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The longitudinal effects of social media on sleep among youth: A scoping review

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ABSTRACT

Social media has become an integral part of our everyday lives, with nearly 5 billion users worldwide. Its ubiquity has sparked concerns about the potential effects on sleep, particularly among young people. Previous research has generally shown that greater social media engagement is associated with poorer sleep outcomes, such as later bedtimes and longer sleep onset latency. However, most evidence is cross-sectional, limiting causal claims. This scoping review synthesises longitudinal studies published in the last five years examining the impact of social media use on subsequent sleep in young people. In accordance with cross-sectional findings, the majority of studies (~70 %) provide evidence of a negative impact of social media use on bedtime and sleep onset latency, particularly in relation to problematic social media use, including at bedtime. However, methodological limitations, such as heavy reliance on self-reports and non-validated measures of social media use and sleep, restrict the strength of these conclusions. Future studies should employ validated measures and move beyond frequency-based metrics of social media to explore how content, patterns of problematic use, and the timing of use influence sleep longitudinally. It will also be important to consider bidirectional pathways and interactions with other key variables such as neurodiversity, socioeconomic status and mental health.

1. Introduction

Social media is now a fundamental aspect of daily life, with over 5 billion people around the world using social media sites. This reflects a 4.1 % growth over the past year (Kemp, 2025). Usage continues to grow across generations: while the average adult spends nearly 2 hours per day on social media, younger users often engage in social media for up to 5 hours daily. In the UK, 38 % of 5-7-year-olds now use social media sites or apps, up from 30 % the previous year (Ofcom, 2024). Similarly, in the US, children aged 0–8 are spending more time on social media apps such as TikTok, Instagram, and YouTube, with average daily use increasing by 13 minutes between 2020 and 2024 (Mann et al., 2025). Comparable patterns are also observed in China, where 95 % of adolescents aged 6–19 engage with social media platforms for communication and entertainment, spending an average of about 2.7 hours per day online (China Internet Network Information Center, 2024).

There is widespread concern about the implications of such pervasive social media use on youth. These concerns span multiple domains, including reduced physical activity, diminished face-to-face

interactions, and more recently the potential for adverse effects on mental health, including sleep problems (Alonzo et al., 2021). While some studies highlight potential harms, others suggest negligible effects on wellbeing (Orben, 2020), and even highlight benefits such as enhanced interpersonal communication and increased access to support (Lapierre & Zhao, 2022; Sala et al., 2024).

Understanding the impact of social media use during adolescence is particularly important. Adolescence is characterised by biological, psychological and social changes, including the maturation of brain regions involved in emotion regulation, risk and reward-processing and social sensitivity (Blakemore & Mills, 2014; Casey et al., 2008; Sala et al., 2024). At the same time, sleep patterns undergo significant changes such as later bedtimes, shorter nocturnal sleep durations, and greater variability between school and weekend sleep schedules (Lagerberg et al., 2001). These developmental changes often clash with early school start times (Carskadon, 2011), contributing to widespread sleep deprivation, with an estimated 69–73 % of US adolescents not obtaining sufficient sleep (Eaton et al., 2010; Wheaton, 2018).

It is plausible that social media use may be exacerbating the

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adolescent sleep deprivation crisis. According to the displacement hypothesis (Cain & Gradisar, 2010), time spent engaging with social media may displace other healthy behaviours that safeguard mental health, or protect against reductions in wellbeing, such as sleep (Scott et al., 2019). Furthermore, reductions in sleep may also have downstream consequences for cognitive development, including executive functions such as working memory and inhibition (Friedman et al., 2009), therefore sleep might be a critical causal mechanism through which social media use exerts harm (see Fig. 1).

While previous research demonstrates an association between social media use and poorer sleep, extant evidence is predominantly based on cross-sectional designs. Although such studies are useful for identifying correlations, they are limited in their ability to establish temporal relationships or causality (i.e. whether social media use leads to poorer sleep, or whether sleep difficulties drive increased social media use). In contrast, longitudinal studies are better positioned to clarify the direction and magnitude of these effects over time.

In this scoping review, we synthesise recent longitudinal research examining the relationship between social media use and sleep outcomes in children and adolescents. We also highlight the underlying mechanisms proposed in the literature and conclude with practical recommendations for researchers and professionals working in this rapidly evolving area.

2. Methods

2.1. Search strategy

We searched the Web of Science, Scopus, PubMed, Medline, PsycInfo, CINAHL, and Embase electronic databases in March 2024, with an update in November 2024. We also sourced papers from other reviews and meta-analyses. Search terms such as ‘Adolescent’, ‘Social media’, ‘Sleep’, and ‘Longitudinal’ were used to identify relevant studies (see Supplementary Table S1 for the full search strategy for each database).

2.2. Inclusion and exclusion criteria

We included studies that examined the longitudinal impact of social media use (e.g. problematic and frequent use) on sleep outcomes, including bedtimes and sleep onset, sleep quality, sleep duration and daytime sleepiness. Problematic social media use is defined as addictive or compulsive engagement. Frequency of social media refers to the total time spent on social media and encompasses both overall daily use and use during the hours immediately preceding bedtime. Although our primary age group of interest was youth aged 8–25 years, we included studies in which 50 % of the sample were under 25 years. We only considered studies that were either peer-reviewed papers or systematic reviews and were published in the English language in or after 2019. This cut-off reflects the rapid evolution of social media use and platform preferences over the past five years. For example, preferences have shifted from text-based platforms such as Facebook toward highly visual platforms like Instagram and TikTok (Hou & Shiau, 2019; Laor, 2022).

