

Original Article

Impacts of digital social media detox for mental health: A systematic review and meta-analysis

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Abstract

The impact of social media has been significant on various aspects of life, particularly mental health. Growing concerns about the adverse effects of social media use have prompted the exploration of experimental interventions, defined as digital detox interventions. However, it remains unclear whether digital detox interventions are effective for mental health outcomes. The aim of this study was to provide comprehensive insights into the effects of digital detox interventions on various mental health outcomes, including depression, life satisfaction, stress, and mental well-being. Following the PRISMA guidelines, systematic searches were carried out in online databases, including PubMed and ScienceDirect, within the publication range of 2013 and 2023. A total of 2578 titles and abstracts were screened, and 10 studies were included in the analysis. A risk of bias assessment was conducted using RoB 2.0 and the Newcastle-Ottawa scale, while statistical analysis was conducted using RevMan 5.4.1. Our data indicated a significant effect of digital detox in mitigating depression with the standardized mean difference (SMD: -0.29; 95%CI: -0.51, -0.07, $p=0.01$). No statistically significant effects were discerned in terms of life satisfaction (SMD: 0.20; 95%CI: -0.12, 0.52, $p=0.23$), stress (SMD: -0.31; 95%CI: -0.83, 0.21, $p=0.24$), and overall mental well-being (SMD: 0.04; 95%CI: -0.54, 0.62, $p=0.90$). These data underscore the nuanced and selective influence of digital detox on distinct facets of mental health. In conclusion, digital detox interventions significantly reduce depressive symptoms, suggesting that intentional reduction or cessation of digital engagement may help alleviate contributing factors. However, no statistically significant effects were observed in mental well-being, life satisfaction, and stress. This discrepancy may be due to the complex nature of these constructs, involving various factors beyond the scope of digital detox interventions.

Keywords: Digital detox, social media use, mental health, depression, effectiveness

Introduction

Digital technology has become an integral part of contemporary life, revolutionizing communication, work, and leisure. However, the pervasive use of digital devices has raised concerns about its potential impact on mental health [1]. Excessive digital or social media use has



been associated with several adverse effects on mental health, such as depression and anxiety [2,3]. Constant exposure to curated representations of others' lives on social platforms can contribute to feelings of inadequacy and social comparison. The incessant notifications, information overload, and the pressure to maintain a digital presence can lead to increased anxiety and a sense of being constantly "plugged in." Moreover, the addictiveness of digital devices and social media platforms can disrupt sleep patterns, affecting the quality and duration of rest. Sleep deprivation, in turn, has established links to various mental health issues, including depression and anxiety [4]. The continuous stimulation from screens may also contribute to difficulties in focusing, attention deficits, and a decline in overall cognitive well-being [5,6].

The World Health Organization (WHO) reports an annual increase of 13% in the incidence of mental health issues [7]. Anxiety and depression stand out as the prevalent concerns, impacting 264 million and 280 million individuals globally, respectively [8]. This upward trend is anticipated to persist, influenced by diverse factors. Notably, the utilization of technologies, particularly social media platforms like Facebook, Twitter, Instagram, and TikTok, has been identified as a contributing factor to the mounting challenges in mental health [2]. The statistics reveal that Indonesia had 213 million active social media users in January 2023, showing a 5.44% increase from 2022, which was 202 million users. This amount is equivalent to 77% of Indonesia's total population, which was 276.4 million people at the beginning of 2023. Additionally, Indonesia ranks among the top three countries with the highest number of users on popular social media platforms, including Facebook, Instagram, and TikTok [9]. As smartphones, social media platforms, and digital devices become integral components of daily existence, the need to comprehend the efficacy of interventions designed to counteract the potential negative effects of excessive digital exposure becomes increasingly imperative. In response, the concept of "digital detox" has emerged, encompassing various strategies aimed at reducing or eliminating digital engagement to alleviate the potential negative effects on mental well-being [10].

The concept of digital detox arises from the recognition that these negative impacts on mental health necessitate intentional breaks from digital engagement. Digital detox involves strategies such as setting designated periods without screen use, limiting social media consumption, and practicing mindful technology use [11]. By implementing these detox methods, individuals aim to regain control over their digital habits, alleviate the mental strain associated with constant connectivity, and foster a healthier relationship with technology [12]. There is an assumption that digital detox or social media detox interventions could reduce the negative impacts of smartphone use, such as anxiety, depression, stress, overall well-being, and other relevant psychological indicators. However, until now, it remains unclear whether digital detox or social media detox interventions (gradual reduction in the usage of social media) are effective in mental health outcomes encompassing measures like anxiety, depression, stress, overall well-being, and other relevant psychological indicators. In other words, while the concept of digital detox has gained attention, there is limited empirical evidence or conclusive findings about whether it is effective and positively impacting mental health outcomes. Therefore, this systematic review and meta-analysis embark on a comprehensive exploration of digital detox, aiming to investigate its effectiveness in promoting mental health outcomes. This systematic review and meta-analysis will provide evidence-based recommendations and guidelines that can guide individuals, healthcare professionals, and policymakers in adopting or promoting the most effective digital detox practices for mental health improvement. By elucidating the efficacy of digital detox, this study could contribute to the broader discourse on cultivating a healthy balance between technology and mental health in our increasingly digitalized world.

