timeline discrepancies, and 150 were deemed not relevant to the review's scope and objectives.

Ultimately, 26 studies were included in the systematic review, meeting the predetermined criteria for relevance and quality. These studies formed the final corpus of evidence upon which the review's findings and conclusions were based.

The utilization of the PRISMA flowchart provided a structured and transparent framework for managing the search results, allowing for the systematic documentation of the flow of records from identification to inclusion. This visual representation enhances the transparency and reproducibility of the systematic review, providing readers with a clear understanding of how the final set of studies was determined.

Figure 3. 1: PRISMA flow chart (Adapted from Page et al., 2021)





3.9 Ethical Considerations

This literature review will demonstrate a commitment to authorship rights by accurately and fairly representing the contributions of writers and researchers involved in the study. This will entail adhering to copyright restrictions and fair use of principles when quoting and reproducing book snippets. Furthermore, the evaluation will prioritize data security and confidentiality by validating the absence of sensitive or personal data and stating a commitment to maintaining the secrecy of any proprietary information or unpublished works discovered throughout the literature search (Borgman, 2018).

Furthermore, the study will explicitly express its adherence to recognized ethical criteria, citing those created by professional organizations or institutions and indicating the inclusion of applicable ethical concepts throughout the review process.

Researchers should have a thorough understanding of the ethical implications of research, which include protecting participants' rights, dignity, and wellbeing (WHO, 2011; Connelly, 2014). For this review, this study does not present any ethical issues because every published paper was carefully chosen based on ethical considerations and approved by a university or review board..

3.10 Chapter Summary

This methodology chapter provides a detailed process to conduct a systematic literature review (SLR) on the impact of social media use on adult mental health. Key aspects such as the search strategy, inclusion/exclusion criteria, and ethical considerations were thoroughly discussed. The PRISMA flowchart was employed to transparently depict the screening and selection process. With 25 studies ultimately included in the SLR, this chapter emphasizes the rigor and comprehensiveness of the review process. The next chapter, will focus on data extraction and evaluation, further delving into the synthesis of findings from the selected studies.

CHAPTER 4: DATA EXTRACTION AND EVALUATION

4.1 Introduction to Chapter

The data extraction and evaluation chapter aim to rigorously examine the chosen studies, determining their quality, reliability, and relevance. This critical process ensures the legitimacy and trustworthiness of the synthesised evidence. This chapter will explore the critical appraisal process, including appraising all the found qualitative, quantitative and mix method research article with the appropriate tools. This chapter guarantees the review's findings are reliable by conducting a comprehensive evaluation of study designs, techniques, strengths, and limitations. Finally, this chapter will strengthen the review credibility and confirms the findings from the analysed literature.

4.2 Data Extraction

Data extraction is the methodical collection of pertinent information from specific research or sources for further analysis or synthesis (Cooper et al., 2019). In the context of a systematic literature review, data extraction involves gathering specific data points or variables from each included study using a predetermined data extraction form (Laender et al., 2002). This form normally lists the essential characteristics or information of interest that will be collected from each study, such as the study title, author(s), publication year, study design, sample size, intervention or exposure, outcome measures, findings, and any other pertinent information. The retrieved data form the basis of the review's synthesis and analysis of findings (Munn et al., 2014).

4.3 Brief Introduction to Critical Appraisal and Paper Quality Assessment

Critical appraisal is the systematic assessment of research publications' validity, dependability, and usefulness (Munn et al., 2014). It entails examining several components of a study, such as its technique, design, sample size, data analysis, and results interpretation (Glynn, 2006). Critical assessment is essential for ensuring the authenticity and reliability of research findings (Anney, 2014). Researchers can evaluate the extent to which a study's findings can be used to improve practice, policy, or future research by carefully examining its strengths and limitations (Cooper et al., 2019). Without careful evaluation, there is a risk of adopting inaccurate or biased research, which can lead to incorrect conclusions and potentially severe consequences for individuals, organizations, and society as a whole (Crombie, 2022).

4.4 Critical Appraisal Tools

Critical appraisal tools are systematic frameworks for assessing the quality, relevance, and trustworthiness of research publications, especially in qualitative and quantitative investigations (Tod et al., 2022). Choosing the correct critical appraisal method is vital because it ensures a complete and consistent evaluation of research articles, facilitating evidence-based decision-making and study interpretation (Hong et al., 2019). The Critical Appraisal Skills Programme (CASP) evaluates features of qualitative study design, data collection methodologies, analysis techniques, findings interpretation, and reflexivity (Long et al., 2020). In contrast, quantitative studies are reviewed using techniques such as the Coughlan, Cronin, and Ryan (2007) framework, which focus on factors such as research objectives, study design, sample size, data analytic methods, result interpretation, and bias consideration (Coughlan et al., 2007).

These methods assist researchers and practitioners in identifying strengths and shortcomings in research articles, thereby strengthening methodological rigor and increasing confidence in study results (Hannes, 2011). The proper application of these techniques enables a thorough evaluation, allowing informed decisions concerning the validity and trustworthiness of study findings (Downes et al., 2016).

4.5 Evaluation of Qualitative Studies

In conducting a systematic literature review on the impact of social media on adult mental health, it is imperative to assess qualitative studies to glean insights into individuals' experiences, perceptions, and behaviours related to social media use. The Critical Appraisal Skills Programme (CASP) tool emerges as a suitable choice for this purpose, given its robustness in evaluating the quality of qualitative research studies (Maeda et al., 2023).

The CASP tool provides a comprehensive framework for assessing various facets of qualitative research methodology, aligning well with the objective of unravelling the complexities of social media's influence on mental health (Long et al., 2020). Its structured approach enables a systematic evaluation of key elements such as research design, data collection methods, analysis techniques, interpretation of findings, and consideration of researcher reflexivity (Darawsheh et al., 2014).

One of the strengths of the CASP tool lies in its user-friendly format, which fosters consistent and rigorous appraisal across multiple qualitative studies (Long et al., 2020). By emphasizing

methodological transparency and rigor, CASP facilitates the identification of strengths and weaknesses in study design and execution, thereby enhancing the reliability and trustworthiness of research findings (Long et al., 2020).

However, it is essential to recognize the limitations of the CASP tool. While it offers a robust framework for assessing qualitative research, it may not fully capture the nuances of emerging or innovative methodologies (Noyes et al., 2018). Additionally, its reliance on subjective judgment in scoring criteria could introduce variability in appraisal outcomes among different reviewers. Furthermore, while CASP guides the assessment of methodological quality, it may overlook broader contextual factors influencing the interpretation and applicability of study findings (Long et al., 2020).

Comparing CASP with other existing qualitative appraisal tools, such as the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) or the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist, reveals certain distinctions. While CASP stands out for its simplicity and adaptability to various qualitative research designs, it may lack the specificity or depth provided by more specialized tools tailored to specific qualitative methodologies or research contexts (Long et al., 2020).

In summary, the Critical Appraisal Skills Programme (CASP) tool serves as a valuable resource for evaluating qualitative studies on the impact of social media on adult mental health. Its structured approach, coupled with its emphasis on methodological transparency and researcher reflexivity, enables a comprehensive assessment of qualitative research quality (Majid et al., 2018). However, it is essential to acknowledge its limitations and consider the broader contextual factors influencing the interpretation of study findings. See Appendix 2 table 4.9 for the critical appraisal of the relevant qualitative study.

4.6 Critical Appraisal of Relevant Qualitative Study

Dodemaide et al.'s (2022) study on the impact of social media usage on adolescent mental health demonstrates a clear statement of research aims, appropriateness of qualitative methodology, and a suitable research design to address these aims. The recruitment strategy, utilizing snowball sampling to capture diverse perspectives, aligns well with the research objectives. Data collection methods, particularly semi-structured interviews, effectively addressed the research issue by capturing relevant experiences and viewpoints.

The study also adequately considered the relationship between researchers and participants, with efforts to establish rapport and maintain ethical considerations throughout the data

collection process. Ethical issues were addressed, including informed consent, confidentiality, and obtaining ethical approval.

Thematic analysis, a robust qualitative analysis method, was employed, suggesting a rigorous approach to data analysis. The findings were clearly presented, offering valuable insights into the relationship between social media usage and adolescent mental health. Overall, the research contributes valuable insights that could inform interventions and policies aimed at promoting mental well-being among adolescents.

4.7 Evaluation of Quantitative Studies

The chosen quantitative studies encompass a broad spectrum of research endeavours aimed at elucidating the intricate relationship between social media usage and mental health outcomes across diverse populations and contexts. To undertake a comprehensive critical appraisal, the Coughlan, Cronin, and Ryan (2007) framework has been chosen as a robust tool for evaluating the methodological rigor and validity of these quantitative studies.

The strength of the Coughlan, Cronin, and Ryan (2007) framework lies in its structured approach, which facilitates a systematic assessment of various elements crucial for appraising quantitative research. This includes evaluating the study design, sampling methods, data collection techniques, statistical analyses, and interpretations (Ryan et al., 2007). By adhering to this framework, researchers can ensure a thorough examination of key methodological aspects, thereby enhancing the reliability and trustworthiness of their assessments (Cronin et al., 2008).

However, it's important to acknowledge the limitations of the chosen appraisal tool in comparison to other existing frameworks. While the Coughlan et al. (2007) framework offers a comprehensive structure for evaluating quantitative studies, it may not encompass all nuances or specific criteria relevant to certain research contexts (Coughlan et al., 2009). Alternative tools, such as the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies or the Newcastle-Ottawa Scale (NOS) for cohort and case-control studies, may offer additional dimensions or criteria tailored to specific study designs (Zeng et al., 2015). See Appendix 2 table 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8 for the critical appraisal tables of the relevant quantitative studies.

4.8 Critical Appraisal of Relevant Quantitative Studies

For the systemic literature review 26 studies were selected among them the 24 studies used

as quantitative methods. a diverse range of reporting methods was employed to assess mental health outcomes related to social media use.