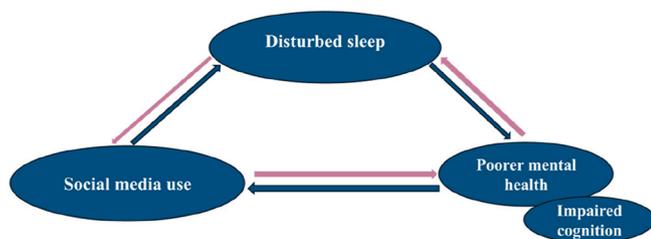


Fig. 1. Causal pathway linking social media use to mental health and cognition.

Finally, experimental studies were required to have a longitudinal design with two or more time points, such as two-wave longitudinal studies.

2.3. Quality appraisal

The quality of included studies was assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018). While no studies were excluded based on their quality ratings, the appraisal was conducted to provide an overall sense of the strength and reliability of the literature included in the synthesis. MMAT was selected as an appropriate tool given that the included studies employed experimental designs that aligned with its criteria. Each study was independently evaluated by two reviewers (E.C.S and H.K), with any discrepancies resolved through discussion or, when necessary, by consulting a third reviewer.

3. Results

3.1. Summary of reviews

Supplementary Table S2 summarises key attributes of identified reviews including author, number of longitudinal studies that examined the effects of social media on sleep included in the review, sample age range, pre-registration status, definitions of social media use and sleep, main results, and strengths and limitations. We focused on reviews that included at least one study examining the longitudinal impact of social media on sleep outcomes in adolescents and were published in 2019 or later. In total, six reviews were identified: four systematic reviews (two of which included a meta-analysis (Ahmed et al., 2024; Brautsch et al., 2023; Dibben et al., 2023; Lund et al., 2021; Pagano et al., 2023); and one scoping review (Yu et al., 2024). Four of these focused more broadly on electronic/digital media use with social media use as a subcomponent and two focused on the impacts of social media use on sleep and mental health. Only one of these reviews focused specifically on longitudinal studies and their review encompassed digital media more broadly, with social media as one type of digital media activity (Pagano et al., 2023). Furthermore, given that the intersection of social media and sleep is a rapidly growing field of research, an updated review of longitudinal studies was required.

Overall, the reviews highlight that the majority of included studies report a negative impact of social media use on subsequent sleep, particularly highlighting associations between problematic social media use and later bedtimes, shorter sleep duration, and poorer sleep quality (Ahmed et al., 2024; Brautsch et al., 2023; Dibben et al., 2023; Lund et al., 2021; Pagano et al., 2023; Yu et al., 2024). However, some individual studies report no significant association between social media use and sleep outcomes, particularly when they focused on time spent on social media (e.g., daily, in the hours before bed etc). One study even demonstrated potential benefits of social media use for sleep in male adolescents. Such inconsistencies are largely attributed to substantial heterogeneity in the measurement of social media use and sleep, with studies often focused on specific aspects of social media use and sleep and frequently relying on self-report measures, which are not always validated.

3.2. Summary of longitudinal studies

Table 1 summarises key attributes of selected studies including author, the country where the study took place, number of participants, sample age range, characteristics, pre-registration status, measures used to assess social media use and sleep, main results, and strengths and limitations. In total, we identified 12 longitudinal studies that examined the prospective relationship between social media use and sleep (see Fig. 2 for an overview of the components of social media use and sleep assessed and measures used and Fig. 3 for an overview of findings).

Table 1
Summary of longitudinal studies on social media use and sleep.

Study	Country of study	Sample characteristics (age, % female)	Sample size across time	Preregistered (Y/N)	Duration of study	Social media use measures	Sleep measures	Main findings	Strengths	Limitations
Problematic social media use										
Van Der Schuur et al. (2019)	Netherlands	11-15, 49	T1: 1241, T2: 1216, T3: 1103	N	18 months	Social media stress (self-report questionnaire).	Sleep onset latency (self-report questionnaire). Daytime sleepiness (the Sleep Reduction Screening Questionnaire (SRSQ)).	Social media stress predicted longer sleep latency and higher daytime sleepiness, but only among females.	Large sample. Low attrition (12 %). Standardised measure of daytime sleepiness.	Reliance on self-report measures of both social media use and sleep. Non-standardised measure of social media stress.
van den Eijnden et al. (2021)	Netherlands	11-17, 45.4	T1: 2030; T2: 1422	N	1 year	Problematic social media use (Social Media Disorder scale (SMD)).	Sleep quality (5-item Groningen Sleep Quality Scale (GSKS)). Bedtime (self-report questionnaire)	Problematic social media use predicted later bedtime. Problematic social media use did not predict sleep quality.	Controlled for gender, age, educational level and outcome variables at T1. Standardised measures of problematic social media use and sleep quality.	Reliance on self-report measures of both social media use and sleep. High attrition (30 %). Significant differences between participants who dropped out and participants who remained in the study limiting generalisability (e.g. participants who dropped out were more likely to report more frequent and problematic social media use, later bedtimes and poorer sleep quality at T1).
Lin et al. (2021)	Iran	13-19, 55.4	T1: 1098 T ³ : 812	N	4 months	Addictive use of social media (Bergen Social Media Addiction Scale (BSMAS)).	Insomnia severity (Insomnia Severity Index (ISI)).	Addictive use of social media predicted greater insomnia severity.	Used validated measures of social media and sleep.	Reliance on self-report measures of both social media use and sleep. Did not control for other types of behavioural addictions which may influence relationships.
Koban et al. (2023)	Germany	16-21, 54.81	T1: 978, T2: 415	N	4 months	Compulsive social media use (adapted 3-items from Lee et al. (2014) measure of compulsive usage of mobile phones).	Sleep quality (3 items based on the Pittsburgh Sleep Quality Index (PSQI)).	Compulsive social media use predicted poorer sleep quality.	Attempts to distinguish between "good" and "bad" social media habits.	Reliance on self-report measures of both social media use and sleep. High attrition (57 %). Non-standardised measure of compulsive social media use and sleep quality (i.e. adapted scale). Measured compulsive social media use without reference to specific time (e.g. near bedtime) or activity (e.g. during important activities).
Raudsepp (2019)	Estonia	15.3 ± 0.3, 46,6	T1: 249, T2: 223, T3 208	N	2 years	Problematic social media use (Bergen Social Media Addiction Scale (BSMAS)).	Insomnia severity (Insomnia Severity Index (ISI)).	Problematic social media use predicted greater insomnia severity.	Low attrition (17 %). Standardised measures of social media use and sleep.	Reliance on self-report measures of both social media use and sleep. Small homogenous sample.

