|  |  |  |
| --- | --- | --- |
|  | **GOMAL UNIVERSITY****JOURNAL OF RESEARCH**Gomal University, Dera Ismail Khan, Khyber Pakhtunkhwa, PakistanISSN:1019- 8180 (Print) ISSN: 2708- 1737 (Online) |  |
|  **Website**  | [www.gujr.com.pk](http://www.gujr.com.pk)  | **HEC Recognized** | Social Sciences | **CrossRef** | DOI:10.51380 |

SMARTPHONE ADDICTION, PROBLEMATIC SOCIAL MEDIA USE & MENTAL HEALTH PROBLEMS AMONG YOUNG ADULTS

Adeela Kanwal1, Havaida Munir2 & Samreen Ibrar3

1Alumni, Department of Psychology, University of Sargodha, Sargodha, Pakistan

2Lecturer, Psychology Department, Lahore Garrison University, Lahore, Punjab, Pakistan

3Alumni, Lahore School of Behavioral Sciences, The University of Lahore, Lahore, Pakistan

|  |  |
| --- | --- |
| **KEYWORDS** | **ABSTRACT** |
| Smartphone Addiction, Problematic Social Media Use, Depression, Young Adults | Smartphones have transformed communication and relationship-building among young adults; but, their misuse not only disrupts daily functioning but contributes to mental health issues. This study examines the mediating role of social media problematic use in relationship between smartphone addiction and depression in young adults, addressing gaps in the existing research. Utilizing a correlational design and purposive sampling, the study surveyed 106 young adults (61 men and 49 women) aged 18 to 25. The findings indicate positive and significant association between smartphone addiction and depression and social media problematic use; however, the relationship between social media problematic use and depression was positive but not significant. Mediation analysis reveals the partial mediating effect of social media problematic use on the relationship amid smartphone addiction & depression, with both direct and total effects being significantly positive, while indirect effect remained insignificant. Gender comparisons show no significant differences, although men scored higher than women smartphone addiction, social media problematic use and depression. Study discusses implications for youth welfare, acknowledges its limitations, and offers recommendations.  **2024 Gomal University Journal of Research** |
| **Article History** |
| Date of Submission:21-11-2024Date of Acceptance:23-12-2024Date of Publication:31-12-2024 |
| Corresponding Author  | Adeela Kanwal: deelamalik167@gmail.com |
| DOI | <https://doi.org/10.51380/gujr-40-04-05> |

**INTRODUCTION**

In the digital era, smartphones have revolutionized communication, becoming essential tools for both personal and professional interactions (Singh, Singh & Kumari, 2024; Kögler, Paulick, Scheffran & Birkholz, 2024; Miller, 2021). In this drive, with over seven billion users worldwide, including around 78 million in Pakistan alone (Jamil, 2021; Guillaume, Troncoso, Duroseau, Bluestone & Fullerton, 2022; Hidayat-Ur-Rehman, 2024), these devices facilitate connections across vast distances. Still, this convenience has led to concerning rise in smartphone addiction, particularly amid young adults, characterized by compulsive usage and overwhelming need to remain connected (Elhai, Yang, McKay & Asmundson, 2020; Khan, Shahid & Majid, 2024; Pera, 2020; Ratan, Parrish, Zaman, Alotaibi & Hosseinzadeh, 2021). The implications of addiction extend beyond mere distraction, as it is linked to significant mental health challenges, includes symptoms of depression, anxiety and stress (Cho, 2020; Guo, Luk, Lee, Shen, Oliffe & Wang, 2020).