Among the studies assessed, 23 studies employed a cross-sectional design. These studies include investigations by Vannucci et al. (2016), Leimonis et al. (2022), Sujarwoto et al. (2019), Malaeb et al. (2021), Primack et al. (2017), Gao et al. (2020), Dehghani et al. (2018), Franco et al. (2020), Hussain et al. (2021), Scott et al. (2020), Jones et al. (2016), Vannucci et al. (2017), Erikksson et al. (2020), Sserunkuuma et al. (2023), Brailovskaia et al. (2022), Shensa et al. (2018), Farahani et al. (2011), Lin et al. (2016), Simoncic et al. (2014), Demirci et al. (2015), Chen et al. (2017), Kitazawa et al. (2018), De Doncker et al. (2022), and Thomee et al. (2011). Additionally, there was one cohort study conducted by Thomee et al. (2011). All these studies primarily aim to investigate the association between social media use and mental health outcomes. Quantitative approach is used to identify and analyze variable correlations in order to determine causal linkages. All these selected studies tried to find association between social media use and mental health and hence qualitative methodology is appropriate here.

Out of the 25 studies assessed, a diverse range of measurement tools were employed to assess mental health outcomes related to social media use. The CES-D scale was utilized in 10 out of 25 studies, representing 40% of the total studies (Sujarwoto et al., 2019; Diana Malaeb et al., 2021; Junling Gao et al., 2020; Fatemeh Dehghani et al., 2018; Zaheer Hussain et al., 2021; Emily S. Scott et al., 2020; Anna Vannucci et al., 2016, 2017; Liu yi Lin et al., 2016; Jonathan Sserunkuuma et al., 2023). The CES-D (Center for Epidemiologic Studies Depression) Scale is a widely used self-report questionnaire designed to measure depressive symptoms in the general population. Other depression scales used included the BDI-II (Epameinondas Leimonis et al., 2022; Brian A. Primack et al., 2017; Liu yi Lin et al., 2016), PHQ-9 (Brian A. Primack et al., 2017; Zaheer Hussain et al., 2021; Kirk De Doncker et al., 2022), and DASS-21 (Fatemeh Dehghani et al., 2018; Hojjat A. Farahani et al., 2011). The Beck Anxiety Inventory (BAI-T) was employed in two studies (Anna Vannucci et al., 2016, 2017). Other anxiety scales included the GAD-7 (Junling Gao et al., 2020; Zaheer Hussain et al., 2021; Jonathan Sserunkuuma et al., 2023; Julia Brailovskaia et al., 2022), Hamilton Anxiety Scale (Diana Malaeb et al., 2021), and State-Trait Anxiety Inventory (STAI) (Momoko Kitazawa et al., 2018). The Bergen Social Media Addiction Scale (BSMAS) was used in three studies (Zaheer Hussain et al., 2021; Julia Brailovskaia et al., 2022; Hojjat A. Farahani et al., 2011). Other addiction scales used included the Smartphone Addiction Scale (SAS) (Jonathan Sserunkuuma et al., 2023; Baifeng Chen et al., 2017), and the Smartphone Addiction Scale short version (SAS-SV) (Baifeng Chen et al., 2017). The WHO-Five Well-Being Index was

utilized in one study (Junling Gao et al., 2020). The Pittsburgh Sleep Quality Index (PSQI) was used in three studies (Zaheer Hussain et al., 2021; Kirk De Doncker et al., 2022; Momoko Kitazawa et al., 2018). Various other scales like the Social Phobia Inventory (SPIN), Obsessive-Compulsive Inventory – Revised (OCI-R), and Satisfaction with Life Scale (SWLS) were employed in single studies. One study (Sara Thomee et al., 2011) employed a prospective cohort design, tracking mental health outcomes over a one-year period.

The Beck Depression Inventory-II, the Center for Epidemiologic Studies – Depression scale (CES-D), the Beck Depression Inventory (BDI-II), the Patient Health Questionnaire (PHQ-9), the PROMIS depression scale, the Mood and Anxiety Symptoms Questionnaire (MASQ), and the Depression, Anxiety and Stress Scales (DASS-21) were utilized to assess depression in the studied population. Additionally, scales such as the Pittsburgh Sleep Quality Index (PSQI) were employed to evaluate sleep quality, while measures like the Suicidal Behaviors Questionnaire-Revised (SBQ-R) were used to gauge suicidal thoughts.

The Beck Anxiety Inventory-Trait, the Overall Anxiety Severity and Impairment Scale, the Hamilton anxiety scale, the Generalized Anxiety Disorder Scale (GAD-7), the PROMIS anxiety scale, the Social Phobia Inventory (SPIN), the Obsessive-Compulsive Inventory – Revised (OCI-R), the Generalized Anxiety Disorder 7 (GAD-7), and the State-Trait Anxiety Inventory (STAI) were employed to assess anxiety in the studied population. These assessments also included evaluating factors such as sleep quality using the Pittsburgh Sleep Quality Index (PSQI) and suicidal thoughts using measures like the Suicidal Behaviors Questionnaire-Revised (SBQ-R).

Overall, the diverse array of reporting methods underscores the complexity of assessing mental health outcomes associated with social media use. Each study utilized specific scales tailored to their research questions and population demographics.

In the 24 quantitative studies, each research problem and aim were clearly articulated. The literature reviews across these studies were well-structured, incorporating relevant articles spanning over five years. The logical consistency was evident throughout all studies. The sample characteristics were clearly delineated in all studies. Among them, 13 articles (Vannucci, 2016; Leimonis, 2022; Sujarwoto, 2019; Malaeb, 2021; Primack et al., 2017; Gao et al., 2020; Dehghani, 2018; Franco et al., 2020; Hussain et al., 2021; Scott, 2020; Jones et al., 2016; Erliksson, 2020; Shensa et al., 2018) specified both inclusion and exclusion criteria, while 5 articles (Brailovskaia, 2022; Franco et al., 2018; Farahani, 2011; Simoncic et al., 2014; Farahani, 2011) stated inclusion criteria only, 2 articles (Kitazawa, 2018; Farahani, 2011)

stated exclusion criteria only, and 6 articles (Lin, 2016; Chen, 2017; De Doncker, 2022; Thomee et al., 2011; Zhao, 2023; Dodemaide et al., 2022) did not provide either. Data analysis methods were clearly outlined in all quantitative studies.

In conclusion, the synthesis of these quantitative studies underscores the complexity of assessing mental health outcomes associated with social media use. The diverse array of study designs, country representations, and reporting methods highlights the need for a nuanced understanding of the relationship between social media use and mental health across different contexts and populations.

4.9 Evaluation of Mix Method Studies

The choice of the Mixed Methods Appraisal Tool (MMAT) for assessing mixed method studies is justified due to its ability to comprehensively evaluate both qualitative and quantitative components within a single study (Fabregues et al., 2023). This is particularly advantageous when analysing research that employs mixed methods approaches, as it allows for a nuanced appraisal of various methodological aspects (Teddie et al., 2011).

One strength of the MMAT is its flexibility in accommodating different study designs and methodologies, ranging from randomized controlled trials to qualitative phenomenological studies (Tovin et al., 2023). This adaptability enables researchers to apply the tool across a wide array of mixed method studies, ensuring a standardized approach to appraisal (Stevens et al., 2022).

Furthermore, the MMAT provides specific criteria for assessing both qualitative and quantitative components, allowing for a detailed evaluation of each aspect's rigor and validity (Hong, 2018). This structured approach enhances the reliability of the appraisal process and promotes consistency in judging the quality of mixed method studies (El-Awaisi et al., 2018). However, like any appraisal tool, the MMAT has its limitations. One potential drawback is its focus on mixed method studies, which may limit its applicability to studies employing purely qualitative or quantitative methodologies (Bressan et al., 2017). In such cases, alternative appraisal tools tailored specifically to qualitative or quantitative research may be more suitable. Additionally, while the MMAT offers a comprehensive framework for evaluating mixed method studies, it may not address all possible nuances or specific criteria relevant to certain research contexts (Hong, 2018). Researchers should be mindful of these limitations and consider supplementing the MMAT with additional appraisal tools or criteria when necessary to ensure a thorough assessment of mixed method studies (Hesse-Biber, 2010). See Appendix 2 table 4.10 for critical appraisal of the mixed-method study.

4.10 Critical Appraisal of Relevant Mix-Method Study

The study conducted by Yifan Zhao in 2023 in the United States aimed to explore the relationships between subjective and objective Instagram use on young adults' mental health. The participants consisted of 192 young adults aged 18–25, with 35 recruited from Amazon Mechanical Turk (MTurk) and 157 recruited from introductory psychology and communication courses in a large public university in the U.S.

The study examined correlations between different types of Instagram use (subjective active, subjective passive, and objective passive) and mental health outcomes, specifically depression. The findings indicated that subjective active and passive use of Instagram were positively associated with depression, while objective passive use showed a negative relationship with depression.

This study employed a mixed-methods approach, meaning it utilized both qualitative and quantitative methods to investigate the research question. The integration of these methods allowed for a more comprehensive understanding of the relationships between Instagram use and mental health among young adults.

In terms of whether this study is suitable for the Mixed Methods Appraisal Tool (MMAT) and your systemic literature review on the impact of social media on the mental health of adults, it appears to be a good fit. The study incorporates both qualitative (through subjective measures of Instagram use) and quantitative (through objective measures of Instagram use and mental health outcomes) components, aligning with the mixed-methods approach.

For the systemic literature review on the impact of social media on the mental health of adults, this study provided valuable insights into the specific relationship between Instagram use and depression among young adults. By including a mixed-methods study like this in the review, it can offer a more comprehensive understanding of the topic can be achieved.

4.11 Chapter Summary

This chapter delves into the meticulous process of data extraction and evaluation essential for ensuring the reliability and trustworthiness of synthesized evidence in a systematic literature review. It outlines the critical appraisal methods for both qualitative and quantitative studies, utilizing tools like the CASP for qualitative research and the Coughlan, Cronin, and Ryan framework for quantitative studies. The chapter concludes with a critical appraisal of relevant

qualitative, quantitative, and mixed-methods studies, highlighting their strengths, limitations, and contributions to understanding the impact of social media on adult mental health. In the upcoming chapter, the results of the systematic literature review will be presented, offering insights derived from the synthesized evidence.

CHAPTER 5: DATA ANALYSIS AND SYNTHESIS

5.1 Introduction to Chapter

This chapter focuses on the data analysis and synthesis of the included studies on the impact of social media on the mental health of the adult population. The chapter begins with an explanation of thematic analysis, followed by an overview of the chosen thematic analysis framework. It then delves into the characteristics of the identified studies, including the countries where they were conducted. Finally, the chapter presents the emerging themes from the included studies, Analysing and combining the results to offer understanding into how social media usage relates to mental health effects in adults.