Methods

Study design and search strategy

This systematic review and meta-analysis were conducted based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guideline. Literature searches were performed across two databases (PubMed and ScienceDirect). The search focused on studies related to digital detox for social media, with data up to November 20, 2023. The keywords used

were “mental health” AND (“social media detox” OR “digital detox”) AND “methods” AND “effectiveness.” Suitable advanced search techniques were applied whenever appropriate.

Study eligibility criteria

To select the available studies, the specific inclusion criteria were determined based on the population, intervention, comparison, and outcome (PICO) framework. The study population comprised adults aged 18 years or older who actively engaged with social media platforms like Instagram, Facebook, and others on a daily basis and expressed a willingness to participate in the research. Various methods of social media detox were considered, such as complete cessation, time-limited detox periods, selective content filtering, and gradual reduction in usage. The comparison included different methods of social media detox, including head-to-head comparisons or comparisons with a control group that maintained regular social media use. The outcome was mental health conditions encompassing measures like anxiety, depression, stress, overall well-being, and other relevant psychological indicators. All studies lacking a control group, not reporting outcomes related to detox, mentioning outcomes without providing estimates, having unavailable full-text, and published more than 10 years ago were excluded. While the preference was given to articles with a randomized controlled trial (RCT), experimental studies were still considered if they fell within the scope of our research.

Data extraction

In conducting this systematic review and meta-analysis, we employed a structured data extraction approach. Four authors initially screened studies based on title and abstract. Subsequently, full-text articles underwent a detailed review in accordance with the inclusion and exclusion criteria to identify relevant content. To eliminate duplicate studies, Mendeley reference manager was employed.

A predefined tabular data extraction sheet was utilized to systematically capture all pertinent details from the selected studies. The sheet encompassed the following information: (1) author and year of publication; (2) study characteristics, including location, duration, and design; (3) population demographics, featuring total sample size and mean age with standard deviation (SD); (4) detailed descriptions of the intervention and control groups, outlining the nature and duration of the digital detox intervention, as well as any notable findings or adverse events; and (5) outcome measures, with a specific emphasis on mental well-being, depression, life satisfaction, and stress levels, including baseline and post-treatment scores where available. The evaluation process involved qualitative assessments by two authors (RNR and DAY), and another author (DDR) cross-verified the retrieved data during the statistical analysis phase.

Outcome

The outcome measures in the meta-analysis were varied, reflecting the multifactor impact of digital detox interventions on psychological and behavioral health. These measures included the use of standardized scales and self-reported questionnaires to assess changes in mental well-being, life satisfaction, depressive symptoms, anxiety levels, and psychological stress following the intervention period. Specific scales used were not detailed in the studies. Additionally, daily hours spent on social media platforms were quantitatively measured to provide an objective metric of social media consumption. These varied outcome measures aimed to capture both the subjective psychological experiences of individuals as well as objective usage behaviors associated with a digital detox.

Quality assessment

The assessment of the risk of bias was conducted using the revised Cochrane collaboration tool for risk of bias (RoB 2.0) for RCT studies and the Newcastle-Ottawa scale for experimental studies. RoB assesses seven domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other biases. Newcastle-Ottawa scale measures the quality of non-randomized studies based on three criteria: the selection of the study groups, the comparability of the groups, and the ascertainment of the outcome of interest. The results of these assessments were recorded in the domain file "bias (.xlsx)" and subsequently uploaded to the ROBVIS website

for risk of bias visualization. The quality assessment process engaged four independent authors, and any discrepancies that arose were resolved through consensus discussions among the authors.

Statistical analysis

Statistical analyses were conducted using Review Manager (RevMan) 5.4.1. The primary measure of effect was the standardized mean difference (SMD), which accounts for differences in scale between studies. SMD, standard deviations (SD), and 95% confidence interval (CI) were extracted from each study for both the intervention and control groups' pre- and post-treatment scores. A random-effects model was employed to account for potential heterogeneity among studies, using the Der Simonian-Laird method as proposed previously [13]. Heterogeneity was quantified using the I^2 statistic, with I^2 values of 0%, 25%, 50%, and 75% representing no, low, moderate, and high heterogeneity, respectively.

Results

Study selection

A total of 2,578 studies (102 from PubMed and 2,476 from ScienceDirect) were identified based on the listed keywords. After removing five duplicate studies, two studies exceeding the 10-year publication limit, and 585 studies lacking free full-text access, the screening process excluded 1,986 studies with titles and abstracts not aligning with the discussion scope or not qualifying as research articles (Figure 1). Out of the 80 studies considered for retrieval, 62 were excluded based on article type. Out of the 18 studies that passed the eligibility test, eight studies were excluded: two studies lacked a control group, three studies did not report outcomes related to the detox, and three studies, while mentioning outcomes, did not present estimations. As a result, 10 studies were included in the meta-analysis (Figure 1), comprising seven RCTs [12,14-19] and three non-RCT studies [20-22].