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Table 1 (continued)

Study	Country of study	Sample characteristics (age, % female)	Sample size across time	Preregistered (Y/N)	Duration of study	Social media use measures	Sleep measures	Main findings	Strengths	Limitations
Li, Li, and Luo (2024)	China	21.8 ± 1.2, 64.4	T1: 194, T2: 194, T3: 194	N	4 months	Intensity of social media use (used intensity of Social Networking Site Use Scale adapted from Facebook Intensity Scale).	Sleep quality (Chinese version of the PSQI).	Intensity of social media use at the initial time point did not significantly predict sleep quality at any of the other time points.	Standardised measures of social media use and sleep. No attrition as used full cohort.	Reliance on self-report measures of both social media use and sleep.
Frequent social media use										
Van Der Schuur et al. (2019)	Netherlands	11-15, 49	T1: 1241, T2: 1216, T3: 1103,	N	18 months	Frequency of social media use (self-report questionnaire).	Sleep latency (self-report questionnaire). Daytime sleepiness (the Sleep Reduction Screening Questionnaire (SRSQ)).	Frequent social media use predicted less daytime sleepiness, only in males.	Large sample. Low attrition (12 %). Standardised measure of daytime sleepiness.	Reliance on self-report measures of both social media use and sleep. Frequency of social media use examined with non-validated measures.
van den Eijnden et al. (2021)	Netherlands	11-17, 45.4	T1: 2030; T2: 1422	N	1 year	Frequency of social media use (self-report questionnaire).	Sleep quality (5-item Groningen Sleep Quality Scale (GSKS)). Time of going to bed (self-report questionnaire).	Frequent social media use predicted later bedtime. Frequent social media use did not predict sleep quality. When frequency of social media use and problematic social media use were tested in the same model, only frequent social media use predicted later bedtime.	Controlled for gender, age, educational level and outcome variables at T1. Standardised measures of problematic social media use and sleep quality	Reliance on self-report measures of both social media use and sleep. Non-standardised measure of frequency of social media use. High attrition (30 %). Significant differences between participants who dropped out and participants who remained in the study limiting generalisability (e.g. participants who dropped out were more likely to report more frequent and problematic social media use, later bedtimes and poorer sleep quality at T1).
Richardson et al. (2021)	Australia	10-12, 49	T1: 528, T2: 502, T3: 478	N	3 years	Frequency of technology use (including browsing social media on school days).	School night sleep duration (self-report questionnaire). Caregiver-reported school night sleep duration. Daytime sleepiness (Pediatric Daytime Sleepiness Scale (PDSS)).	Frequent social media use predicted shorter adolescent-reported sleep duration. Frequent social media use did not predict caregiver-reported sleep duration. Frequent social media use did not predict daytime sleepiness.	Comprehensive, multi-informant measure of sleep (adolescent and caregiver-reported). Low attrition (10 %). Standardised measure of daytime sleepiness. Examined sleep on school days.	Reliance on self-report measures of both social media use and sleep. Non-standardised measure of frequency of social media use. Sample homogenous in terms of age, and relationships only investigated in early adolescents (aged 10–12).
Koban et al. (2023)	Germany	16-21, 54.81	T1: 978, T2: 415	N	4 months	Habitual social media use (adapted 3-items from Lee et al. (2014))	Sleep quality (3 items based on the Pittsburgh Sleep	Habitual social media use did not predict sleep quality.	Attempts to distinguish between “good” and	Reliance on self-report measures of both social media use and sleep.

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Table 1 (continued)