Recent findings from Jordan indicate the troubling prevalence of smartphone addiction among university students, with over the half reporting severe psychological distress (Abuhamdah & Naser, 2023). A critical factor in this landscape is social media, which serves as the virtual space for sharing ideas, information, and personal expressions (Gillespie, HendryAnduuru, Laird & Ballantyne, 2021; Vukušić, Viskić, Poplašen, Relić, Marelić, Jokic & Sedak, 2021). Its versatility spans numerous domains, including education, commerce, and international diplomacy (Raza, Qazi, Umer & Khan, 2020; Williams, 2020; Carpenter & Harvey, 2020; Nili & Shaner, 2022). While, the social media can foster the community and connection, excessive use can lead to the problematic behaviours that impact daily functioning across multiple dimensions, including personal and professional spheres. Such problematic social media use often the stems from an excessive investment of time on these platforms (Pellegrino, Stasi & Bhatiasevi, 2022; Zulfiqar, Khan, Bibi, Ali, Samuel & Habib, 2024; Patel, 2024; Nawaz, 2024).Research shows a significant link amid problematic smartphone use & social media use with self-construal influencing these issues over fear of missing out in Italian students (Servidio, Koronczai, Griffiths & Demetrovics, 2022).

Additionally, the study on Ethiopian students found that excessive use correlates with mental health challenges, highlighting factors like sleep quality, and depression (Mengistu, Habtamu, Kassaw, Madoro, Molla, Wudneh & Duko, 2023). The scholarly research has found a positive relationship between extended screen time, particularly on social media platforms and severity of depressive symptoms, including depression (Rosenthal, Zhou & Booth, 2020; Shahid, Bashir & Fatima, 2024; Zink, Belcher, Imm & Leventhal, 2020). Additionally, the studies have shown significant positive correlations between depressive symptoms, such as suicidal ideation, and aggressive behavior in the individuals with prolonged screen exposure (Rothenberg et al., 2019; Fareed, Jabeen, Aurangzeb & Aslam, 2024). Study on Italian adolescents showed that excessive social media use is linked to disrupted sleep patterns at the night (Lin, Longobardi, Gastaldi & Fabris, 2024). Another study on university students revealed a significant positive association between smartphone addiction and aggressive behavior, with the depressive symptoms and loneliness identified as the contributing factors to this relationship (Karaoglan, Avci & Yilmaz, 2023).

**LITERATURE REVIEW**

The smartphone addiction has emerged as significant form of behavioral addiction, exhibiting characteristics similar to other dependencies, such as the tolerance, withdrawal symptoms, and mood swings (Ratan et al., 2021). The young adults and adolescents are particularly susceptible frequently struggling to regulate their usage, can negatively impact their daily functioning and mental health (Wacks & Weinstein, 2021). The appeal of smartphones largely stems from their ability to foster a sense of connection, enabling the formation of online relationships that many young transition into offline interactions (Harkin et al., 2021; Khan et al., 2024). The excessive smartphone use has been linked to anxiety concerning social connectivity. A study involving 115 Canadian teenagers indicated that they recognized their usage as addictive and often felt a lack of control, with peer influence playing vital role in their behaviors (Adorjan & Ricciardelli, 2021). The research conducted on Hong Kong University students found a correlation between problematic smartphone use and psychological distress, suggesting that early exposure to such use may exacerbate mental health issues (Chen, Pakpour, Leung, Potenza, Su, Lin & Griffiths, 2020).

Further studies have established that both internet gaming and social media use can result in adverse health effects, including psychological distress and diminished sleep quality among adults (Wong, Mo, Potenza, Chan, Lau, Chui, & Lin, 2020). A systematic review emphasized the negative effects of social media on mental health, revealing connections between the time spent on platforms, particular activities, and elevated levels of depression and anxiety (Kales et al., 2020). Moreover, effects of social technology on mental health are multifaceted. While social media can enhance emotional well-being by promoting connections, it may also induce stress through the social comparison and feelings of the rejection, thereby contributing to anxiety and depression (Valkenburg et al., 2022; Hartanto et al., 2021). The association between smartphone use and mental health has recently garnered the significant attention, particularly regarding its impact upon individuals with depression. A study by Korkmazer et al. (2022) at the University Malaya Medical Centre offers important insights into this topic, exploring the prevalence of the smartphone addiction among patients with depression and its correlation with severity of their condition.