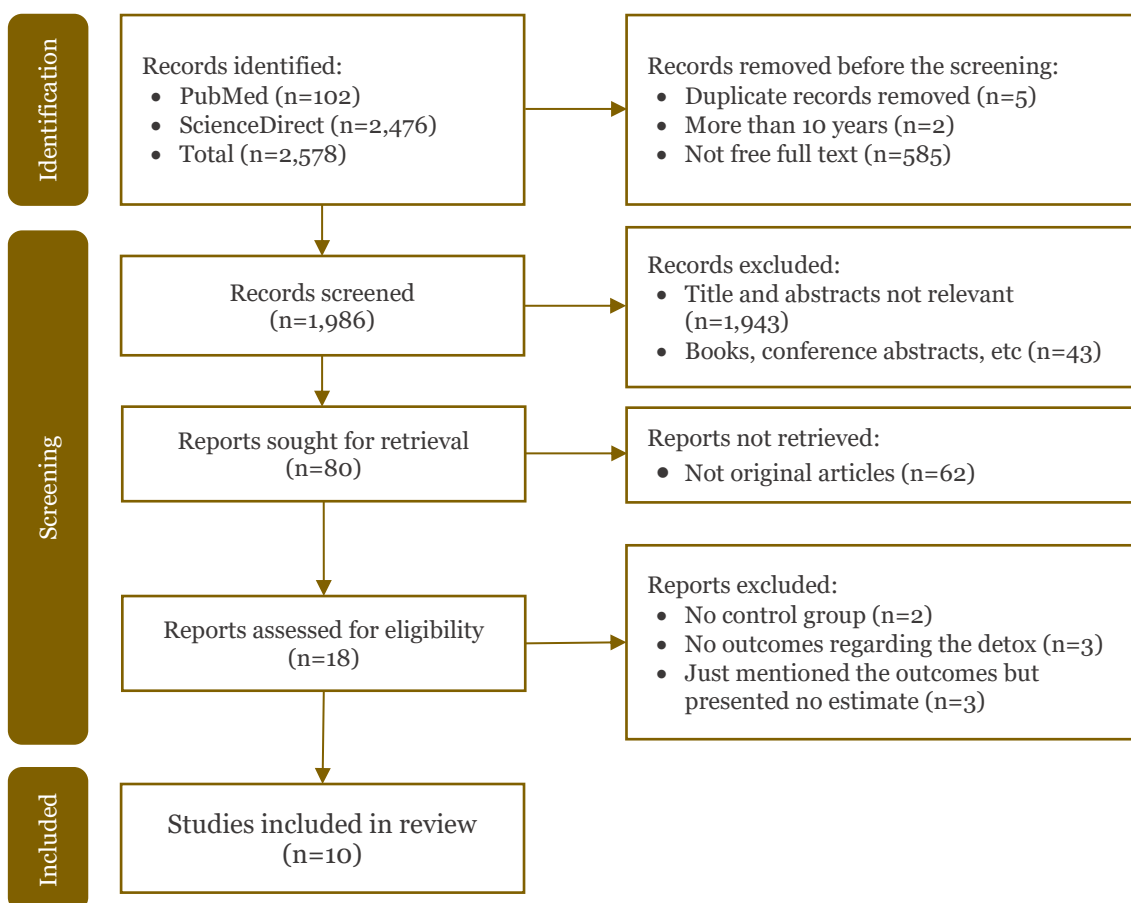


Figure 1. Diagram flow of literature search strategy.

Quality assessment

Among the RCTs, the majority of the studies indicated a low risk across most domains. However, two of them had a high risk for overall results, and one of them had 'some concerns' for overall results. The risk of bias assessment for randomized studies is depicted in **Figure 2**.



Figure 2. Risk of bias assessment of the included randomized controlled studies.

The non-randomized experimental studies included in the meta-analysis were evaluated using NOS for quality assessment. The studies assessed demonstrated a moderate to high quality overall, with most studies achieving scores of 6 or 7 out of a maximum of 9 stars. The areas where the studies consistently performed well included the representativeness of their cohorts, the selection of non-exposed cohorts, and the ascertainment of exposure, suggesting that the study populations and outcomes were defined and measured appropriately. The results of the bias assessment for non-randomized studies are provided in **Table 1**.

Demography and clinical characteristics of the included studies

The meta-analysis encompasses 10 studies, each exhibiting diverse designs, including randomized controlled trials (RCTs) and experimental design. These studies delve into the impact of digital detox on various outcomes such as mental well-being, life satisfaction, depression, and stress. Overall study characteristics, including participants and outcomes of each study, are provided in **Table 2**. The participant pool encompasses a range of demographics, spanning German Facebook users, a mixed-gender group from the USA, and international university students. Sample sizes varied from 61 to 555 individuals.