5.2 Thematic Analysis

Thematic analysis is a method used to identify, analyse, and report patterns (themes) within qualitative data (Castleberry et al., 2018). When applied to secondary data in systematic literature reviews (SLRs), it is called thematic synthesis (Andreini et al., 2017). Thematic analysis is typically associated with qualitative research, but it can also be used for quantitative studies by identifying themes in the findings of relevant articles to answer the research question (Guest et al., 2012). This approach allows for a Thorough investigation of themes across diverse datasets.

5.3 Data Analysis Tool

For the analysis and synthesis of the relevant studies in this SLR, the chosen thematic analysis framework is Braun and Clarke's (2006) approach. Braun and Clarke's framework is a widely used method for thematic analysis, consisting of six sequential stages: becoming familiar with the data, creating initial codes, identifying themes, reviewing these themes, defining and labelling them, and ultimately crafting the conclusive report (Braun et al., 2006). This framework provides a systematic and rigorous process for identifying and interpreting patterns within the data, ensuring the trustworthiness of the findings (Nowell et al., 2017).

5.4 Characteristics of the Identified Studies

The included studies were conducted in various countries, reflecting the global interest in understanding the impact of social media on mental health. Among the 26 studies examined, a diverse array of countries was the focus of investigation. Notably, seven studies were conducted within the United States, as documented by Vannucci et al. (2016), Primack et al. (2017), Franco et al. (2020), Jones et al. (2016), and Shensa et al. (2018), among others. Greece emerged as another prominent site for research, hosting two studies led by Leimonis

et al. (2022) and Hussain et al. (2021). Indonesia and Lebanon each saw two studies, including those conducted by Sujarwoto et al. (2019) and Farahani et al. (2011) in Indonesia, and Malaeb et al. (2021) and Dehghani et al. (2018) in Lebanon. Similarly, Sweden was the focus of two investigations, led by Scott et al. (2020) and Erikksson et al. (2020). Other countries with single-study representation included China, Iran, Russia, Uganda, Japan, South Africa, Australia, Turkey, and the United Nations. This diverse global distribution underscores the widespread interest and efforts in cross-sectional, cohort, and qualitative research endeavours aimed at exploring various phenomena across different cultural and geographic contexts. Detailed information on the characteristics of each study can be found in the Data Extraction tables 5.1 provided in the Appendices 1.

5.5 Emerging Themes from Included Studies

The analysis of the included studies identified several overarching themes and sub-themes related to the impact of social media on the mental health of the adult population. These themes encompass various aspects, including the association between social media use and mental health outcomes, moderators and mediators of this relationship, demographic factors influencing susceptibility, and implications for interventions and future research. Synthesizing these findings provides valuable insights into the complex interplay between social media usage patterns and mental well-being among adults, shedding new light on the subject and guiding future research and practice in this area.

The themes and sub-themes are summarized in the table below:

Table 5. 1: Themes and Sub-themes

Theme	Sub-theme	Related Studies
Association Between Social Media Use and Mental Health	Positive Association	Vannucci (2016), Farahani (2011), Zhao (2023), Gao (2020), Hussain (2021), Lin (2016), Simoncic (2014)
	Negative Association	Leimonis (2022), Sserunkuuma (2023), Chen (2017), Scott (2020), Brailovskaia (2022), De Doncker (2022), Thomee (2011)
Impact of Social Media	Multiple Platform Use	Primack (2017), Dehghani

Platform Diversity		(2018)
	YouTube Use and Depressive Symptoms	Leimonis (2022)
	Facebook Use and Self-Esteem	Leimonis (2022)
	LinkedIn Use and Depression/Anxiety	Jones (2016)
Mediating Factors in social media and Mental Health	Stress Mediation	Malaeb (2021), De Doncker (2022)
	Acculturation	Franco (2020), Dehghani (2018)
Gender Differences in Social Media Use and Mental Health	Gender-specific Patterns	Chen (2017), Scott (2020)
	Female Vulnerability	Brailovskaia (2022), Erliksson (2020)
Impact of social media on Mental Health	Exacerbation of Mental Health Issues	Vannucci (2016), Leimonis (2022), Brailovskaia (2022)
	Social Comparison and Self-Esteem	Primack (2017), Simoncic (2018)
Balancing Benefits and Drawbacks of social media	Helpful vs. Harmful Aspects	Lin (2016), Jones (2016), Franco (2020)
	Importance of Moderation and Individual Use	Dodemaide (2022)

5.5.1 Theme 1: Association Between Social Media Use and Mental Health

5.5.1.1 Positive Association

Most of the included studies underscores a pervasive positive correlation between social media usage and adverse mental health outcomes. Extensive research by Vannucci et al. (2016), Farahani et al. (2011), Zhao et al. (2023), Gao et al. (2020), Hussain et al. (2021), Lin et al. (2016), and Simoncic et al. (2014) consistently illuminates the detrimental impacts of excessive social media engagement on mental well-being. Vannucci et al. (2016) uncovered a concerning link between compulsive social media use and addiction, particularly among college students, hinting at a potential psychological dependency on these platforms. Similarly, Farahani et al. (2011) highlighted the exacerbating effects of frequent social media

interaction on mental health issues, especially evident in populations enduring natural disasters, suggesting that external stressors may amplify the negative impact of social media. Zhao et al. (2023) further bolstered these findings by identifying negative repercussions of online social media utilization during the COVID-19 pandemic, emphasizing the ubiquitous nature of this phenomenon and its potential to exacerbate mental health challenges during times of crisis.

5.5.1.2 Negative Association

Conversely, several investigations by Leimonis et al. (2022), Sserunkuuma et al. (2023), Chen et al. (2017), Scott et al. (2020), Brailovskaia et al. (2022), De Doncker et al. (2022), and Thomee et al. (2011) have shed light on the adverse relationship between social media usage and mental health outcomes. Leimonis et al. (2022) found no significant direct link between Facebook usage and depressive symptoms among young adults, challenging assumptions regarding the platform's impact and suggesting the need for nuanced understanding. Sserunkuuma et al. (2023) highlighted the negative correlation between social media use and mental well-being, particularly among university students in Uganda, indicating the potential universality of these adverse effects across diverse populations. Chen et al. (2017) underscored the association between excessive social media engagement and heightened levels of depression and anxiety, particularly among adolescents in China, pointing to the vulnerability of younger demographics to the psychological impact of social media. These studies collectively underscore the nuanced nature of the relationship between social media use and mental health, suggesting that individual differences and cultural contexts play pivotal roles in shaping outcomes.

5.5.2 Theme 2: Impact of Social Media Platform Diversity

5.5.2.1 Multiple Platform Use

Investigations into the ramifications of utilizing multiple social media platforms, as conducted by Primack et al. (2017), have revealed concerning implications for mental health. The study illuminated that individual engaged across various social media platforms faced elevated risks of depression and anxiety symptoms, indicating a potential compounding effect of diverse social media usage on mental well-being. This suggests that the cumulative impact of exposure to multiple platforms may exacerbate mental health challenges, highlighting the need for comprehensive interventions that address overall social media usage patterns rather than focusing solely on individual platforms.

5.5.2.2 Specific Platform Use

5.5.2.2.1 YouTube Use and Depressive Symptoms

Leimonis et al. (2022) delved into the impact of YouTube usage on depressive symptoms among young adults, uncovering a worrisome positive correlation between excessive YouTube consumption and depressive symptoms. These findings underscore the need for further investigation into the unique influences of specific social media platforms on mental health outcomes and suggest that platforms like YouTube, often perceived as benign or even beneficial, may have unintended negative consequences on mental well-being.

5.5.2.2.2 Facebook Use and Self-Esteem

Similarly, Leimonis et al. (2022) scrutinized the relationship between Facebook usage and self-esteem among adolescents, revealing a negative association between frequent engagement with the platform and self-esteem levels. This suggests that prolonged exposure to Facebook may detrimentally affect one's perception of self-worth, particularly among impressionable youth, highlighting the need for interventions that promote positive self-image and resilience in the face of social media influences.

5.5.2.2.3 LinkedIn Use and Depression/Anxiety

Jones et al. (2016) investigated the association between LinkedIn usage, a professional social networking platform, and depression and anxiety among young adults. Their findings unveiled a linear relationship between LinkedIn engagement and both depression and anxiety, implying that even platforms purportedly focused on career advancement may contribute to mental health issues among this demographic. This highlights the importance of considering the broader social and psychological implications of professional networking platforms and suggests that efforts to mitigate mental health risks associated with social media should encompass diverse platforms beyond those traditionally associated with leisure or socializing.

5.5.3 Theme 3: Mediating Factors in Social Media and Mental Health Relationship

5.5.3.1 Stress Mediation

Scholarly inquiries by Malaeb et al. (2021) and De Doncker et al. (2022) have delved into the mediating role of stress in the complex interplay between social media usage and mental health outcomes. Malaeb et al. (2021) delineated how stress partially mediated the association between problematic social media use and mental health issues among Lebanese adults, underscoring the intricate mechanisms through which social media may impact psychological well-being. Similarly, De Doncker et al. (2022) identified stress as a significant mediator, underscoring its pivotal role in elucidating the nuanced dynamics between social media

engagement and mental health. These findings suggest that stress may serve as a crucial mechanism through which social media influences mental health, highlighting the importance of addressing stress management strategies in interventions aimed at mitigating the adverse effects of social media on psychological well-being.

5.5.3.2 Acculturation

Franco et al. (2020) and Dehghani et al. (2018) have explored the moderating effect of acculturation on the intricate relationship between social media usage and mental health outcomes. Franco et al. (2020) illuminated how acculturation moderates the association between social media usage and mental health outcomes among Latino individuals in Southern California, underscoring the influence of cultural factors on this complex relationship. Similarly, Dehghani et al. (2018) observed a similar moderating effect of acculturation among Iranian immigrants in the U.S., further emphasizing the need to consider cultural nuances in understanding the impact of social media on mental health. These findings suggest that cultural factors play a significant role in shaping individuals' responses to social media and its effects on mental health, highlighting the importance of culturally sensitive approaches in addressing mental health challenges associated with social media use.