In their research involving 140 patients diagnosed with major depressive disorder, Korkmazer et al. utilized the Smartphone Addiction Scale (SAS) to evaluate levels of smartphone addiction and Montgomery-Asberg Depression Rating Scale (MADRS) to assess severity of depression. The results showed significant prevalence of smartphone addiction, with 58.6% of participants (n = 82) identified as exhibiting addictive behaviors related to smartphone use. Thus, this high prevalence aligns with previous studies that highlight growing trend of smartphone addiction, especially among individuals facing psychological distress (Hale & Guan, 2015; Elhai, Yang, McKay & Asmundson, 2020). One more study suggests that excessive smartphone use can exacerbate psychological issues, potentially leading to a cycle of the increased dependency and deteriorating mental health (Kuss & Griffiths, 2017). In this regard, recent studies have shown that problematic social media use and smartphone addiction are linked to mental health issues, such as depression, particularly among the young adults (Shahid et al., 2024; Kausar, Rana, Nouman & Faisal, 2024; Fareed, Jabeen, Aurangzeb & Aslam, 2024; Bashir, Shahid & Salman, 2024).

A study with 259 participants revealed that 25.9% were addicted to smartphones, with positive correlation between smartphone use and addiction scores. The social media users also reported higher levels of the social appearance anxiety compared to non-users (Korkmazer et al., 2022). Moreover, reducing smartphone use and improving sleep quality have been shown to reduce depression symptoms (Gao et al., 2023). Excessive smartphone use, particularly among medical students, is strongly linked to higher levels of depression (Nikolic et al., 2023). These findings highlight significant impact of smartphone addiction and social media on mental health. While there is extensive literature on association between smartphones and mental health issues, and problematic social media use, gap still exists regarding the mediating role of problematic social media use between smartphone addiction and mental health problems among young adults in Pakistan. Thus, the objective of this study is to address this gap. In this research, mental health problems are operationalized as depression in this study. The findings of study will be vital for societal welfare, as they will provide insights for potential implications and interventions if needed.

**Hypotheses of Study**

H1: Significant positive relationship is expected between smartphone addiction, social media addiction, and depression in young adults.

H2: Problematic social media use is likely to mediate amid independent variable, smartphone addiction, and dependent variable, depression, in young adults.

H3: Gender difference is likely to exist in study variables, smartphone addiction, problematic social media use, and depression—in young adults.

**RESEARCH METHODOLOGY**

This study adopts a quantitative correlational research design, utilizing cross-sectional survey approach and purposive sampling to explore the relationship between smartphone addiction, problematic social media use, and depression amid young adults. The sample consisted of 106 participants, aged 18 to 25, selected from various institutions. Of these, 59 were men (56%) and 47 were women (44%), with a mean age of 21.53 years (SD = 3.56). Participants were required to own a smartphone and have used it for at least past year. Data analysis, including correlation, mean differences, and mediation analysis via Hayes Process 4.1, was conducted using SPSS version-22.

**Measures of Study**

The Smartphone Addiction Scale-Short Version (SAS-SV), as developed by Kwon et al. (2013), comprises 10 items rated on the 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The SAS-SV has the reliability coefficient of 0.96. The Bergen Social Media Addiction Scale (BSMAS), created by Andreassen et al. (2012), consists of six items rated on a scale from 1 (very rarely) to 5 (very often). Thus, the scale has a reliability coefficient of 0.88. Abbreviated Profile of Mood State (Revised version) is a 40-item questionnaire was developed by Robert Grove and Harry Prapavessis, assesses various emotional states, including fatigue, anger, vigor, tension, esteem, confusion, and depression. It features four Likert items ranging from "not at all" (1) to "extremely" (4). In this study, a 7-item subscale focusing on depression will measure depressive symptoms in young adults. Cronbach alpha reliability for this scale is 0.80.

**Ethical Consideration**

All ethical considerations were strictly followed during the research process. Permissions for scale use were obtained from the original authors, and necessary approvals for data collection were secured. Informed consent was collected from all participants, who were debriefed on the study's objectives to minimize the biases. The confidentiality and anonymity were assured, and participants had the right to withdraw at any time without repercussions. No psychological or the physical harm was inflicted on any participant, and all reported data were accurate and properly cited. The ethical approval was granted by the research ethics committee before the publication. The ethical considerations are vital to ensure the accuracy in results and authentic outcomes.