Table 1. Risk of bias assessment of the included non-randomized experimental studies using the Newcastle-Ottawa scales

Authors	Selection				Comparability Confounding controlled	Outcome Outcome assessment	Adequate follow-up	Score Total
	Representativeness of the exposed cohort	Selection of non-exposed cohort	Ascertainment of exposure	Precision of exposure				
Brown <i>et al.</i> , 2020 [21]	☆	☆	-	☆	☆	☆	☆	6
Tromholt, 2016 [20]	☆	☆	☆	☆	☆	-	☆	6
Hanley, 2019 [22]	☆	☆	☆	☆	☆	☆	-	6

Table 2. Characteristics of studies included

Authors	Participants	Intervention	Control	Social media	Outcome	Follow-up period
Brailovskaia <i>et al.</i> , 2020 [15]	286 participants. Mean age: intervention group 24.15±5.06 years; control group 25.39 years	Reduction of social media use by 20 minutes every day	Usual social media activity	Facebook	Facebook use, life satisfaction, depressive symptoms, physical activity, and smoking behavior	0, 7, and 15 days; 1 and 3 months
Brown <i>et al.</i> , 2020 [21]	61 participants (67.21% women). Mean age 24.4 years	Pre-abstinence of social media	Post-abstinence from social media	Facebook, YouTube, Instagram, Snapchat, Twitter, Reddit, Pinterest, Tumblr Instagram	Average number of daily hours, mental wellbeing, social connectedness, fear of missing out	One week
Fioravanti <i>et al.</i> , 2019 [16]	80 participants (50% women)	A week-long break from social media	Usual social media activity	Instagram	Life satisfaction, positive and negative affect	One week
Turel, 2018 [12]	555 participants (42.8% women). Mean age 24.01 years	Social media abstinence	Usual social media activity	Facebook	Subjective well-being, perceived stress	Two weeks
Lambert <i>et al.</i> , 2022 [14]	154 participants. Mean age 29.6 years	A week-long break from social media	Usual social media activity	Facebook, Twitter, TikTok	Depression, anxiety, well being	One week
Vally <i>et al.</i> , 2019 [18]	68 participants (52.6% women). Median age 22.13 years	Abstained from social media	Usual social media activity	Facebook	Subjective well-being, stress, loneliness	One week
Wezel <i>et al.</i> , 2021 [17]	76 participants	A week-long 50% reduction in social media usage	10% reduction in social media usage	Facebook, Instagram, Snapchat and YouTube	Wellbeing, fear of missing out, self-control	Not applicable
Reed <i>et al.</i> , 2023 [19]	50 participants (66% women). Mean age 23.48 years	Reducing social media usage by 15 min per day	Two groups: no change group and “Reduce + Activity” group	Snapchat, Instagram, Facebook, or Twitter	Anxiety, depression, physical, emotional	Four months
Tromholt, 2016 [20]	1,095 participants (86% women). Mean age 34±8.74 years	Abstained from using Facebook	Usual social media activity	Facebook	Well-being	One week
Hanley <i>et al.</i> , 2019 [22]	78 participants (55,1 % women). Mean age: men 29.49 years; women 31.95 years	Social networking sites (SNS) vacation: restricted access to Facebook and Instagram	Usual social media activity	Facebook and Instagram	Life satisfaction, positive and negative affect, passive and active usage scale	One week

Interventions across these studies involved specific strategies, such as reducing daily Facebook usage by 20 minutes, taking a week-long break from Instagram, and abstaining from multiple social media platforms. Follow-up periods for outcome assessment post-intervention extended from seven days to three months. The studies collectively evaluated different social media platforms, including Facebook, Instagram, Twitter, and TikTok, reflecting the diverse landscape of social media interactions. Diverse outcomes were measured, encompassing quantitative aspects like the number of hours spent on social media and qualitative outcomes such as depressive symptoms and psychological stress. The combined participant pool across these studies totaled 2,503, providing a comprehensive dataset for evaluating the effects of social media consumption on mental health and well-being.

Meta-analysis of digital detox efficacy for mental well-being

The impact of digital detox on the mental well-being of participants revealed a small and non-significant effect, as measured by the pooled standardized mean difference (SMD: 0.04; 95%CI: -0.54, 0.62, $p=0.90$). This result suggested that undergoing social media detox does not significantly influence the well-being of the participants. Notably, there is a moderately high and significant level of heterogeneity among the studies ($I^2=93%$, $p<0.00001$), indicating substantial variability in study results that cannot be solely attributed to chance, as illustrated in **Figure 3**. Subsequently, the evaluation of the funnel plot is presented in **Figure 4A**.