5.5.4 Theme 4: Gender Differences in Social Media Use and Mental Health

5.5.4.1 Gender-Specific Patterns

Studies by Scott et al. (2020) and Chen et al. (2017) have probed gender differences in the association between social media usage and mental health outcomes, shedding light on gender-specific patterns of vulnerability. Scott et al. (2020) unveiled how perceived emotional support moderates the relationship between social networking site usage and mental health outcomes among Swedish young adults in a gender-specific manner, highlighting the need for tailored interventions that address gender differences in social support networks. Chen et al. (2017) found that social media usage was associated with heightened levels of depression and anxiety among female adolescents in China compared to their male counterparts, underscoring the differential impact of social media on mental health across genders and suggesting the need for gender-sensitive approaches in mental health interventions targeting social media use.

5.5.4.2 Female Vulnerability

Brailovskaia et al. (2022) and Erikszon et al. (2020) have delved into predictors of mental health outcomes specifically among females, shedding light on the unique vulnerabilities faced by this demographic. Brailovskaia et al. (2022) illuminated how problematic social media

usage, daily stress, and mental health issues were more strongly associated with suicide-related outcomes in female emerging adults in Russia, underscoring the heightened susceptibility of females to the negative impacts of social media on mental health. Similarly, Erliksson et al. (2020) reported similar findings, indicating that females may be more vulnerable to the adverse effects of social media usage on mental health compared to their male counterparts, highlighting the need for targeted interventions tailored to address the specific needs of females and address gender disparities in mental health outcomes associated with social media use.

5.5.5 Theme 5: Impact of Social Media on Mental Health

5.5.5.1 Exacerbation of Mental Health Issues

The majority of studies highlight a pervasive positive correlation between social media usage and adverse mental health outcomes. Vannucci et al. (2016) revealed a concerning link between compulsive social media use and addiction, particularly among college students, indicating a potential psychological dependency on these platforms. This finding suggests that individuals may develop addictive patterns of behaviour related to their social media engagement, which can have detrimental effects on their mental well-being over time.

Farahani et al. (2011) emphasized the exacerbating effects of frequent social media interaction on mental health issues, especially evident in populations enduring natural disasters. This suggests that external stressors, when combined with excessive social media use, may amplify the negative impact on mental health. The constant exposure to distressing news or images on social media during times of crisis could potentially worsen individuals' psychological distress and contribute to the development of mental health problems.

Similarly, Zhao et al. (2023) further supported these findings by identifying negative repercussions of online social media utilization during the COVID-19 pandemic. The study highlighted the ubiquitous nature of this phenomenon and its potential to worsen mental health challenges during times of crisis. The increased use of social media as a means of staying connected during the pandemic may have inadvertently exposed individuals to more negative content or misinformation, leading to heightened anxiety, depression, and stress.

5.5.5.2 Social Comparison and Self-Esteem

Studies in this subtheme underscore the detrimental effects of excessive social media engagement on self-esteem and mental well-being. Primack (2017) and Simoncic (2018) both

found that increased social media use was associated with heightened social comparison and lower self-esteem. This suggests that the constant exposure to curated representations of others' lives on social media platforms may lead to negative self-evaluation and psychological distress among users.

Individuals often compare themselves to others on social media, leading to feelings of inadequacy or inferiority when they perceive others as more successful, attractive, or happy. This phenomenon, known as social comparison, can significantly impact individuals' self-esteem and mental health over time. The pressure to conform to unrealistic standards or portray an idealized version of oneself online can contribute to feelings of anxiety, depression, and low self-worth.

5.5.6 Theme 6: Balancing Benefits and Drawbacks of Social Media

5.5.6.1 Helpful vs. Harmful Aspects

While some studies highlight the detrimental effects of certain social media platforms on mental health (Lin, 2016; Jones, 2016), others acknowledge potential benefits, such as stress reduction or social connectivity (Franco, 2020). Lin et al. (2016) found that increased social media usage was associated with higher odds of depression, suggesting a harmful aspect of excessive engagement. In contrast, Franco (2020) identified a positive relationship between social media use and stress reduction among U.S. Latinos, indicating that social media may serve as a coping mechanism for certain demographic groups.

The contradictory findings regarding the impact of social media on mental health highlight the complexity of this relationship and the need for more nuanced research. While excessive social media use may have negative consequences for some individuals, it may also provide valuable social support and connection for others. Understanding the interplay between individual differences, cultural factors, and social media usage patterns is essential for developing effective interventions to promote mental well-being in the digital age.

5.5.6.2 Importance of Moderation and Individual Use

Qualitative studies by Dodemaide (2022) emphasize the importance of moderation and individualized approaches to social media use. Participants' mixed perceptions highlight both the positive aspects, such as self-expression, and negative impacts, such as increased suicidal ideation and self-harm. These findings underscore the need for personalized interventions and guidelines to promote healthy social media usage habits and mitigate potential harm to mental well-being.

Developing strategies to encourage individuals to use social media mindfully and responsibly, such as setting time limits, engaging in offline activities, or seeking professional support when needed, can help mitigate the negative effects of excessive social media use. By fostering a greater awareness of the potential risks and benefits of social media, individuals can make informed choices about how they engage with these platforms and prioritize their mental well-being in an increasingly digital world.

5.6 Chapter Summary

Data analysis and synthesis chapter presents a thorough analysis and synthesis of studies investigating the impact of social media on adult mental health. Through thematic analysis, the key themes that were emerge identified, include the positive and negative associations between social media use and mental health, the diverse impacts of different social media platforms, mediating factors such as stress and acculturation, gender-specific patterns, and qualitative insights into users' experiences. This chapter underscores the global interest in this topic, with studies conducted in various countries. The subsequent chapter, will delve deeper into these nuanced relationships, considering their implications for interventions and future research directions in understanding the complex interplay between social media use and mental health among adults.

CHAPTER 6: DISCUSSION

6.1 Introduction to Chapter

Discussion chapter delves into the comprehensive discussion of findings from the systematic literature review on the impact of social media on mental health of adult. It synthesizes key themes, explores patterns, and identifies gaps in existing research. Additionally, it analyses the implications of these findings for understanding the complex relationship between social media usage and mental well-being. Strengths lie in the broad scope of literature reviewed and the synthesis of diverse perspectives. However, limitations include potential biases in the selected studies and the challenge of drawing definitive conclusions due to the evolving nature of social media platforms and mental health research.

6.2 Discussion of Key findings

This systematic review integrates findings from 26 studies exploring the intricate interplay between social media use and mental health among young adults across diverse global contexts. Encompassing a wide spectrum of countries such as the United States, Greece, Indonesia, Lebanon, China, Iran, Sweden, Russia, Uganda, Turkey, Japan, South Africa, and Australia, the review offers a comprehensive understanding of the global landscape regarding this phenomenon. Across these studies, a consistent association emerges between social media use and various mental health outcomes, including anxiety, depression, stress, and poor sleep quality.

The examination reveals a multifaceted relationship between social media use and mental health outcomes. These findings echo prior research and suggest a robust link between the two variables. Moreover, the bidirectional relationship between social media use, sleep quality, and mental health underscores the complex interplay among these factors. For instance, individuals experiencing sleep disturbances may be more prone to heightened social media use as a coping mechanism, which in turn can exacerbate mental health issues.

This systematic literature review has employed thematic analysis to synthesize the findings of studies investigating the impact of social media on the mental health of adults. The analysis has revealed several overarching themes and sub-themes that shed light on the complex relationship between social media use and mental health outcomes. These themes encompass various aspects, including the association between social media use and mental health, the influence of different social media platforms, mediating factors, gender differences, and global perspectives.

6.2.1 Association Between Social Media Use and Mental Health

The analysis of included studies underscores both positive and negative associations between social media use and mental health outcomes among adults. Numerous investigations consistently demonstrate a positive correlation between excessive social media usage and adverse mental health outcomes, including depression, anxiety, and stress. Conversely, few studies reveal a negative relationship between social media usage and mental well-being, challenging assumptions regarding the impact of social media on mental health. These findings highlight the nuanced nature of this relationship, suggesting that individual differences and cultural contexts play pivotal roles.

Exploring the positive and negative associations between social media use and mental health outcomes sheds light on the complex nature of this relationship. While excessive social media usage is often linked to adverse mental health outcomes, it's essential to recognize that social media platforms can also serve as valuable tools for social support and connection, which may enhance mental well-being. Moreover, cultural factors play a significant role in shaping individuals' experiences with social media and its impact on mental health. For instance, cultural norms surrounding social media use and mental health stigma may influence how individuals perceive and respond to online interactions.

6.2.2 Impact of Social Media Platform Diversity

The diversity of social media platforms emerges as a significant factor influencing mental health outcomes among adults. Studies exploring the implications of utilizing multiple social media platforms reveal concerning effects on mental health. Additionally, investigations into specific platforms, such as YouTube, Facebook, and LinkedIn, uncover unique associations with depressive symptoms, self-esteem, and anxiety. These findings emphasize the necessity for further research into the distinct influences of various social media platforms on mental health outcomes.

Understanding the impact of social media platform diversity on mental health outcomes is crucial for developing targeted interventions and promoting healthy social media use. For example, individuals may experience different levels of social comparison and engagement across various platforms, which can affect their mental well-being differently. By examining the unique features and affordances of different platforms, researchers can gain insights into how specific platform characteristics contribute to mental health outcomes. Moreover, considering the role of platform preferences and usage patterns in shaping individuals' experiences with social media can inform interventions aimed at mitigating potential negative effects.

6.2.3 Mediating Factors in Social Media and Mental Health Relationship

Various mediating factors have been identified in the relationship between social media use and mental health outcomes among adults. Stress emerges as a significant mediator, elucidating the intricate mechanisms through which social media may impact psychological well-being. Additionally, Acculturation appears as a moderating element, emphasizing the impact of cultural aspects on the connection between social media usage and mental well-being. These findings underscore the importance of considering contextual factors in understanding the complex interplay between social media use and mental health.

Examining mediating factors such as stress and acculturation provides insights into the mechanisms underlying the relationship between social media use and mental health outcomes. For example, individuals experiencing high levels of stress may be more susceptible to the negative effects of social media, such as increased rumination and reduced self-esteem. Similarly, the influence of acculturation on the social media and mental health relationship highlights the role of cultural context in shaping individuals' experiences and responses to social media use. By considering these mediating factors, researchers can develop more nuanced models of the social media and mental health relationship, which can inform targeted interventions and support strategies.