**RESULT OF STUDY**

**Table 1**

*Relationships Among Study Variables in 106 Participants.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables | 1 | 2 | 3 | Mean | SD |
| 1. Smartphone Addiction | - | .26\*\* | .69\*\* | 35.45 | 8.89 |
| 2. Problematic Social Media Use |  | - | .14 | 14.39 | 6 |
| 3. Depression |  |  | - | 18.27 | 3.42 |

 Note. \*p<.05. \*\*p<.01

The table depicts that there is positive and significant relationship amid smartphone addiction and problematic social media use. Moreover, smartphone addiction is significantly related to depression. Still, association of depression and problematic social media use is positive but not significant.

**Table 2**

*Regression Coefficients Among Study Variables (Hayes Process)*

|  |  |
| --- | --- |
| Antecedent | Consequent |
|  | PSMU (M) | Depression(Y) |
|  | β | SE | P |  | β | SE | P |
| Smartphone Addiction (X) | a | .18 | .06 | <.01 | c’ | .26 | .02 | <.001 |
| PSMU(M) |  | - | - | - | b | -.02 | -.06 | .57 |
| Constant | I | 8 | 2.33 | <.001 | I | 9.04 | 1 | <.001 |
|  | R2 =.07 | R2 =.47 |
|  | F = 8.1, p<.01 | F = 42.21, p < .001 |

Note. PSMU= Problematic Social Media Use, \*p<.05 \*\*p<.01, \*\*\*p<.001.

Direct effect of smartphone addiction on problematic social media use is statistically significant (β = .18\*\*, p<.01). Similarly, direct effect of smartphone addiction on depression is significant (β = .26\*\*\*, p<.001). Direct effect of problematic social media use statistically insignificant (β = -.02, p >.05). these results provides the clues towards the indirect effect to reach the desired leading conclusion.

**Table 3**

*Indirect Effect (N=250)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indirect Path | Effect | Standardized Estimate | Lower Level | Upper Level |
| PSMU | -.004 | -.001 | -.04 | .02 |

 Note. PSMU= Problematic Social Media Use

The indirect effects show problematic social media use is insignificant in smartphone addiction & depression.

**Table 4**

*Mean Differences in Gender Among the Study Variables (N=106)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Men (n=59) | Women (47) |  |  |  |
| Variables | Mean | SD | Mean | SD | t (104) | P | Cohen’s d |
| SPA | 35.93 | 8.8 | 34.85 | 9.07 | .62 | .53 | 0.12 |
| PSMU | 15.1 | 6.01 | 13.55 | 5.95 | 1.29 | .2 | 0.25 |
| Depression | 18.64 | 3.31 | 17.81 | 3.54 | 1.25 | .21 | 0.24 |

Note. SD= Standard Deviation, SPA= SA, PSMU= Problematic SM Use, \*p<.05. \*\*p<.01, \*\*\*p<.001

Above table indicates no significant differences however, men score more on all three variables i.e., smartphone addiction, problematic social media use and depression than their counterpart women.

**DISCUSSION**

In quantitative analysis of study, first proposition was strongly supported, with correlational analysis demonstrating significant positive link amid smartphone addiction and problematic social media use. Also, positive and significant association was identified between smartphone addiction and depression; however, the connection between problematic social media use and depression was positive but not statistically significant among young adults. These findings are consistent with prior research that advises smartphone addiction boosts online interactions, particularly through excessive engagement with games like PUBG and social media (Khan et al., 2024; Kausar et al., 2024; Shahid et al., 2024). Furthermore, studies indicate that addiction to games such as Ludo star game can lead to increased online connectedness, which may result in aggression (Bashir et al., 2024; Fareed et al., 2024), and the depression has been significantly associated with the mental health issues, including depression, in young adults (Shahid et al., 2024).