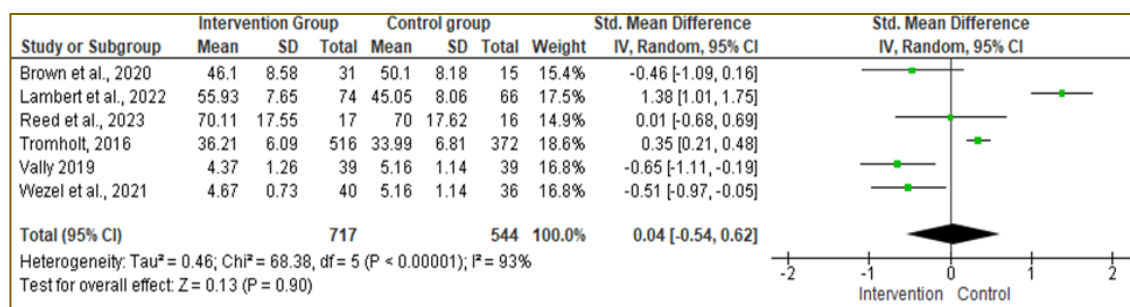


Figure 3. Forest plot of digital detox impact on mental well-being.

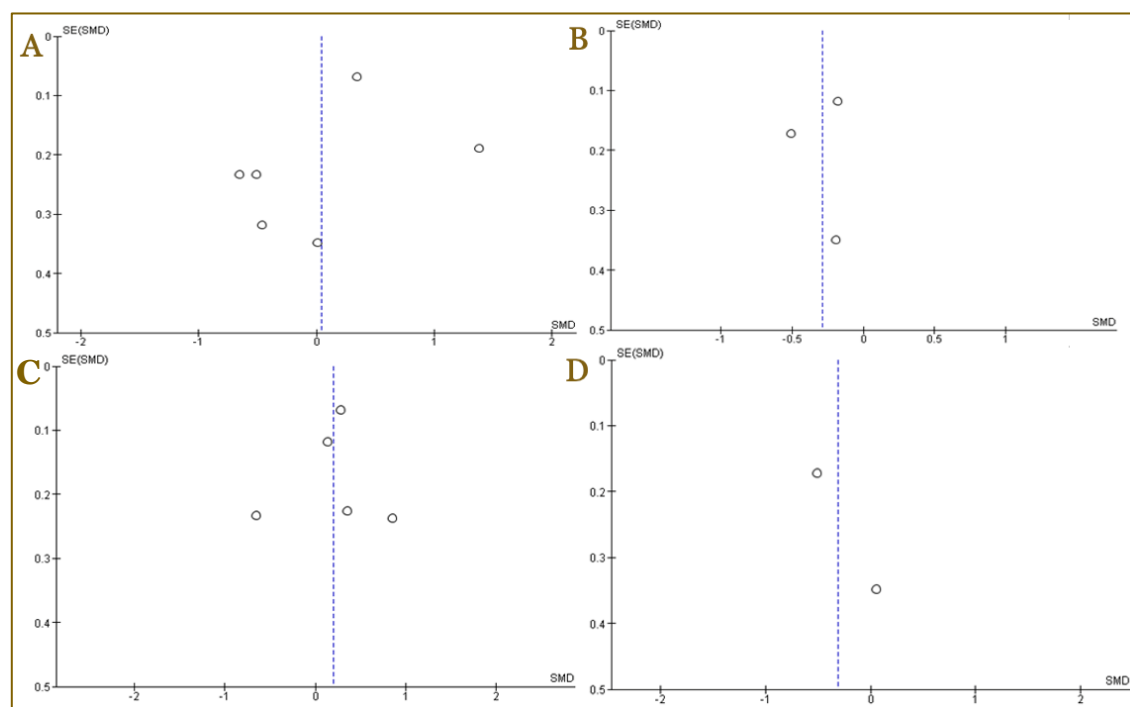


Figure 4. Funnel plot showing publication bias of all studies included in different outcomes: mental well-being (A), depression (B), life satisfaction (C), and stress (D).

Meta-analysis of digital detox efficacy for depression

The decrease in depressive symptoms among participants following a gradual reduction in social media usage is statistically significant (SMD: -0.29; 95%CI: -0.51, -0.07, $p=0.01$). This suggested that the implementation of social media detox led to a noteworthy reduction in depression after a decrease in the time spent on social media. The level of heterogeneity among the studies is moderately low ($I^2=20\%$), indicating a relatively consistent agreement in their findings, as depicted in **Figure 5**. No publication bias was found in the included studies, as measured by the funnel plot in **Figure 4B**.