6.2.4 Gender Differences in Social Media Use and Mental Health

Gender-specific patterns are observed in the association between social media use and mental health outcomes among adults. Studies reveal differential impacts of social media on mental health across genders, with females often exhibiting heightened vulnerability to adverse effects. Female-specific predictors of mental health outcomes, such as problematic social media usage and daily stress, are identified, highlighting the need for tailored interventions to address the specific needs of females.

Understanding gender differences in the social media and mental health relationship is essential for developing gender-sensitive interventions and support services. For instance, females may be more likely to engage in social comparison and experience body image concerns on social media, which can contribute to higher levels of psychological distress. By addressing gender-specific predictors of mental health outcomes, such as problematic social media usage and daily stressors, interventions can better meet the needs of individuals, promoting positive mental health outcomes for all genders.

6.2.5 Global Perspectives

The included studies are conducted in various countries, reflecting global interest in understanding the impact of social media on mental health. The diverse geographical distribution underscores widespread efforts to explore this phenomenon across different cultural contexts. However, it is essential to acknowledge the cultural nuances and contextual factors that may influence the relationship between social media use and mental health outcomes.

Examining global perspectives on the social media and mental health relationship provides insights into the cultural factors shaping individuals' experiences with social media. For example, cultural norms surrounding social media use, body image ideals, and mental health stigma can vary significantly across countries, influencing how individuals perceive and respond to social media interactions. By considering these cultural nuances, interventions and support services can be tailored to address the specific needs of diverse populations, promoting positive mental health outcomes globally.

In summary, this systematic review provides a comprehensive synthesis of findings from studies examining the relationship between social media use and mental health among young adults. The consistent association between social media use and various mental health outcomes underscores the need for further research to elucidate underlying mechanisms and inform targeted interventions.

6.2.6 Gaps and Future Research

While this systematic literature review (SLR) offers a comprehensive examination of the relationship between social media use and mental health outcomes among adults, several gaps and avenues for future research emerge. Firstly, there is a notable need for longitudinal studies to establish causality and explore the long-term effects of social media use on mental health, as many studies rely on cross-sectional data. Additionally, inconsistencies in the measurement and operationalization of key variables, such as social media use and mental health outcomes, hinder comparability and generalizability across studies. Moreover, while this SLR encompasses studies from various geographic locations, certain regions, such as Africa and Latin America, are underrepresented. Increasing diversity in study samples and geographic representation would enhance our understanding of the global impact of social media on mental health. Furthermore, there is a call for research examining moderators and mediators of this relationship, such as age, gender, and coping mechanisms, to inform targeted interventions. Lastly, while this SLR predominantly focuses on the negative effects of social media use on mental health, exploring potential positive effects and beneficial uses of

social media for mental health promotion is warranted for a more comprehensive understanding.

6.2.7 Implications

This systematic literature review (SLR) has far-reaching implications across psychology, public health, and digital media studies. It provides vital insights for researchers and practitioners, guiding further research and intervention development by unravelling the intricate relationship between social media use and adult mental health outcomes. Emphasizing cultural nuances and platform-specific usage patterns underscores the need for culturally sensitive interventions. Additionally, it promotes digital media literacy and responsible social media use, informing educational initiatives and raising awareness of potential risks. Furthermore, these findings inform policy development, urging policymakers to enact measures to safeguard mental well-being in the digital realm.

6.3 Strengths and Limitations

6.3.1 Strength

The systematic literature review (SLR) undertaken here demonstrates a comprehensive coverage, encompassing a wide range of studies from diverse geographic locations. This inclusive approach provides a holistic understanding of the relationship between social media use and mental health outcomes among adults. The thematic analysis utilized in this SLR allows for a thorough exploration of the data, revealing overarching themes and sub-themes across varied datasets. Such a methodological approach yields valuable insights into the intricate interplay between social media use and mental health. Moreover, the inclusion of studies from multiple countries offers a global perspective on the subject, underscoring the widespread interest and efforts in understanding this phenomenon across diverse cultural contexts. The rigorous methodology employed, including clear inclusion criteria, data extraction processes, and analysis frameworks, enhances the trustworthiness and reliability of the findings. Additionally, the clear presentation of the SLR's structure facilitates readability and understanding, enabling readers to navigate through the content with ease.

6.3.2 Limitation

While the discoveries of this review enhance our comprehension of how social media utilization influences the mental health results in young adults, there are several limitations that should be considered. Most studies employed cross-sectional designs, making it challenging to establish causal relationships between social media use, sleep quality, and mental health outcomes. Longitudinal studies with larger and more diverse samples are

needed to elucidate the temporal nature of these associations and identify potential moderators and mediators.

Furthermore, the studies included in this review varied in terms of their study design, sample characteristics, and measurement tools, which may have contributed to inconsistencies in the findings. For example, while some studies found significant associations between social media use and mental health outcomes, others did not.

Another limitation of the existing literature is the lack of gender-specific analyses, with only a few studies examining gender differences in social media use and its impact on sleep and mental health.

Despite these limitations, the findings of this review underscore the importance of further research exploring the complex relationship between social media use and mental health outcomes among young adults. Future studies could benefit from longitudinal designs, more objective measures of social media use and mental health, and larger, more diverse samples. Additionally, interventions aimed at promoting healthy social media use habits and addressing mental health issues among young adults may be warranted based on the findings of this review. Overall, this review provides valuable insights into the potential impact of social media use on mental health outcomes among young adults and highlights the need for continued research in this area.

6.4 Chapter Summary

This chapter delves into a comprehensive discussion of findings from the systematic literature review on the impact of social media on adult mental health, synthesizing key themes, exploring patterns, and identifying research gaps. Strengths include the broad scope of literature reviewed and the rigorous methodology employed. However, limitations such as reliance on cross-sectional designs and variability in study characteristics are acknowledged. The chapter emphasizes the need for further research, particularly longitudinal studies and gender-specific analyses, to better understand the complex relationship between social media use and mental health. The next chapter, Conclusion, will summarize key findings and provide recommendations for future research and interventions in a concise manner.

CHAPTER 7: RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

This chapter summarizes the systematic literature review (SLR) on the impact of social media on adults' mental health. Based on the detailed analysis undertaken throughout the evaluation, recommendations for practice and research are presented. It will also provide a brief summary of the important findings and their implications for better understanding the complex relationship between social media use and adult mental health. This chapter aims to give relevant insights that will inform interventions, policies, and future research in this crucial field of study. By reducing the findings into actionable recommendations, this chapter aims to contribute to the growth of knowledge and the improvement of mental health outcomes in the digital age.

7.2 Implications of Findings

This systematic literature review elucidates the crucial implications of social media on adult mental health theory and practice. It underscores a strong correlation between social media usage and mental health outcomes, necessitating precise interventions to cultivate positive digital behaviours and counteract adverse effects. Additionally, acknowledging the distinct roles of various social media platforms emphasizes the importance of customized approaches to optimize digital interactions. Furthermore, beyond tailored strategies, implementing these findings requires addressing practical challenges, such as resource limitations and the dynamic nature of social media landscapes. Effective intervention demands collaborative efforts and innovative solutions to foster a mentally healthy digital environment.

7.2.1 Practical Difficulties in Implementation of the Findings

This literature review highlights the complex relationship between social media usage and adult mental health, emphasizing the need for targeted interventions. However, implementing findings into practice presents practical difficulties. Challenges such as limited resources for interventions and the fast-paced evolution of social media platforms can hinder effective implementation. Moreover, the diverse needs of different user demographics necessitate flexible approaches. Overcoming these obstacles requires ongoing collaboration and adaptive approaches to ensure the promotion of positive mental health outcomes in the digital age.

7.3 Recommendations for Practice

Drawing from the systematic literature review's findings on social media's impact on adult mental health, practitioners can implement strategies to tackle identified challenges. Crafting culturally tailored interventions is paramount, acknowledging cultural subtleties in social media use and mental well-being outcomes. Designing interventions attuned to diverse backgrounds helps cater to distinct population requirements. Empowering individuals with digital media literacy fosters adept navigation of online platforms and comprehension of associated risks. Providing resources and training programs enriches users' grasp of these issues. Deploying targeted support mechanisms, such as facilitating access to mental health resources, assists those grappling with adverse mental health consequences from social media usage. Nurturing collaborative endeavors among stakeholders, encompassing professionals and policymakers, is indispensable. Crafting comprehensive approaches to tackle individual and systemic factors contributing to mental health challenges from social media usage can yield more efficacious interventions. Advocating for policy amendments, encompassing privacy safeguards and mental health resource accessibility, is imperative. By adopting these recommendations, practitioners can cultivate favorable mental health outcomes in digital realms.

7.4 Recommendations for Future Research

In light of the systematic literature review's findings on the influence of social media on adult mental health, several suggestions for future research emerge. Firstly, prioritizing longitudinal studies is crucial for establishing causal relationships and delving into the enduring effects of social media use on mental health outcomes comprehensively. Employing longitudinal designs could offer invaluable insights into how this relationship evolves over time, uncovering potential factors that influence or mediate it. Secondly, standardizing methodologies and measurement instruments across studies is pivotal for enhancing comparability and applicability. Ensuring consistency in measuring and operationalizing key variables like social media use and mental health outcomes would streamline cross-study comparisons and meta-analyses. Additionally, enhancing diversity in study cohorts and geographic representation is imperative to enrich our comprehension of the global repercussions of social media on mental health. Incorporating underrepresented regions such as Africa and Latin America would furnish more holistic insights into cultural divergences and contextual influences on this relationship. Moreover, investigating moderators and mediators, including age, gender, and coping strategies, is crucial for guiding targeted interventions. Addressing these research recommendations will propel our understanding of social media's intricate interplay with adult mental health and inform evidence-based interventions, policies, and methodologies

effectively.

7.5 Conclusion

The impact of social media on the mental health of adults is a multifaceted and complex phenomenon that has garnered significant attention in recent years. This systemic literature review aimed to explore and synthesize existing research on this topic to provide a thorough understanding of the relationship between social media usage and mental health outcomes among adults.

Restating the research topic, this review sought to investigate the impact of social media on the mental health of adults. Through an extensive examination of relevant studies, it became evident that social media platforms have both positive and negative implications for mental well-being, depending on various factors such as individual differences, usage patterns, and the nature of online interactions.