The second proposition also received considerable support, as mediation analysis revealed that social media problematic use partially mediates the association between smartphone addiction (the independent variable) and depression (the dependent variable). Both the direct and total effects were found to be statistically significant, while indirect effect did not reach significance. This aligns with earlier studies that emphasize a positive association between the smartphone addiction and mental health issues, such as anxiety and depression, particularly among college students (Korkmazer et al., 2022; Ge et al., 2024). Smartphones serve to enhance online social connectedness (Khan et al., 2024), and these platforms and online social networking have been linked to many mental health problems, including depression and aggression in young adults (Fareed et al., 2024; Shahid et al., 2024; Kausar et al., 2024). The partial mediation of the social media difficult use might be explained by participants engaging less with the content depicting depressive themes or utilizing the defense mechanisms, such as reaction formation, during the questionnaire.

Independent samples t-tests conducted to assess gender differences in study variables revealed no significant discrepancies. Nevertheless, men exhibited higher mean scores across all three variables, smartphone addiction, social media problematic use, and depression, compared to women. This opinion aligns with previous research indicating that men are more susceptible to smartphone and social media addiction than women (Shahid et al., 2024; Khan et al., 2024). Conversely, our findings contradict those of Shahid et al. (2024), which reported higher levels of depression among women. The trend of higher depression scores among men, despite not being statistically significant, may arise from their problematic engagement with social media and smartphones or could suggest that male sample is more prone to depressive symptoms. Additionally, context of this study within Pakistan, a male-dominated society, may influence technology use; men might experience less scrutiny regarding their technology use, while the women’s engagement may be subjected to greater judgment, potentially restricting their online activities.

**CONCLUSION**

This study explored the relationship between smartphone addiction and depression among young adults in Pakistan, with problematic social media use as mediator. Findings revealed a positive and significant relationship amid smartphone addiction and problematic social media use and significant association between smartphone addiction and depression. However, while depression and problematic social media use were positively correlated, the relationship was not statistically significant. Despite these findings, the mediating role of social media use was partial, with the indirect effect insignificant, although direct and total effects were significant according to Hayes Process 4.1. Although gender differences were not significant, men scored slightly higher across all variables. These results highlight smartphones’ dual nature, fostering connectivity but negatively impacting the mental health when overused, contributing towards depression. Study emphasizes the need for balanced smartphone use to prevent problematic social media use, which worsens depression amid young adults. Overall, the study’s objectives were confirmed, underscoring important societal implications for addressing mental health issues.

**Implications**

The findings of this study underscore the imperative to address smartphone addiction through proactive strategies, such as digital literacy programs, mental health awareness campaigns, and policy interventions within workplaces and educational institutions. These initiatives can promote responsible smartphone usage and enhance awareness of adverse effects associated with problematic social media use. By applying such measures, individuals may be fortified to develop healthy smartphone habits while fostering meaningful & balanced social interactions in virtual and real-world environments, ultimately contributing to prevention of mental health issues.

**Limitations & Recommendations**

One notable limitation of study is its exclusive focus on young adults, which may constrain the generalizability of findings. Future research should encompass a broader range of age groups to provide a nuanced perspective. The relatively small sample size of 106 participants further limits the generalizability of results; thus, future studies should strive for a larger participant pool. The utilization of a purposive sampling strategy also poses a limitation, suggesting that the future research would benefit from employing a stratified sampling approach to enhance representativeness.

**REFERENCES**

Abuhamdah, S. M., & Naser, A. Y. (2023). Smart phone addiction and its mental health risks among university students in Jordan: a cross-sectional study. *BMC psychiatry*, *23*(1), 812.Handa, M., & Ahuja, P. (2020). Disconnect to detox: a study of smartphone addiction among young adults in India. *Young Consumers*, *21*(3), 273-287.

Adorjan, M., & Ricciardelli, R. (2021). Smartphone and social media addiction: Exploring the perceptions and experiences of Canadian teenagers. *Canadian Review of Sociology/Revue canadienne de sociologie*, *58*(1), 45-64.