Study	Country of study	Sample characteristics (age, % female)	Sample size across time	Preregistered (Y/N)	Duration of study	Social media use measures	Sleep measures	Main findings	Strengths	Limitations
						measure of compulsive usage of mobile phones).	Quality Index (PSQI)).		“bad” social media habits.	High attrition (57 %). Non-standardised measure of habitual and social media use and sleep quality (i.e. adapted scales). Measured habitual social media use without reference to specific time (e.g. near bedtime) or activity (e.g. during important activities). Reliance on self-report measures of both social media use and sleep. Non-standardised measures of frequency of social media use. Did not report whether weekdays were during school term time or holidays.
Viner et al. (2019)	UK	13–16	T1: 12,866, T2: 11,166, T3: 10,010	N	3 years	Frequency of social media use (self-report questionnaire)	Sleep duration on weekdays (calculated from bedtime and wake time).	Frequent social media use (i.e. regularly/multiple times a day) predicted shorter sleep duration (<8 h a night).	Large representative sample.	Reliance on self-report measures of both social media use and sleep. Non-standardised measure of frequency of social media use. Did not report whether weekdays were during school term time or holidays.
Maksniemi et al. (2022)	Finland	13-19, 65.7	426 (87.6 % participants in at least four of the five follow-up timepoints)	N	6 years	Frequency of active social media use i.e. using social media to interact with others (the social-media-networking dimension of the Socio-Digital Participation Inventory).	Bedtime on school days (self-report questionnaire).	Frequent social media use did not predict bedtime.	Conducted over 6 years. Examined bedtime on school days. Low attrition (13 %). Standardised measure of social media use. Measured specific type of social media use (active use).	Reliance on self-report measures of both social media use and sleep. Non-standardised measure of sleep. Did not measure sleep latency, possible adolescents over-or-underestimated their reported bedtime. Lag was 1 year- little is known about developments within the year. Urban population with average financial status and standard level of school performance.
Marciano et al. (2022)	Switzerland	14.45 ± 0.5, 56.7	T1: 1224 T2: 1088	N	18 months	Frequency of social media use (self-report questionnaire).	Sleep disturbance (3 items from the DSM-5 self-rated Level 1 Cross-Cutting Symptom Measure for children).	Increased time spent on social media (from T1 to T2) did not predict sleep disturbance at T2.	Low attrition (11 %). Non-standardised measure of sleep disturbance.	Reliance on self-report for both social media and sleep. Non-standardised measure of social media use. Conducted in the COVID-19 pandemic which was a unique context.
Nagata et al. (2024)	USA	11-12, 48.4	T1: 9389 T2: 9389	N	1 year	Frequency of social media use (whilst in bed before sleep)	Caregiver-reported sleep disturbance (Sleep disturbance scale for children (SDSC)). Sleep duration (Munich Chronotype questionnaire).	Spending time on social media before going to sleep predicted greater sleep disturbance and shorter sleep duration.	Large demographically diverse sample. No attrition as used full cohort. Standardised measures of sleep.	Reliance on self-report for both social media and sleep. Caregivers reported sleep disturbance without adolescent reports. Non-validated measures of social media use.

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Table 1 (continued)

Study	Country of study	Sample characteristics (age, % female)	Sample size across time	Preregistered (Y/N)	Duration of study	Social media use measures	Sleep measures	Main findings	Strengths	Limitations
Other (e.g. network size)										
Dissing et al. (2021)	Denmark	21.6 ± 2.6, 23	T1: 816 (785 agreed to have Facebook data collected), T2: 589	N	4 months	Call and text network size (number of unique individuals with whom participants had interacted with using text messages or phone calls at least 3 times within 4 weeks- categorised in intervals of 10). Facebook network size (number of existing and obtained 'Facebook friends' during four-week observation period- cut-off of 150 connections). Frequency of call and text interactions (average number of incoming and outgoing calls and text messages per day during four-week observation; categorised in intervals of 10). Frequency of likes and status update interactions (number of 'liking' and posting 'status' updates on Facebook; intervals of 2). Total call duration (number of hours on calls during four-week observation; grouped into 2-h slots).	Sleep disturbance (the Karolinska Sleep Questionnaire (KSQ)).	Larger text and call network size and Facebook network size predicted decreased sleep disturbance but only among males. No significant associations between frequency of call and text interactions, Facebook likes and status update interactions and total call duration and sleep disturbance.	Smartphone ran customised software which continuously recorded information on call and text message interactions as well as Facebook activity. Variety of different social media interaction types examined. Standardised measure of disturbed sleep.	Binary sleep disturbance outcome (yes/no) means possibility of misclassification. Reliance on self-report for sleep. Interactions carried out on other platforms (e.g. email and messenger) not recorded. Conducted in 2013, assessed call, text messages and Facebook as the predominant interaction platforms so is likely outdated. Low response rate (29 %) could have resulted in selection mechanism into the study. Study population consisted of students at a higher education institute, the results may be less generalisable to socially disadvantaged young adults. Students given a smartphone in which they inserted their personal SIM card; may not reflect personal smartphone usage.
Nagata et al. (2024)	USA	11-12, 48.4	T1: 9389 T2: 9389	N	1 year	Frequency of call and text interactions (frequency of talking on the phone/texting whilst participants were in bed).	Caregiver-reported sleep disturbance (Sleep disturbance scale for children (SDSC)). Sleep duration	Frequency of call and text interactions before going to sleep predicted greater sleep disturbance and shorter sleep	Large demographically diverse sample. No attrition as used full cohort. Standardised measures of sleep.	Reliance on self-report for both social media and sleep. Caregivers reported sleep disturbance without adolescent reports. Non-validated measures of

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Table 1 (continued)

Study	Country of study	Sample characteristics (age, % female)	Sample size across time	Preregistered (Y/N)	Duration of study	Social media use measures	Sleep measures	Main findings	Strengths	Limitations
						Frequency of call and text interruptions (frequency of interruptions by phone calls, texts or emails after trying to sleep).	(Munich Chronotype questionnaire).	duration. Frequency of call and text interruptions after trying to go to sleep predicted shorter sleep duration but not sleep disturbance.		social media use. Binary sleep disturbance outcome (yes/no) means possibility of misclassification.