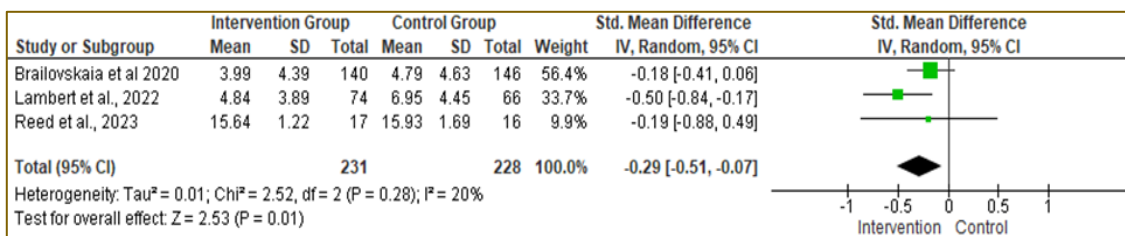


Figure 5. Forest plot of digital detox impact on depression.

Meta-analysis of digital detox efficacy for life satisfaction

Life satisfaction of the participants was measured following a gradual reduction in the usage of social media points and the result shows a minor non-significant improvement based on the overall effect size (SMD: 0.20; 95%CI: -0.12, 0.52, $p=0.23$). The heterogeneity among the studies is moderately high and significant ($I^2=83\%$, $p<0.0001$), indicating some degree of variation between the study results, as illustrated in **Figure 6**. There is no publication bias found in the included studies, as measured by the funnel plot in **Figure 4C**.

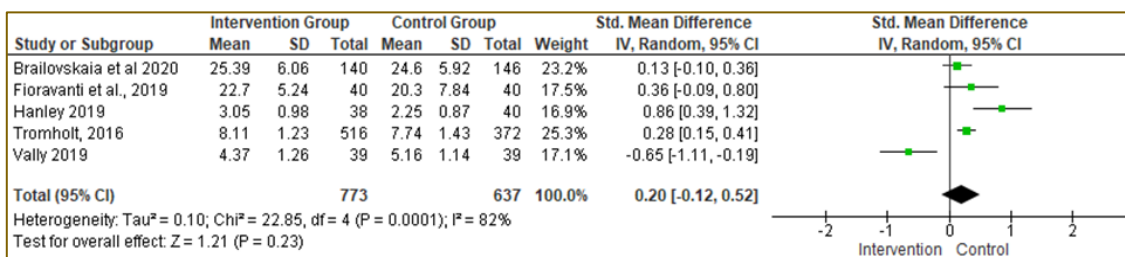


Figure 6. Forest plot of digital detox impact on life satisfaction.

Meta-analysis of digital detox efficacy for stress

Two studies were incorporated into the meta-analysis assessing the stress levels of participants following the use of social media detox. The result indicated a non-significant effect of digital detox on stress reduction (SMD: -0.31; 95%CI: -0.83, 0.21, $p=0.24$), as depicted in **Figure 7**. There is no publication bias found in the included studies, as measured by the funnel plot in **Figure 4D**. The observed considerable heterogeneity ($I^2=51\%$) suggested a moderate inconsistency in the study results. The lack of significant findings in stress reduction could be attributed to the fact that stress is multifactorial and might not be solely or directly influenced by social media usage. The moderate heterogeneity suggested that while some participants may benefit from a digital detox in terms of stress reduction, others may not, potentially due to different stressors in their lives, varying coping mechanisms, or different levels of dependency on social media for stress relief.

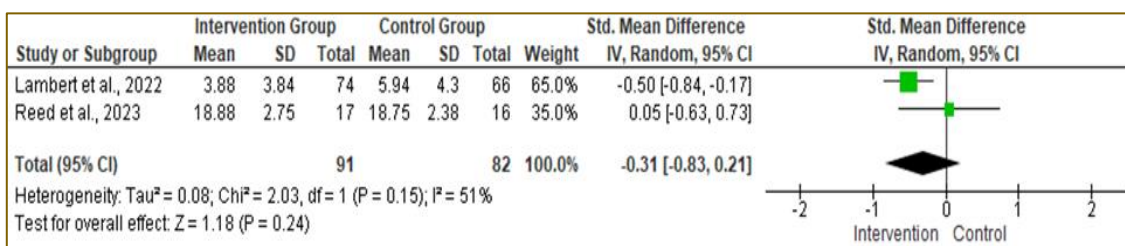


Figure 7. Forest plot of digital detox impact on stress.

Discussion

This systematic review and meta-analysis provided a synthesis of existing evidence of associations between digital detox and various mental health outcomes such as mental well-being, life satisfaction, depression, and stress. Digital detox is abstaining from electronic devices but should also extend to periods when individuals refrain from using specific applications, branded media, special features, interactions, and/or messages (e.g., voice messages) [23,24]. The results of our study unveiled a noteworthy contrast in the impact of digital detox wherein a significant effect was discerned specifically in relation to depression, while no statistically significant effects were observed concerning mental well-being, life satisfaction, and stress. This different pattern prompts a comprehensive exploration into the underlying mechanisms contributing to this divergence.