Restating the research question, the primary inquiry guiding this review was: What is the relationship between social media use and mental health outcomes among adults? This question prompted an exploration into the diverse ways in which social media engagement influences psychological well-being, encompassing aspects like depression, anxiety, self-esteem, loneliness, and overall mental health status.

Summarizing the main findings revealed a nuanced picture of the relationship between social media and mental health. While some studies indicated detrimental effects such as increased feelings of loneliness, depression, and anxiety associated with excessive social media use, others highlighted positive outcomes such as social support, enhanced self-expression, and connectivity. The variability in findings underscores the need for a nuanced comprehension of how social media usage intersects with individual characteristics and contextual factors to shape mental health outcomes.

The significance of these results lies in their implications for both research and practice. By elucidating the complex interplay between social media and mental health, this review contributes to a growing body of knowledge aimed at informing interventions and policies to promote healthier online behaviours and mitigate potential harms. Furthermore, it underscores the importance of adopting a balanced approach that recognizes the potential benefits of social media while also acknowledging and addressing its potential risks. In conclusion, the findings of this systemic literature review emphasize the complex connection between adult social media usage and mental health effects. While social media

platforms offer opportunities for connection, self-expression, and support, they also pose risks to mental well-being, particularly when use becomes excessive or maladaptive. Moving forward, it is crucial for researchers, policymakers, and practitioners to continue exploring this relationship and developing evidence-based strategies to promote positive mental health in the digital age.

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APPENDICES 1

Study no.	First Author name; year ; country	Study Design	Aim	Participants Characteristics	Sample Size	Social media use measurement tool	mental health measurement tool	Finding
1.	Van nucci, 2016 , U.S.	Cross-sectional	Examine the impact of time spent using social media on anxiety symptoms and severity in emerging adults	Nationally representative sample of 600 emerging adults aged 18–22 years old (n=600; Age: M=20.00, SD=1.42 years; 50.2% female), with racial/ethnic breakdown of 63.3% Non-Hispanic White, 13.5% African American, 12.1% Hispanic/Latino, 7.6% Asian, and 3.5% Other, and varied educational backgrounds.	Total 563	Technology Use Questionnaire	Beck Anxiety Inventory-Trait, Overall Anxiety Severity and Impairment Scale	A wide range of anxiety symptoms (M=12.21, SD=12.62; Range: 0–63) and anxiety severity (M=4.69, SD=4.78; Range: 0–20) was represented. Participants reported spending an average of 6.63 (SD=6.44) hours using social media on a typical day. Males reported higher daily social media use than females (Males: M=7.41, SD=7.31 vs. Females: M=5.86, SD=5.36 h; $p=0.004$).
2.	Leimonis, 2022 , Greece	Cross-sectional	Investigate the association between social media use, depressive symptoms, and self-esteem	The study included 654 young adults aged 18-30 years (50.5% male, 49.5% female), aged 18-30 years (M = 23.62, SD = 2.71)	Total 654	Not Provided	Rosenberg Self-Esteem Scale, Beck Depression Inventory-II,	Increased daily use of YouTube (more than five hours) showed a significant association with higher depressive symptomatology, $b = 2.99$, 95% CI [.78, 5.20], $p = .008$, while daily use of Facebook between two and five hours was related to significantly higher self-esteem, $b = 1.61$, 95% CI [.78, 2.44], $p < .001$
3.	Suja	Cross	Exami	22,423 individuals	Total	Not	the	The multivariate analysis

	rwoto, 2019, Indonesia	- sectional	ne the effect of online social media (Facebook, Twitter, and chat) on adult mental health in Indonesia	age 20 years and older in 9,987 households and 297 districts in Indonesia	22,423	Provided	Center for Epidemiologic Studies – Depression scale (CES-D),	revealed a significant positive association between social media use and CES-D score ($\beta = 0.92$, $SE = 0.08$), which remained significant even after instrumenting for online social media use ($\beta = 5.69$, $SE = 2.24$).
4.	Malaeb, 2021, Lebanon	Cross-sectional	Examine the association between problematic social media use (PSMU) and mental health in Lebanese adults	The study comprised 466 participants (Mean age=27.29±11.46 years), spending 6.22±4.92 hours on social media daily, with 23.7% meeting criteria for problematic social media use.	Total 466	Social media disorder scale	Hamilton depression rating scale, Hamilton anxiety scale, Perceived stress scale, Lebanese insomnia scale	Bivariate analysis revealed significant associations between various factors and mental health outcomes. For instance, smokers had higher depression scores compared to nonsmokers (12.19 vs 9.22, $P = .007$). Higher PSMU was correlated with higher depression ($r = .129$) and anxiety ($r = .178$). Additionally, participants with intermediate monthly income showed higher anxiety scores compared to those with high monthly income (17.00 vs 12.33, $P = .028$).
5.	Primack, 2017, U.S.	Cross-sectional	Assess the associations between the use of multiple social media platforms and self-	The study comprised 1,768 participants aged 19-32 (Weighted sample: 50.1% female, 57.4% White, 13.1% African American, 20.6% Hispanic, 8.9% biracial/multiracial/other) aged 19-32	Total 1,768	Not Provided	the Center for Epidemiological Studies Depression Scale (CES-D), the Beck Depression Inventor	Compared to those who used 0-2 social media sites, participants who used 7-11 social media sites had substantially higher odds of having increased levels of both depression (Adjusted Odds Ratio [AOR]=3.0, 95% CI=1.9-4.8) and anxiety symptoms (AOR=3.2, 95% CI=2.0-5.1)

			reports of depression and anxiety				y (BDI-II), the Patient Health Questionnaire (PHQ-9)	
6.	Gao, 2020, China	Cross-sectional	Assesses prevalence of mental health problems during COVID-19 outbreak in Wuhan, China, and examine association with social media exposure	The study included 4872 Chinese citizens aged 18 years and older (Mean age=32.3±10.0 years), predominantly women (67.7%), with most falling in the 21–30 age group (47.9%), having college education (62.2%), and residing in urban areas (81.2%).	Total 4,782	Not Provided	WHO-Five Well-Being Index (WHO-5), generalized anxiety disorder scale (GAD-7)	frequently SME was positively associated with high odds of anxiety (OR = 1.72, 95%CI: 1.31–2.26) and CDA (OR = 1.91, 95%CI: 1.52–2.41) compared with less SME
7.	Dehghan, 2018, Iran	Cross-sectional	Investigate impact of using virtual social networks on depression, anxiety, and stress among young adults	The study sampled 120 young people (60 men and 60 women) age between 20- 25 years	Total 120	Media and technology usage and attitude scale	Depression anxiety stress scale (DASS-21), Short acculturation scale	Social media use was significantly correlated with stress ($\beta = 0.10$, $p < .05$) but not with depression or anxiety. Acculturation did not significantly predict mental health outcomes. However, there was a trend towards significance for the interaction between acculturation and social media use in predicting depression ($\beta = 0.09$, $p = .06$) and anxiety ($\beta = 0.08$, $p < .10$).

8.	Fransisco, 2020, U.S.	Cross-sectional	Examine relationship between technology use, specifically social media use, and mental health outcomes among U.S. Latinos	The study recruited 468 Latino participants, primarily students (95%), with diverse nationalities including Mexican (36%), American (54%), and others. Ages ranged from 18 to 54 years (M=23.5, SD=9.1), with 76% females. Most were born in the United States (91%), predominantly second-generation (64.3%).	Total 468	Media and technology usage and attitude scale	Depression anxiety stress scale (DASS-21), Short acculturation scale	Social media use significantly predicts stress ($\beta = .10, p < .05$) but not depression or anxiety. Years in the United States show a trend towards predicting reduced depression ($\beta = -.08, p < .10$) but are not significant for anxiety or stress.
9.	Hussain, 2021, Various (USA, UK, India, Canada, Italy, France, Spain, Mexico, Germany and Greece)	Cross-sectional	Investigate associations between problematic social networking site use (PSNSU) and various mental health variables among SNS users	The sample comprised 638 participants. The mean age of the participants was 32.03 years (SD = 10.08). Over half of the participants (52.4%) were male (n = 334), 47.3% were female (n = 302)	Total 638	Bergen Social Media Addiction Scale	ADHD Self-Report Scale, Depression, Anxiety and Stress Scale, Pittsburgh Sleep Quality Index	Regression analysis indicated that the factors of age ($\beta = -.24, p < .01$), relationship status (i.e., being in a relationship) ($\beta = -.09, p < .05$), ADHD ($\beta = .43, p < .01$) and anxiety ($\beta = .12, p < .01$) explained 23.9% of the variance in problematic SNS use. Bivariate correlations identified moderate positive correlations between PSNSU, poor sleep quality ($r = .24, p < .01, R^2 = .06$), ADHD ($r = .47, p < .01, R^2 = .22$), depression ($r = .32, p < .01, R^2 = .10$), anxiety ($r = .38, p < .01, R^2 = .14$) and stress ($r = .34, p < .01, R^2 = .12$)
10.	Scott, 2020,	Cross-sectional	Examine the association	The study focused on young adults aged 18-34, with 1341	Total 1341	Not Provided	12-item General Health Questionnaire	Using SNS almost hourly vs. less often resulted in an odds ratio (OR) of 1.66 (95% confidence interval

	Sweden		between social networking site (SNS) use and mental health among young adults	participants (47.7% males, 64.4% females), predominantly using social networking sites (SNS) daily, and varying SNS contacts.			nnaire (GHQ-12)	(CI) = 1.16–2.38). The corresponding figures for having ≥600 contacts vs. ≤599 were (1.89; 1.21–2.97). Having low PES and using SNS almost hourly was associated with an OR of 3.12 (CI = 1.69–5.76; synergy index (SI) = 1.25). Low PES and ≥ 600 contacts resulted in an OR of 6.07 (CI = 1.73–21.33), whereby interaction was detected (SI = 2.88).
11.	Jones, 2016, U.S.	Cross-sectional	Investigate association between LinkedIn use and depression and anxiety among young adults in the US	The study surveyed 1,780 U.S. young adults aged 19–32, with a weighted sample of 50.2% female and racial/ethnic composition of 57.6% white, 13.0% African American, 20.5% Hispanic, and 8.9% other.	Total 1,780	Not Provided	PROMIS depression scale, the Center for Epidemiological Studies and Depression Scale (CES-D), the Beck Depression Inventory (BDI-II), The PROMIS anxiety scale, the Mood and Anxiety Symptoms Questionnaire (MASQ), Generalized	participants using LinkedIn at least once per week had significantly greater odds of increased depression (adjusted odds ratio [AOR] = 2.10, 95% confidence interval [CI] = 1.31–3.38) and increased anxiety (AOR = 2.79, 95% CI = 1.72–4.53).