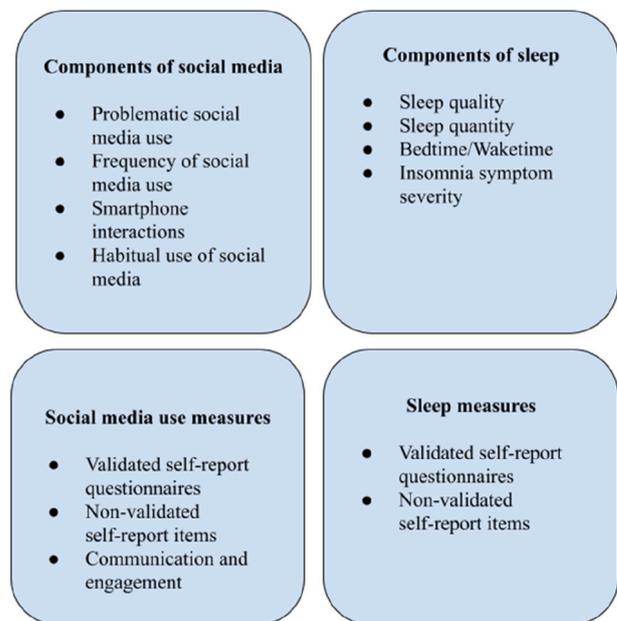


Fig. 2. Components of social media use and sleep assessed, and measures used.

Sample size across the included studies ranged from 194 to 10,010 and the age range of included study samples was between 10 and 29 years.¹

3.2.1. Measurement of social media use

Most studies assessed social media use through either self-developed questionnaire items (e.g. “Have you neglected other activities to use social media?”) or standardised questionnaires such as the Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2016). Only one study employed more objective and reliable methods, such as digital recordings of smartphone interactions (Dissing et al., 2021). The specific aspects of social media use varied across the 12 studies: five focused on problematic use, eight measured usage frequency and two explored other dimensions such as smartphone interaction metrics (e.g. call and text network size and interactions).

3.2.2. Measurement of sleep

Sleep was assessed using either self-developed questionnaire items (e.g. “On average, how long does it take before you fall asleep?”) or standardised questionnaires such as the Insomnia Severity Index (ISI; Bastien et al., 2001). None of the studies employed objective measures, such as actigraphy. The studies examined various components of sleep: three focused on bedtime and sleep onset, eight on sleep quality (including insomnia symptom severity and sleep disturbance), three on sleep duration and two studies investigated daytime sleepiness.

3.2.3. Effects of social media on sleep

Eight of the 12 studies reported at least one negative impact of social media use on subsequent sleep, while two studies reported at least one beneficial association. To aid synthesis, we organised our findings in line with Lund et al.’s (2021) grouping of sleep outcomes into four domains: bedtime and sleep onset, sleep quality, sleep duration, and daytime sleepiness.

Bedtime and sleep onset. Across studies, both problematic and

¹ Two of the included studies reported a mean age range of 21.8 ± 1.2 years and 21.6 ± 2.6 years therefore the estimate of the upper age range is an approximation using ±3 standard deviations to give an estimated range that covers approximately 99.7 % of the values, assuming a normal distribution. Of those studies who reported the age range, the maximum age reported was 21 years.