Aichner, T., Grünfelder, M., Maurer, O., & Jegeni, D. (2021). Twenty-five years of social media: a review of social media applications and definitions from 1994 to 2019. *Cyberpsychology, behavior, and social networking*, *24*(4), 215-222.

Andreassen, S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports*, *2*(2), 175-184.

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. Bergen Social Media Addiction Scale. *Psychology of Addictive Behaviors*.

Bashir, S., Shahid, M. S., & Salman, F. (2024). The Mediating Role Of Social Connectedness In Linking Ludo Star Game Addiction & Mental Health Problems In Young Adults. *Gomal University Journal of Research*, *40*(3), 359-369.

Brailovskaia, J., Schillack, H., & Margraf, J. (2020). Tell me why are you using social media (SM)! Relationship between reasons for use of SM, SM flow, daily stress, depression, anxiety and addictive SM use–An exploratory investigation of the young adults in Germany. *Computers in human behavior*, *113*, 106511.

Carpenter, J. P., & Harvey, S. (2020). Perceived benefits and challenges of physical educators’ use of social media for professional development and learning. *Journal of Teaching in Physical Education*, *39*(4), 434-444.

Chen, I. H., Pakpour, A. H., Leung, H., Potenza, N., Su, J. A., Lin, Y., & Griffiths, M. D. (2020). Comparing generalized & specific problematic smartphone/internet use: Longitudinal relationships between smartphone application-based addiction & social media addiction and psychological distress. *Journal of behavioral addictions*, *9*(2), 410-419.

Cho, Y. G. (2020). Excessive and problematic smartphone use and poor mental health in adolescents. *Korean journal of family medicine*, *41*(2), 73.

Elhai, J. D., Yang, H., McKay, D., &Asmundson, G. J. (2020). COVID-19 anxiety symptoms associated with problematic smartphone use severity in Chinese adults. Journal of Affective Disorders, 274, 576-582.

Fareed, S., Jabeen, S., Aurangzeb, S., & Aslam, R. (2024). Social Media Addiction, Social Media Use and Aggression in Young Adults. *Pakistan Journal of Humanities and Social Sciences*, *12*(3), 2411-2416.

Gao, W. J., Hu, Y., Ji, J. L., & Liu, X. Q. (2023). Relationship between depression, smartphone addiction, and sleep among Chinese engineering students during the COVID-19 pandemic. *World Journal of Psychiatry*, *13*(6), 361.

Ge, J., Liu, Y., Cao, W., & Zhou, S. (2023). The relationship between anxiety and depression with smartphone addiction among college students: the mediating effect of executive dysfunction. *Frontiers in Psychology*, *13*, 1033304.

Gillespie, K., Hendry, G., Anduuru, N., Laird, T., & Ballantyne, C. (2021). Using social media to be ‘social’: Perceptions of social media benefits and risk by autistic young people, and parents. *Research in developmental disabilities*, *118*, 104081.

Grove, J. R., & Prapavessis, H. (1992). Preliminary evidence for the reliability and validity of an abbreviated profile of mood states. *International Journal of Sport Psychology*.

Guillaume, D., Troncoso, E., Duroseau, B., Bluestone, J., & Fullerton, J. (2022). Mobile-social learning for continuing professional development in low-and middle-income countries: integrative review. *JMIR medical education*, *8*(2), e32614.

Guo, N., Luk, T. T., Ho, S. Y., Lee, J. J., Shen, C., Oliffe, J., & Wang, M. P. (2020). Problematic smartphone use and mental health in the Chinese adults: a population-based study. *International journal of environmental research and public health*, *17*(3), 844.

Harkin, L. J., & Kuss, D. (2021). “My smartphone is an extension of myself”: A holistic qualitative exploration of the impact of using a smartphone. *Psychology of Popular Media*, *10*(1), 28.

Hayes, A. F., & Preacher, K. J. (2013). Conditional process modeling: Using structural equation modeling to examine contingent causal processes.