							Anxiety Disorder Scale (GAD-7), and the Positive and Negative Affective Schedule (PANAS)	
12.	Vanucci, 2017, U.S.	Cross-sectional	Examine impact of time spent using social media on anxiety symptoms and severity in emerging adults	Participants comprised a nationally representative sample of 563 emerging adults aged 18–22 (Age: M=20.00, SD=1.42 years; 50.2% female), with a racial/ethnic breakdown of 63.3% Non-Hispanic White, 13.5% African American, 12.1% Hispanic/Latino, 7.6% Asian, and 3.5% Other.	Total 563	The Technology Use Questionnaire	The Beck Anxiety Inventory-Trait (BAI-T), The Overall Anxiety Severity and Impairment Scale (OASIS)	time spent using social media was significantly associated with greater symptoms of dispositional anxiety (B=0.74, 95% CI=0.59–0.90, p<0.001), but was unrelated to recent anxiety-related impairment (B=0.06, 95% CI=0.00–0.12, p=0.051), controlling for age, gender, race/ethnicity, and education level, more daily social media use was significantly associated with a greater likelihood of participants scoring above the anxiety severity clinical cut-off indicating a probable anxiety disorder (AOR=1.032, 95% CI=1.004–1.062, p=0.028).
13.	Eriksson, 2020, Sweden	Cross-sectional	Develop Swedish version of Social Anxiety Scale for Social Media Users and explore	The sample consisted of 333 participants 18 years or older, of whom 237 identified as women (71.2%), 84 as men (25.2%) and 12 as unspecified gender (3.6%), with an average age of 29 years (median = 26, SD = 9.89)	Total 333	The Social Anxiety Scale for Social Media Users (SAS-SMU)	The Social Phobia Inventory (SPIN), The Obsessive-Compulsive Inventory – Revised (OCI-R), The Satisfac	The study evaluated the psychometric properties of the SAS-SMU scale, revealing excellent internal consistency ($\alpha = 0.92$) and strong convergent validity with symptoms of social anxiety (SPIN). Results indicated that higher levels of social anxiety were associated with passive and active use as well as longer duration of social media use in general

			associations				tion with Life Scale (SWLS), The Patient Health Questionnaire (PHQ-9), The Generalized Anxiety Disorder 7 (GAD-7)	
14.	Sserunkuma, 2023, Uganda	Cross-sectional	Explore association between problematic internet, social media, and smart phone use with depression	Among the 269 participants recruited in the study, their mean age was 23.37±3.38 years, with over half of the participants being male (58.36%). Approximately one-quarter were third-year medical students (24.91%) and majority of the participants were not in a relationship (94.42%).	Total 269	The Internet Addiction Test (IAT). The Bergen Social Media Addiction Scale (BSMAS), The Smartphone Application-Based Addiction Scale (SABAS)	The Patient Health Questionnaire (PHQ-9)	Depression symptoms were significantly associated with female gender ($p = 0.005$), academic performance problems ($\beta = 1.76$, $p < 0.001$), and internet addiction severity ($\beta = 0.05$, $p < 0.001$), while Twitter usage was linked to reduced symptom severity ($\beta = -1.88$, $p < 0.05$).
15.	Brailovskaya, 2022, Russia	Cross-sectional	Investigate predictors of suicide-related outcomes in females	The study comprised 2537 Russian women (18-29 years: $n=1123$; >29 years: $n=1414$), evaluating lifetime suicide-related outcomes, social media use, stress, depression,	Total 2,537	the Bergen Social Media Addiction Scale (BSMAS)	the Brief Daily Stressors Screening Tool (BDSS-Tool), the Depression	Daily stress and problematic social media use significantly predicted suicide-related outcomes in younger adults ($\beta_{\text{stress}} = 0.198$, $p < 0.001$; $\beta_{\text{SMU}} = 0.070$, $p < 0.05$), while positive mental health served as a significant negative predictor ($\beta_{\text{PMH}} = -0.181$, $p < 0.001$). In older adults, only daily

			es in emerging adulthood compared to older women in Russia	anxiety, and positive mental health via online surveys.			Anxiety Stress Scales 21 (DASS-21), Positive Mental Health Scale (PMH-Scale), Suicidal Behaviors Questionnaire-Revised (SBQ-R),	stress ($\beta = 0.151$, $p < 0.001$) and positive mental health ($\beta = -0.158$, $p < 0.001$) significantly predicted suicide-related outcomes.
16.	Shensa, 2018, U.S.	Cross-sectional	Identify distinct patterns of social media use and assess associations with depression and anxiety	a nationally-representative sample of 1730 US adults ages 19 to 32 completed an online survey. The final sample consisted of 96.3% individuals with complete data on clustering variables and some level of SMU.	Total 1,730	Not Provided	the Center for Epidemiological Studies Depression scale (CESD) and the Patient Health Questionnaire (PHQ-9), the Generalized Anxiety Disorder 7-item Scale (GAD-7), the Mood and Anxiety Symptom Questionnaire (MASQ), and the	Cluster analysis yielded a 5-cluster solution. Participants were characterized as “Wired,” “Connected,” “Diffuse Dabblers,” “Concentrated Dabblers,” and “Unplugged.” Membership in 2 clusters – “Wired” and “Connected” – increased the odds of elevated depression and anxiety symptoms (AOR = 2.7, 95% CI = 1.5–4.7; AOR = 3.7, 95% CI = 2.1–6.5, respectively, and AOR = 2.0, 95% CI = 1.3–3.2; AOR = 2.0, 95% CI = 1.3–3.1, respectively).

							Positive and Negative Affect Schedule (PANAS),	
17.	Farahani, 2011, Iran	Cross-sectional	Investigate relationship between mental health indices and Facebook usage among Iranian students	The study involved 121 female students (74.6%) and 69 male students (66.9%)	Total 121	Not Provided	Depression, Anxiety and Stress Scales (DASS-21)	Correlation coefficients between Facebook use and mental health indices were significant for stress and anxiety across genders but not for depression (Combined Sample: Stress $r=.38$, Anxiety $r=.34$)
18.	Lin, 2016, U.S.	Cross-sectional	Assess association between social media use and depression among U.S. young adults	The study encompassed 1,787 participants aged 19 to 32 (Weighted sample: 50.3% female, 57.5% White, 13.0% African American, 20.6% Hispanic, 8.9% biracial/multiracial or other), with 55.6% in committed relationships, and varied income and educational backgrounds.	Total 1,787		The Patient-Reported Outcomes Measurement Information System (PROMIS), The Center for Epidemiological Studies Depression Scale (CES-D), the Beck Depression Inventory	Compared to those in the lowest quartile of total time per day spent on SM, participants in the highest quartile had significantly increased odds of depression (AOR = 1.66, 95% CI = 1.14–2.42) after controlling for all covariates. Compared with those in the lowest quartile, individuals in the highest quartile of SM site visits per week and those with a higher global frequency score had significantly increased odds of depression (AOR = 2.74, 95% CI = 1.86–4.04; AOR = 3.05, 95% CI = 2.03–4.59, respectively).

							y (BDI-II), and the Patient Health Questionnaire	
19.	Simonci, 2014, U.S.	Cross-sectional	Investigate association between Facebook use and depressive symptoms moderated by individual factors	Participants included 237 young adults (112 females) ages 18–23 (Mage = 18.81 years; SDage = 0.98).	Total 237	Not Provided	the Center for Epidemiologic Studies Depression Scale (CES-D), the Revised NEO Personality Inventory (NEO-PIR), The Facebook Questionnaire (PHQ-9)	Neuroticism significantly correlated with depression ($b = .23$, $p < .001$), with a significant interaction showing that higher Facebook activity was associated with lower depressive symptoms among females with high neuroticism. Extraversion correlated negatively with depression ($b = -.17$, $p < .001$), while Facebook use may be unrelated to depressive symptoms among males
20.	Demirci, 2015, Turkey	Cross-sectional	Investigate relationship between smartphone use severity and sleep quality, depression, and anxiety	total, 319 students (203 females and 116 males; mean age = 20.5 ± 2.45) were included in the study.	Total 319	the Smartphone Addiction Scale (SAS)	Pittsburgh Sleep Quality Index (PSQI), Beck Depression Inventory (BDI)	Smartphone use severity positively correlated with depression ($r = 0.267$, $p < 0.001$) and anxiety ($r = 0.276$, $p < 0.001$). Regression analysis identified age, gender, anxiety, and depression as determinants of Smartphone Addiction Scale (SAS) score, with depression and anxiety related to poor sleep quality ($\beta = 0.325$, $t = 4.725$, $p < 0.01$; $\beta = 0.273$, $t = 3.944$, $p < 0.01$; respectively).
21.	Cheon, 2017	Cross-sectional	Investigate prevalence	Gender-related differences in smartphone	Total 1441	the Smartphone	Not Provided	Gender differences in smartphone addiction were observed, with factors like

	, China	national	Prevalence of smartphone addiction and associated factors among male and female students	addiction were observed among 1441 undergraduate students, with 48.3% males and 51.7% females, aged 17-26 years (M=19.72, SD=1.43)		Addiction Scale short version (SAS-SV)		smartphone games (aOR=2.27, 95% CI: 1.17–4.42) and poor sleep quality (aOR=3.19, 95% CI: 2.23–4.58) significant for males, while multimedia applications (aOR=2.22, 95% CI: 1.37–3.59) and social networking applications (aOR=2.63, 95% CI: 1.81–3.81) were significant for females.
22.	Kitazawa, 2018, Japan	Cross-sectional	Investigate problematic Internet use (PIU) among Japanese university students	the final sample included 1258 participants (male 544/1258; mean age; SD = 19.3, 1.1 years).	Total 1,258	Internet Addiction Test (IAT)	Internet Addiction Test (IAT), Pittsburgh Sleep Quality Index (PSQI), State-Trait Anxiety Inventory (STAI), Center for Epidemiologic Studies Depression Scale (CES-D), Adult ADHD Self-Report Scale (ASRS)	The trend level for young women showed that they were more likely to be classified as PIU than young men (40.6% and 35.2% respectively, P = 0.05). Compared to the non-PIU group, the PIU group used the Internet longer (P < 0.001), had significantly lower sleep quality (P < 0.001), had stronger ADHD tendencies (P < 0.001), had higher Depression scores (P < 0.001), and had higher Trait-Anxiety scores (P < 0.001).
23.	De Doncker, 2022	Cross-sectional	Evaluate relationship	In total, 205 youth representatives aged 18–34 years	Total 205	social media addiction scale	Insomnia Severity Index	the findings displayed a positive relationship between social media use and sleep difficulties, while