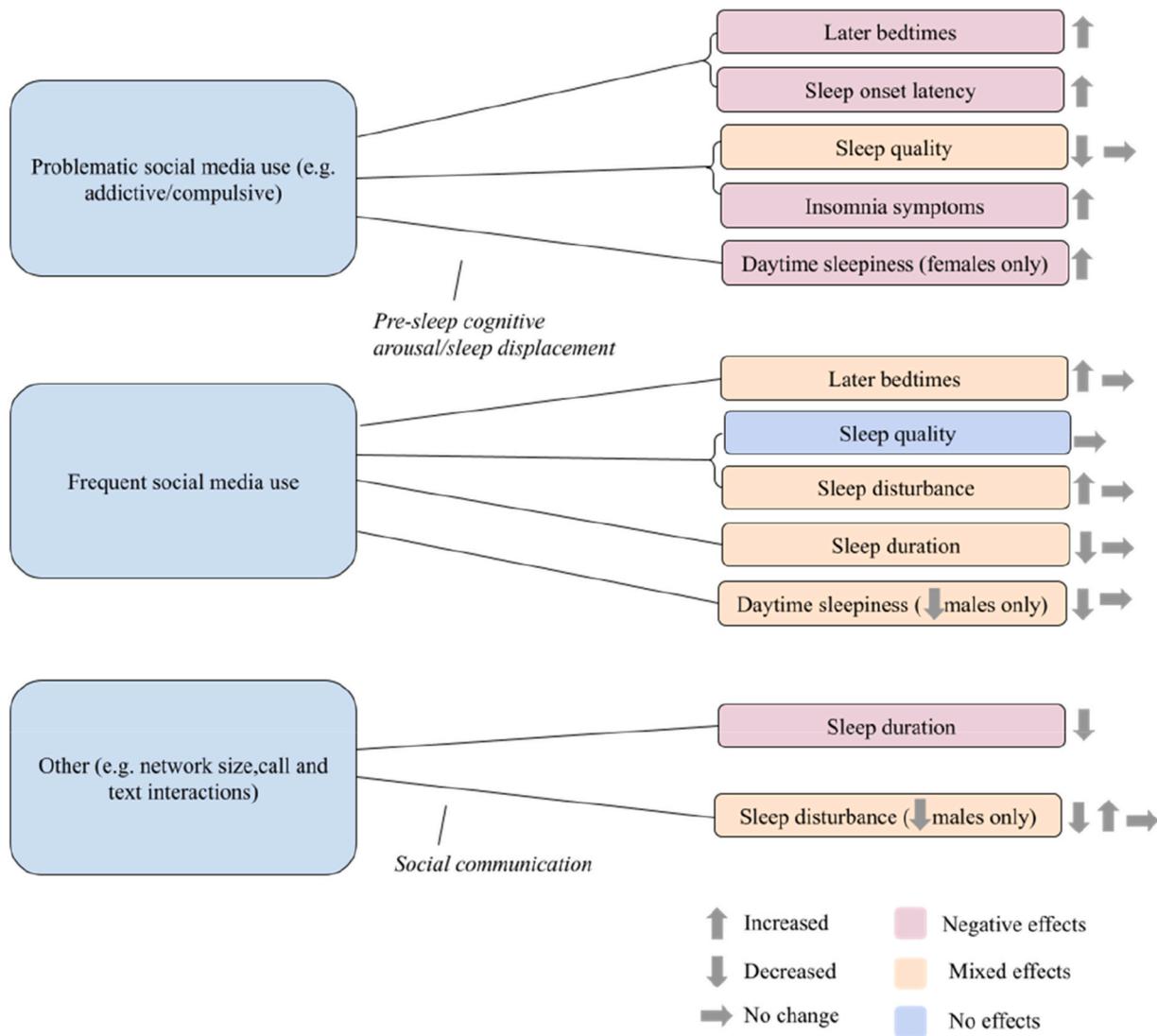


Fig. 3. Overview of findings. Arrows indicate direction of effects across studies and coloured boxes represent whether effects are negative, mixed or null across studies.

frequent social media use were linked to later bedtimes, while social media-related stress predicted longer sleep onset latency, though only among female participants (van den Eijnden et al., 2021; Van Der Schuur et al., 2019). These findings suggest that engaging with social media, especially in addictive, compulsive, or stressful ways, may delay sleep initiation. Van Der Schuur et al. (2019) measured social media stress using a self-developed questionnaire with items such as “Have you felt tense or restless when you could not use social media?”, which limits direct comparability to studies examining other aspects of social media use, such as problematic or frequent use. One study reported a non-significant association: Maksniemi et al. (2022) found that frequent social media use did not predict bedtime on school days.

Sleep quality. Problematic social media use was also associated with poorer sleep quality and greater insomnia symptom severity (Koban et al., 2023; Lin et al., 2021; Raudsepp, 2019). Bedtime engagement (including texting and calling when in bed before sleep) was associated with increased sleep disturbances one year later, and frequent interruptions from texts and calls after trying to go to sleep were similarly associated with greater sleep disturbance in 11–12-year-olds (Nagata et al., 2024). These findings suggest that engaging in social media activities (including calls and texts) at bedtime and during the night may interfere with sleep and reinforce habits characteristic of poor sleep hygiene. However, adolescents who have

poorer sleep may be more likely to engage in more frequent bedtime social media use, reflecting potential bidirectional effects.

Several studies reported non-significant associations. Across three studies, frequency of social media use did not predict sleep quality (Koban et al., 2023; van den Eijnden et al., 2021) or sleep disturbance (Marciano et al., 2022). Nagata et al. (2024) also found no significant association between the frequency of nocturnal interruptions from calls and texts after trying to go to sleep and caregiver reported sleep disturbance.

Similarly, some studies reported no association between problematic social media use and sleep quality (X. Li, Chen, et al., 2024; van den Eijnden et al., 2021). For example, X. Li, Li, and Luo (2024) found that the intensity of social media use at baseline did not significantly predict sleep quality at any subsequent time point. Together, these null findings imply that problematic social media use may exert stronger effects on bedtime and sleep onset latency than on perceived quality of sleep more broadly.

In contrast, Dissing et al. (2021) collected continuous, objective data on call and text message interactions (e.g. call and text network size, frequency of call and text interactions and call duration) as well as Facebook activity (e.g. number of friends, frequency of likes and status updates), alongside self-reported measures of sleep disturbance. They found that larger social networks (both in terms of the number of people

participants communicated with, and the number of Facebook connections) were associated with a decrease in sleep disturbance from baseline to follow-up among males, but not females. However, no significant associations were observed between the frequency of call and text interactions, frequency of likes and status updates on Facebook, or call duration and sleep disturbance. The authors suggested that larger networks may reflect a more active social life, which could serve as a protective factor, potentially offsetting the negative effects of social media use on sleep quality. Importantly, this study also used objective recordings of smartphone activity, thereby avoiding the limitations associated with self-report measures. However, the data was collected in 2013, when texting and Facebook were the predominant social media platforms, so these findings might not be generalisable to more recent social media metrics such as Instagram or TikTok followers. Moreover, this study measured smartphone interactions across the day, rather than smartphone interactions at specific times, such as at night, which may explain the lack of negative effects on sleep disturbance compared to findings from Nagata et al. (2024).

Sleep duration. Higher frequency of social media use predicted shorter sleep duration (Richardson et al., 2021; Viner et al., 2019). Nagata et al. (2024) also reported that in-bed social media use and frequent post-bedtime interactions were associated with reduced sleep duration one year later.

However, Richardson et al. (2021) found no association between time spent on social media and caregiver-reported sleep duration on school nights in 10–12-year-olds, whereas an association was observed with adolescent-reported sleep duration. This discrepancy may reflect weak agreement between caregiver and adolescent reports of sleep, as also noted in Nagata et al. (2024).