Hidayat-Ur-Rehman, I. (2024). Digital competence & students’ engagement: a comprehensive analysis of smartphone utilization, perceived autonomy and formal digital learning as mediators. *Interactive Technology and Smart Education*.

Jamil, S. (2021). From digital divide to digital inclusion: Challenges for wide-ranging digitalization in Pakistan. *Telecommunications Policy*, *45*(8), 102206.

Karaoglan, G., Avci, U., & Yilmaz, R. (2023). Role of loneliness and aggression on smartphone addiction among university students. *Current psychology*, *42*(21), 17909-17917.

Kausar, R., Rana, H., Nouman, S., & Faisal, A. (2024). PUBG Game Addiction, Social Connectedness and Aggression in Young Adults. *Pakistan Journal of Humanities and Social Sciences*, *12*(3), 2439-2446.

Khan, P., Shahid, M. S., & Majid, H. A. (2024). Mediating Role Of Online Social Connectedness In Smartphone Addiction And Online Relationship Among Young Adults. *Gomal University Journal of Research*, *40*(3), 327-336.

Kircaburun, K., Alhabash, S., Tosuntaş, Ş. B., & Griffiths, M. D. (2020). Uses and gratifications of problematic social media use among university students: Simultaneous examination of the Big Five of personality traits, social media platforms, and social media use motives. *International journal of mental health and addiction*, *18*, 525-547.

Kögler, M., Paulick, K., Scheffran, J., & Birkholz, M. (2024). Sustainable use of a smartphone and regulatory needs. *Sustainable Development*.

Korkmazer, B., Yurdakul, F., Özer, Ş., Yeşil, Ö., Coşkuntuncel, C., Sualp, B., & Şahin, E. M. (2022). A cross-sectional study on the relationship between smartphone addiction and depression, anxiety and social appearance anxiety in young adults. *Journal of Istanbul Faculty of Medicine*, *85*(1), 91-97.

Kumar Singh, D. S., Singh, D. N., & Kumari, D. S. (2024). Technology and its Effect on Social Interactions. *Available at SSRN 4894688*.

Kwon, M., Kim, D. J., Cho, H., & Yang, S. (2013). The smartphone addiction scale: development and validation of a short version for adolescents. *PloS one*, *8*(12), e83558.

Lin, S., Longobardi, C., Gastaldi, F. G. M., & Fabris, M. A. (2024). Social media addiction and aggressive behaviors in early adolescents: the mediating role of nighttime social media use and sleep quality. *The Journal of Early Adolescence*, *44*(1), 41-58.

Miller, D., Abed Rabho, L., Awondo, P., de Vries, M., Duque, M., Garvey, P., & Wang, X. (2021). *The global smartphone: Beyond a youth technology*. UCL Press.

Nawaz, S. (2024). Distinguishing between effectual, ineffectual, and problematic smartphone use: a comprehensive review and conceptual pathways model for future research. *Computers in Human Behavior Reports*, 100424.

Nikolic, A., Bukurov, B., Kocic, I., Vukovic, M., Ladjevic, N., Vrhovac, M., & Sipetic, S. (2023). Smartphone addiction, sleep quality, depression, anxiety, and stress among medical students. *Frontiers in Public Health*, *11*, 1252371.

Nili, Y., & Shaner, M. W. (2022). Virtual annual meetings: A path toward shareholder democracy and stakeholder engagement. *BCL Rev.*, *63*, 123.

Olson, J. A., Sandra, D. A., Colucci, É. S., Al Bikaii, A., Chmoulevitch, D., Nahas, J., ... & Veissière, S. P. (2022). Smartphone addiction is increasing across the world: A meta-analysis of 24 countries. *Computers in Human Behavior*, *129*, 107138.

Patel, M. P. (2024). The Impact of Social Media Use on Mental Health of the Adult Population: A Systematic Literature Review.

Pellegrino, A., Stasi, A., & Bhatiasevi, V. (2022). Research trends in social media addiction and problematic social media use: A bibliometric analysis. *Frontiers in psychiatry*, *13*, 1017506.