The findings of our study revealed a decline in depressive symptoms among participants following a gradual reduction in their digital or social media usage. This outcome aligns with numerous prior studies [11,14,15,19,20,25] that measured the effect of a digital detox intervention on depression, which found a significant decline in depression symptoms after a break from social media or smartphone use in general. Notably, the observed decrease in depressive symptoms remained consistently statistically significant despite the varied use of different questionnaires across studies for assessing depressive symptoms. Furthermore, diverse studies employ varying durations for interventions, ranging from complete social media abstinence for one week to reducing usage by 10 minutes over three weeks period. Despite these differences in intervention approaches, the results consistently demonstrated significant outcomes. Hunt *et al.* [25] demonstrated that the group of participants who derived the greatest benefit from the reduction in depressive symptoms by limiting social media time were those who commenced the study with high levels of depressive symptoms. Individuals with moderate depressive symptoms experienced declines to the mild range, while for those with mild depressive symptoms, although statistically significant, the changes were not considered clinically significant. Participants who received the intervention exhibited relatively greater stability and long-lasting reductions in terms of declining depressive symptoms.

Brailovskaia *et al.* [15] demonstrated in their study that patients in the experimental group experienced a steady decline and maintained stability in the two weeks following the intervention. Conversely, the control group displayed the opposite trend, showing an increase in depressive symptoms two weeks after the intervention. The potential positive impact of digital detox on reducing depression may be elucidated through physiological and psychological processes. Exposure to curated representations on social media platforms can evoke social comparison stress, triggering the release of cortisol hormone. By disconnecting during a digital detox, individuals may experience a reduction in cortisol levels, alleviating the physiological stress response associated with negative social comparisons. Social comparisons can lead to feelings of inadequacy or dissatisfaction. Taking a break from social media during a digital detox could prevent individuals' exposure to curated representations of others' lives, diminishing the potential for negative social comparisons that can contribute to depressive feelings. Furthermore, online spaces can be breeding grounds for cyberbullying and harassment, potentially contributing to depressive symptoms. Digital detox gives individuals a break from the potential stressors associated with virtual harassment. Additionally, information overload from constant digital stimuli may induce cognitive fatigue, which can lead to confusion, delay in making decisions, refusal to receive communication, lack of general perspective, and anxiety. Digital detox allows for a restoration of cognitive resources, potentially influencing neurotransmitter regulation and contributing to a reduction in depressive feelings [26]. Lastly, digital detox encourages individuals to engage more actively in face-to-face interactions and real-world relationships. Strong social connections are known to be protective against depression, and by prioritizing offline interactions, individuals undergoing a digital detox may experience an improvement in their social support networks [27]. The emphasis on real-world connections during digital detox aligns with research indicating that social interactions stimulate the release of oxytocin, a neuropeptide with potential mood-regulating effects.

On the contrary, the lack of significant effects on mental well-being, life satisfaction, and stress may stem from the multifaceted and subjective nature of these constructs. The results of

our study showed that there is no significant effect of digital detox on overall mental well-being. These results are in line with a previous study that found no effect of digital detox intervention on psychological well-being [16,25]. In contrast, a study by Brown and Kuss [21] reported the medium effect of the seven-day digital detox intervention through an increase in mental well-being. The lack of a significant effect and a different result from previous study of digital detox on overall mental well-being could stem from several factors. Mental well-being is a multifaceted construct influenced by various factors, including social relationships, work-life balance, personal fulfillment, and more. A targeted reduction in digital engagement might not be sufficient to address the diverse elements contributing to individuals' mental well-being. The duration and intensity of digital detox interventions are crucial considerations, as short-term or less intensive detox periods may not elicit significant changes in mental well-being, which often involves long-term habits and lifestyle patterns [11]. Furthermore, people differ significantly in how they respond to stressors and cope with challenges. The impact of digital detox could vary based on individual coping mechanisms, resilience, and the significance of digital interactions in one's life. During a digital detox, individuals may adopt compensatory behaviors or alternative activities that could counteract the anticipated positive effects on mental well-being. Individuals may also experience stress and challenges from various sources unrelated to digital use. The persistent influence of external stressors could overshadow the potential positive effects of digital detox on mental well-being [28]. Additionally, as digital technologies become more integrated into daily life, individuals may have developed adaptive strategies to balance digital engagement with their well-being. This adaptability could influence the perceived impact of digital detox on mental health.