Daytime sleepiness. Social media-related stress was also associated with greater daytime sleepiness in female participants but lower daytime sleepiness in males (Van Der Schuur et al., 2019). The authors argued that this gender difference may reflect different social media experiences: males may benefit from certain aspects of social media use, while females may be more susceptible to its negative consequences. Supporting this idea, McNee and Woods (2019) found that for female users of Facebook and Instagram, social comparison was linked to increased nighttime social media use and a higher tendency towards rumination (i.e. dwelling on negative thoughts). Moreover, rumination significantly mediated the relationship between social comparison behaviour and poor sleep. Other work has demonstrated that females tend to perceive social media as more stressful than males, which may contribute to gender differences in sleep outcomes (Oyinbo et al., 2024). Nonetheless, Richardson et al. (2021) found no association between time spent on social media and daytime sleepiness on school nights in 10–12-year-olds, suggesting that these effects may vary by age or type of social media engagement.

3.2.4. Quality of included studies

Supplementary Table S3 presents the MMAT ratings for the 12 included studies. In line with guidance from Hong et al. (2018), we did not calculate an overall score but instead report each criterion descriptively. All studies employed non-randomised pre-post designs and used appropriate measurement tools. However, only 16.6 % had clearly representative samples (representativeness of the sample was unclear in 66.6 % of studies), and outcome completeness was achieved in 66.6 % of studies based on established attrition thresholds (van Tulder et al., 2003; Viswanathan & Berkman, 2012). Most studies (75 %) accounted for at least one confounder (e.g. gender), and in all cases, social media was measured as intended. Notably, only one study (Nagata et al., 2024) met all five criteria and reported both adverse and null associations between social media use and sleep outcomes. Overall, while the studies generally employed valid measures and addressed confounding to some extent, weaknesses in sample representation and attrition limit the robustness of the evidence base.

3.3. Summary of experience sampling studies

We also synthesise findings from studies using experience sampling methodology. Although these do not formally meet the criteria for traditional longitudinal designs, they examine whether social media use on one day predicts sleep outcomes that evening, thus providing valuable temporal insights. Table S4 summarises key attributes of these studies.

A total of seven experience sampling studies investigated the relationship between social media use and sleep. All seven studies assessed the frequency of social media use, with three specifically focusing on usage in the hours before bed/sleep. Six studies relied on self-report measures of social media use (e.g. hours spent on social media each day), while one study objectively captured social media use using video cameras. Regarding sleep measurement, two studies used objective indicators (e.g. sleep duration and timing), four relied on self-report (e.g. sleep quality, duration and timing), and one combined both objective and subjective approaches.

Five of the seven studies found at least one adverse association between social media use and subsequent sleep, and one study found at least one beneficial association between social media use and sleep.

Bedtime and sleep onset. Hamilton et al. (2020) reported that greater social media use during the day predicted later bedtimes that evening. Similarly, Brosnan et al. (2024) found that social media use once in bed was associated with later shut-eye time (time when participants tried to go to sleep), later sleep-onset times and increased shut-eye latency (time spent in bed before attempting to sleep). Y. Li, Li, and Luo (2024) also found that greater time actively spent on social media (but not time spent on social media use in general) was associated with later self-reported sleep onset time. However, across two studies, daytime social media use did not significantly predict self-reported bedtime or wake times (Hamilton et al., 2023; Reichenberger et al., 2024).

Sleep duration. Arya et al. (2024) reported that greater social media use within the previous 24 hours was associated with a higher likelihood of obtaining less than 8 hours of sleep, even after adjusting for age, gender, body mass index, and socioeconomic status. Das-Friebel et al. (2020) also found that greater social media use in the hour before bed was associated with shorter subjective sleep duration but only among adolescents reporting higher levels of depressive symptoms, suggesting that individual vulnerabilities may moderate the impact of social media on sleep.

Interestingly, in the same study, Das-Friebel et al. (2020) reported a beneficial association between social media use and subsequent sleep, where greater bedtime social media use significantly predicted longer objective sleep duration that night. In this study, social media use was defined as the total minutes spent communicating with others and using social media within the hour before bed. These findings align with Dissing et al. (2021), suggesting that studies focusing on communicating with family and friends within their definition of social media tend to find less detrimental effects on sleep.

However, three studies found that daytime social media use did not significantly predict subjective or objectively measured sleep duration (Hamilton et al., 2020, 2023; Reichenberger et al., 2024).

Sleep quality. Across two studies, daytime social media use did not predict sleep quality, including wake after sleep onset (WASO) and objectively measured sleep efficiency (Brosnan et al., 2024; Hamilton et al., 2023). Additionally, two studies reported no effect of social media use 1–2 hours before bed on either subjective or objective indicators of sleep quality (Das-Friebel et al., 2020; Y. Li, Chen, et al., 2024).

Notably, Hamilton et al. (2020) found that adolescents at high risk of depression (based on parental history) were not more likely to use social media, nor did they show a stronger association between social media use and sleep. This contrasts with Das-Friebel et al. (2020), who found effects among adolescents with elevated depressive symptoms. This discrepancy may be due to differing approaches in assessing depression

risk, as [Hamilton et al. \(2020\)](#) assessed the risk of depression based on parental history, whereas [Das-Friebel et al. \(2020\)](#) measured self-reported depressive symptoms in the adolescent population.