Pera, A. (2020). The psychology of addictive smartphone behavior in young adults: Problematic use, social anxiety, and depressive stress. *Frontiers in psychiatry*, *11*, 573473.

Ratan, Z. A., Parrish, A. M., Zaman, S. B., Alotaibi, M. S., & Hosseinzadeh, H. (2021). Smartphone addiction & associated health outcomes in adult populations: a systematic review. *International journal of environmental research and public health*, *18*(22), 12257.

Raza, S. A., Qazi, W., Umer, B., & Khan, K. A. (2020). Influence of social networking sites on life satisfaction among university students: a mediating role of social benefit and social overload. *Health Education*, *120*(2), 141-164.

Shahid, M. S., Yousaf, R., & Munir, H. (2024). Social media addiction, depression and aggression in young adults. *Journal of Professional & Applied Psychology*, *5*(2), 276-285.

Rosenthal, S. R., Zhou, J., & Booth, S. T. (2021). Association between mobile phone screen time and depressive symptoms among college students: A threshold effect. *Human behavior and emerging technologies*, *3*(3), 432-440.

Servidio, R., Koronczai, B., Griffiths, M. D., & Demetrovics, Z. (2022). Problematic smartphone use and problematic social media use: The predictive role of self-construal and the mediating effect of fear missing out. *Frontiers in Public Health*, *10*, 814468.

Shahid, M. S., Bashir, S., & Fatima, S. (2024). Social Media Addiction and Aggression in Pakistani Young Adults: Social Connectedness as a Moderator. *Journal of Professional & Applied Psychology*, *5*(3), 424-433.

Sohn, S. Y., Krasnoff, L., Rees, P., Kalk, N. J., & Carter, B. (2021). The association between smartphone addiction and sleep: a UK cross-sectional study of young adults. *Frontiers in psychiatry*, *12*, 629407.

Sun, Y., & Zhang, Y. (2021). A review of theories and models applied in studies of social media addiction and implications for future research. *Addictive behaviors*, *114*, 106699. Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. *International journal of adolescence and youth*, *25*(1), 79-93.

Valkenburg PM, Meier A, Beyens I. Social media use and its impact on adolescent mental health: an umbrella review of the evidence. Current Opinion in Psychology. 2022;44:58–68. doi: 10.1016/j.copsyc.2021.08.017

Vukušić, T., Viskić, J., Poplašen, L., Relić, D., Marelić, M., Jokic, D., & Sedak, K. (2021). Dangers and benefits of social media on e-professionalism of health care professionals: scoping review. *Journal of medical Internet research*, *23*(11), e25770.

Wacks, Y., & Weinstein, A. M. (2021). Excessive smartphone use is associated with health problems in adolescents and young adults. *Frontiers in psychiatry*, *12*, 669042.

Williams, R. (2020). An exploration into the pedagogical benefits of using social media: Can educators incorporate social media into pedagogy successfully?: A work in progress. *ABC Journal of Advanced Research*, *9*(2), 69-78.

Williamson, S. (2023). *A Predictive Study of Excessive Smartphone Use and Aggression in Adults* (Doctoral dissertation, Capella University).

Wong, H. Y., Mo, H. Y., Potenza, M. N., Chan, N. M., Lau, M., Chui, T. K., & Lin, C. Y. (2020). Relationships between severity of internet gaming disorder, severity of problematic social media use, the sleep quality and psychological distress. *International journal of environmental research and public health*, *17*(6), 1879.

Zink, J., Belcher, B. R., Imm, K., & Leventhal, M. (2020). The relationship between screen-based sedentary behaviors and symptoms of depression and anxiety in youth: a systematic review of moderating variables. *BMC public health*, *20*, 1-37.

Zulfiqar, S., Khan, J., Bibi, A., Ali, M., Samuel, S., Habib, S., ... & Yousufzai, A. U. R. (2024). The Relationship between Social Media Addiction and Depression in Students of a Private College in Karachi: Relationship Between Social Media Addiction & Depression. *Pakistan Journal of Health Sciences*, 02-06.