The concept of life satisfaction, utilized in philosophical and psychological discussions of happiness and well-being, involves the assessment of an individual's quality of life. It encompasses various factors, including mood, relationship satisfaction, goals achieved, self-concept, and a person's self-perceived ability to confront life. The meta-analysis of five studies included in our study [15,16,18,20,22] examined the effect of digital detox interventions on life satisfaction. The result showed a gradual reduction in the usage of social media non significantly, which means that digital detox or social media detox has no significant impact on life satisfaction. Most of the studies used the Satisfaction with Life Scale (SWLS). A previous study found no effect of digital detox intervention on life satisfaction [22]. One study observed a decrease in life satisfaction as a result of detox interventions [18]. In contrast, three studies found an increase in life satisfaction but not significant after taking a break from social media use [15,16,20]. A previous study revealed that individuals who refrained from using Facebook for a week experienced significantly greater life satisfaction and positive mood in the short term compared to those who maintained their regular Facebook usage [20]. The absence of a significant effect of digital detox on life satisfaction in our study and different results from previous studies, as indicated by the study results, may be rooted in the intricate and multifaceted nature of life satisfaction as a construct. Digital detox interventions primarily target the reduction or cessation of digital interactions, which might not be directly linked to the broader determinants of life satisfaction. Factors contributing to life satisfaction are deeply rooted in individual experiences, health status, monthly allowance, self-esteem, values, and the overall quality of life, encompassing aspects beyond the digital realm [29]. As a result, a short-term reduction in digital engagement may not yield measurable changes in the comprehensive and subjective evaluation of one's life satisfaction. Moreover, individuals employ diverse coping mechanisms and draw satisfaction from various aspects of life, making it challenging for a singular intervention like digital detox to influence such a complex, universally and individually nuanced construct [11]. The study's findings highlight the need for a more holistic understanding of life satisfaction and underscore the potential limitations of digital detox interventions in generating significant changes in this particular dimension of mental well-being. Future research may benefit from exploring the interplay between digital detox and specific life satisfaction determinants to refine and tailor interventions for optimal impact.

Our study results showed that there exists no statistically significant difference in stress levels post the implementation of digital detox interventions. The meta-analysis of two studies investigated the effect of a detox intervention on stress [11,18] measured by using the Perceived

Stress Scale (PSS), which found no effect from a digital detox intervention on perceived stress. The intriguing outcome underscores the association between digital detox and stress reduction. As observed in this meta-analysis, the absence of a significant effect of digital detox on stress may be attributed to several factors. One plausible interpretation could be rooted in the multifaceted nature of stressors in individuals' lives, which may not be solely contingent on digital engagement. The intricacies of daily challenges, work-related pressures, and personal responsibilities might outweigh the influence of social media usage patterns on overall stress levels. Participants in the studies may continue to face stressors in their daily lives unrelated to their use of social media, and these external factors could overshadow the potential impact of digital detox. Furthermore, individual differences in coping mechanisms and resilience play a pivotal role in how individuals perceive and respond to stress [18]. Some participants may have effective coping strategies or other stressors that outweigh the influence of digital detox, leading to a lack of uniformity in the observed outcomes. This variability in responses could contribute to the non-significant findings in stress reduction. Additionally, the duration and intensity of the digital detox interventions examined in the studies may not have been sufficient to induce significant changes in stress levels [11]. Stress is a complex and persistent phenomenon, and short-term interventions might not be potent enough to produce measurable effects. Long-term studies with more extended periods of digital detox may be necessary to capture substantial changes in stress. Moreover, the evolving nature of digital communication and its integration into daily life raises questions about the adaptability of individuals to the absence of social media. Participants may have developed alternative means of communication and stress relief during the detox, mitigating the expected impact on stress levels. In summary, stress is a complex phenomenon influenced by a myriad of factors, and its reduction may necessitate more targeted and prolonged interventions. The short-term nature of typical digital detox interventions may not suffice to induce significant changes in stress levels, especially considering that stressors can emanate from various sources beyond digital interactions. The non-significant effect of digital detox on stress could result from the diverse origins of stress, individual differences in coping, the duration and intensity of the interventions, and the evolving nature of digital communication. Further research focusing on these factors and a more extended observation period may provide deeper insights into the dynamics of digital detox and its potential influence on stress reduction.

In all cases, the non-significant results do not definitively rule out any effect but highlight the need for more targeted research to understand the conditions under which digital detox might have significant impacts on these psychological outcomes. It may be beneficial to investigate more granular data within the individual studies to identify subgroups or specific conditions that might show a more pronounced effect and ensure that future studies are designed to minimize heterogeneity and improve the precision of the estimated effects. Subsequently, conducting subgroup analyses for each social media platform is essential to provide a more comprehensive understanding and to compare the varying impacts of each social media platform.

Conclusion

The findings from our study unveiled a noteworthy contrast in the impact of digital detox, wherein a significant effect was discerned specifically in relation to depression, while no statistically significant effects were observed concerning mental well-being, life satisfaction, and stress. Digital detox, involving the intentional reduction or cessation of digital engagement, may mitigate factors within the digital realm that contribute to depressive symptoms, such as exposure to negative social comparisons, cyberbullying, or information overload. By disconnecting from these stressors inherent in digital interactions, individuals may experience a reduction in depressive symptoms. On the other hand, the absence of significant effects on mental well-being, life satisfaction, and stress may stem from the multifaceted and subjective nature of these constructs, such as personal, social, and environmental factors that extend beyond the reach of digital detox interventions.

Ethics approval

Not required.

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Competing interests

All the authors declare that there are no conflicts of interest.

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Underlying data

Data that support the findings of this study are available in the article.

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