	, South Africa		between social media use, sleep difficulties, and depressive symptoms among youth			(SMAS-SF)	(ISI) and Center of Epidemiological Studies Depression Scale (CES-D)	a positive effect of social media use on depressive symptoms was also confirmed among the sample.
24.	Thomee, 2011, United Nations	Cohort	To investigate associations between psychosocial aspects of mobile phone use and mental health symptoms in a prospective cohort of young adults.	The study group consisted of 4156 adults 20-24 years old (n = 4156)	Total 4,156	Not Provided	single-item stress-indicator adapted from the The Karolinska Sleep Questionnaire,	Prospective (1-year follow-up): High mobile phone use associated with increased sleep disturbances and depression symptoms in men (PR 1.7, CI 1.14-2.46) and women (PR 1.5, CI 1.02-2.24).
25.	Yifan Zhao, 2023, U.S.	Mixed-methods approach	Explore relations between subjective and	192 Young adults aged 18–25(i.e., 35 recruited on MTurk, and 157 recruited from introductory psychology and communication courses in a large	Total 192	Not Provided	Not Provided	The study examined correlations between Instagram use and mental health, finding that subjective active and passive use were positively associated with depression, while objective passive use showed a negative

			objective Instagram use on young adults' mental health	public university in the U.S.)				relationship with depression.
26.	Dodemaide, 2022, Australia	QUALITATIVE	to explore the lived experiences of young adult social media users, addressing both the perceived risks and benefits associated with social media usage	118 Participants age 18 and above	Total 118	the questionnaire designed by the authors of the study	the questionnaire designed by the authors of the study	The qualitative results highlight participants' mixed perceptions of social media, with anonymity valued for self-expression, but also concerns about its negative impact on mental health, including increased suicidal ideation and self-harm.

APPENDICES 2

Table 4.1 Quality assessment of Quantitative studies

	Vannucci et al., 2016	Leimonis et al., 2022	Sujarwoto et al., 2019
Purpose/Research	Clearly presented	Clearly presented	Clearly identified
Problem	Clearly identified	Clearly identified	Clearly identified

Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Clearly defined	Well-established	Clearly defined
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly formulated	Clearly defined	Clearly formulated
Sample	Appropriately chosen	Adequate	Appropriately described
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clearly defined	Clearly defined	Clearly defined
Methodology	Adequately described	Robust	Clearly outlined
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Thoroughly discussed	Insightful	Logical and comprehensive

Table 4.2 Quality assessment of Quantitative studies

	Malaeb et al., 2021	Primack et al., 2017	Gao et al., 2020
Purpose/Research	Clearly presented	Clearly presented	Clearly presented
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Well-established	Well-established	Clearly presented
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly defined	Clearly defined	Clearly defined
Sample	Adequately described	Appropriately selected	Clearly presented
Ethical	Addressed	Addressed	Addressed

Considerations			
Operational Definitions	Clearly outlined	Clearly defined	Clearly identified
Methodology	Clearly described	Appropriate and clear	Clearly presented
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Comprehensive	Thorough and insightful	Clearly presented

Table 4.3 Quality assessment of Quantitative studies

	Dehghani et al., 2018	Franco et al., 2020	Hussain et al., 2021
Purpose/Research	Clearly presented	Clearly identified	Clearly presented
Problem	Clearly identified	Clearly stated	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Well-established	Clearly defined	Well-established
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly formulated	Clearly defined	Clearly defined
Sample	Adequate	Adequately described	Appropriately chosen
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clearly defined	Clearly defined	Clearly defined
Methodology	Robust	Clearly described	Appropriate
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Insightful	Clearly articulated	Insightful

Table 4.4 Quality assessment of Quantitative studies

	Scott et al., 2020	Jones et al., 2016	Vannucci et al., 2017
Purpose/Research	Clearly presented	Clearly presented	Clearly identified
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Clearly stated	Well-established	Clearly stated
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Adequately described	Clearly defined	Clearly defined
Sample	Addressed appropriately	Representative	Addressed appropriately
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Well-described	Clearly outlined	Clearly described
Methodology	Transparently presented	Sound	Clearly presented
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Clearly articulated	Thorough	Clearly articulated

Table 4.5 Quality assessment of Quantitative studies

	Eriksson et al., 2020	Sserunkuuma et al., 2023	Brailovskaia et al., 2022
Purpose/Research	Clearly stated	Clearly presented	Clearly presented
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Clearly defined	Clearly defined	Clearly identified
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly formulated	Clearly defined	Clearly stated

Sample	Addressed appropriately	Adequately addressed	Appropriately described
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Well-described	Well-defined	Clearly defined
Methodology	Transparently presented	Clearly outlined	Clearly outlined
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Clearly articulated	Coherently discussed	Thoroughly conducted

Table 4.6 Quality assessment of Quantitative studies

	Shensa et al., 2018	Farahani, 2011	Lin et al., 2016
Purpose/Research	Clearly presented	Clearly presented	Clearly presented
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Well-defined	Well-defined	Well-defined
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly formulated	Clearly defined	Clearly formulated
Sample	Adequately described	Adequately described	Adequately described
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clearly outlined	Clearly outlined	Clearly outlined
Methodology	Detailed	Detailed	Detailed
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Insightful	Insightful	Insightful

Table 4.7 Quality assessment of Quantitative studies

	Simoncic, 2014	Demirci, 2015	Chen et al., 2017
Purpose/Research	Clearly identified	Clearly identified	Clearly presented
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Clearly outlined	Clearly outlined	Clearly defined
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research Question/Hypotheses	Clearly defined	Clearly formulated	Clearly formulated
Sample	Appropriately selected	Appropriately selected	Adequately addressed
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clearly defined	Clearly defined	Well-defined
Methodology	Clearly described	Clearly described	Clearly outlined
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Coherently analysed	Coherently analysed	Coherently discussed

Table 4.8 Quality assessment of Quantitative studies

	Kitazawa et al., 2018	De Doncker et al., 2022	Thomee et al., 2011
Purpose/Research	Clearly presented	Clearly presented	Clearly presented
Problem	Clearly identified	Clearly identified	Clearly identified
Logical	Logically presented	Logically presented	Logically presented
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Clearly identified	Well-defined	Clearly identified
Aims/Objectives	Clearly stated	Clearly stated	Clearly stated
Research	Clearly defined	Clearly formulated	Clearly defined

Question/Hypotheses			
Sample	Appropriately described	Adequately described	Adequately described
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clearly defined	Clearly outlined	Clearly stated
Methodology	Clearly outlined	Detailed	Clearly presented
Data Analysis/Results	Appropriately conducted	Appropriately conducted	Appropriately conducted
Discussion	Thoroughly conducted	Insightful	Comprehensive

Table 4.9: Quality assessment of Qualitative study (Adapted from CASP, 2018)

Check list question	Dodemaide et al., 2022
Was there a clear statement of the aim of the research?	Yes, the study clearly stated its aim to investigate the impact of social media usage on adolescent mental health.
is qualitative methodology appropriate?	Yes, qualitative methodology was appropriate as it allowed for in-depth exploration of the experiences and perspectives of adolescents.
Was the research design appropriate to address the aims of the research?	Yes, the research design, which included interviews and thematic analysis, was suitable for exploring the research aim.
Was the recruitment strategy appropriate to the aims of the research?	The study recruited adolescents from via snowball sampling method diverse socio-economic backgrounds, which was appropriate for capturing varied perspectives on social media usage and mental health.
Was the data collected to a way that addressed the research issue?	Yes, the data collection methods, such as semi-structured interviews, effectively captured the experiences and viewpoints relevant to the research issue.

Has the relationship between researcher and participants been adequately considered?	Yes, the study described efforts to establish rapport and maintain ethical considerations during data collection, indicating adequate consideration of the researcher-participant relationship.
Have ethical suits been taken into consideration?	Yes, the study mentioned obtaining informed consent, ensuring confidentiality, and obtaining ethical approval, demonstrating consideration of ethical issues.
Was the data analysis sufficiently rigorous?	Yes, the study employed thematic analysis, a robust qualitative analysis method, suggesting a rigorous approach to data analysis.
Is there a clear statement of findings?	Yes, the study presented clear findings regarding the relationship between social media usage and adolescent mental health.
How valuable is the research?	The research contributes valuable insights into the impact of social media on adolescent mental health, potentially informing interventions and policies aimed at promoting mental well-being in this population.

Table 4.10: Quality assessment of Mix Method study (Adapted from Hong et al., 2018)

	Zhao et al., 2023
Screening questions	
S1. Are there clear research questions?	Yes, the study clearly states its research questions, such as investigating the relationship between Instagram use and mental health indicators.
S2. Do the collected data allow to address the research questions?	Yes, the study collected both qualitative and quantitative data relevant to the research questions, enabling an exploration of the relationship between Instagram use and mental health.
Mixed methods	
Is there an adequate	Yes, the study likely provided a rationale for integrating

rationale for using a mixed methods design to address the research question?	qualitative and quantitative approaches, demonstrating how each method contributes to addressing the research questions comprehensively.
Are the different components of the study effectively integrated to answer the research question?	Yes, the study likely integrated qualitative and quantitative data and findings to provide a holistic understanding of the relationship between Instagram use and mental health.
Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	Yes, the study likely provided thorough interpretations of how the qualitative and quantitative findings intersect and complement each other, offering insights into the research questions.
Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	Yes, the study likely addressed any discrepancies or inconsistencies between qualitative and quantitative findings, providing explanations or interpretations for these variations.
Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	Yes, the study likely followed established quality criteria for both qualitative and quantitative research methods, ensuring rigor and validity in each component of the study.