4. Discussion

4.1. Summary of findings

This scoping review synthesises recent longitudinal research on the relationship between social media use and sleep outcomes in children and adolescents. Most studies suggest an adverse association, with the strongest evidence pointing to problematic or excessive social media use as a key factor contributing to later sleep onset times and increased sleep onset latency. In particular, usage during bedtime hours consistently emerged as especially disruptive.

Despite these trends, the findings across studies remain inconsistent. While many studies reported at least one negative impact of social media use on sleep, they also found, amongst other studies, null or even beneficial associations. The inclusion of multiple social media and sleep measures, with only a subset showing significant results suggests a potential risk of false positives. This issue is further compounded by the absence of pre-registration in the included studies. Additionally, these inconsistencies are likely influenced by methodological limitations, including the reliance on self-report measures and the use of non-validated tools to assess both social media use and sleep, which complicates the interpretation of results.

Findings from experience sampling studies largely align with other longitudinal work and suggest nuanced and context-dependent associations between social media use and sleep. While social media use appears to influence bedtime and sleep onset latency, its impact on sleep quality and duration is less consistent. This may be partly explained by the predominantly university-based samples, who may be able to compensate for later bedtimes by sleeping in, resulting in minimal disruption to their overall sleep duration. Additionally, studies that define social media use to include communication with friends and family suggest that this type of usage is less harmful to sleep compared to other forms of social media use.

Several studies found gender effects for the association between social media use and sleep, suggesting that females may be more negatively affected by the impact of social media use on sleep. These findings may be accounted for by the varying ways that males and females use social media, with females thought to use social media more for social comparison which is linked to rumination and poorer sleep ([McNee & Woods, 2019](#)), and to perceive social media as more stressful ([Oyinbo et al., 2024](#)). Recent work has shown that screen-sleep displacement leads to elevated symptoms of depression among females, but not males ([Hökby et al., 2025](#)). Future studies should continue to account for gender effects to gain clearer insight into how the association between social media use and sleep differs across males and females and the mechanisms underlying this.

It is important to note that this review was limited to English-language studies, which may have excluded relevant findings published in other languages, potentially limiting the generalisability of conclusions across cultural contexts. Generalisability may also be constrained by the characteristics of the samples and contexts in which data were collected. Several studies were conducted with urban populations of average financial status, making it difficult to extend results to lower socioeconomic groups. Moreover, some studies collected data during the COVID-19 pandemic ([Arya et al., 2024](#); [Hamilton et al., 2023](#); [Marciano et al., 2022](#)). This was a unique context in which factors such as exposure to pandemic-related news or disruptions to daily routines may have influenced social media behaviour and/or sleep, further limiting the applicability of findings to post-pandemic conditions.

4.2. Proposed mechanisms

Several mechanisms have been proposed to explain how social media use may impair sleep ([Cain & Gradisar, 2010](#); [Woods & Scott, 2019](#)). First, social media engagement (especially before bed) can increase pre-sleep cognitive arousal. Adolescents may feel emotionally activated, either positively (e.g. excitement) or negatively (e.g. distress), by real-time interactions online, potentially leading to later bedtimes and delaying sleep onset.

Another key factor is the pervasive pressure to remain constantly connected and responsive, which can give rise to fear of missing out (FOMO). FOMO, a persistent anxiety about missing rewarding social experiences, is a well-established driver of social media use ([Przybylski et al., 2013](#)). Research indicates that FOMO can directly elevate pre-sleep cognitive arousal, even independent of social media use itself ([Scott & Woods, 2018](#)). Highly invested social media users often report poorer sleep quality, possibly due to this persistent anxiety and difficulty disengaging at bedtime ([Scott & Woods, 2018](#); [Woods & Scott, 2016](#)).

A second proposed mechanism relates to the timing and sensory effects of screen use. Social media use before sleep may directly displace sleep time or interfere with the production of melatonin due to blue light exposure ([Cain & Gradisar, 2010](#); [Lin et al., 2021](#); [Woods & Scott, 2019](#)). The displacement of sleep time can have downstream consequences for both mental health and cognitive performance ([Friedman et al., 2009](#); [Scott et al., 2019](#)). However, the specific effects of blue light remain contested, and further research is needed to draw firm conclusions ([Silvani et al., 2022](#)).

Some findings suggested an association between social media network size (as opposed to use) and better sleep. For example, [Dissing et al. \(2021\)](#) found that a larger call and text network size, and a larger number of Facebook friends was associated with fewer sleep disturbances over time in males but not females. However, this finding cannot be generalised to conclude that social media use is beneficial for sleep, as the concept of network size may be quite distinct from social media usage itself.

4.3. Recommendations for future research

Based on current findings, we propose several recommendations for future research. First, most studies measured sleep via self-report, with some employing non-validated items to assess different aspects of sleep. Previous work demonstrates that self-reported sleep quality is often lower than that indicated by objective measures of sleep ([Buysse et al., 2008](#)). Therefore, future studies should combine subjective and objective assessments of sleep, using wearables that track sleep alongside standardised questionnaires and sleep diaries.

Researchers should also explore what kind of content young people are engaging with and which platforms they are using. For example, [Carter et al. \(2024\)](#) found that individuals who report problematic social media use were more likely to spend time on Instagram and TikTok, suggesting that platform-specific features may play a role in shaping sleep outcomes. It is also important to consider the emotional and contextual factors surrounding social media use. Some studies have shown that highly invested users tend to experience poorer sleep quality, potentially due to feelings of anxiety or FOMO as highlighted above ([Scott & Woods, 2018](#); [Woods & Scott, 2016](#)). Understanding why young people use social media and how it makes them feel will provide a deeper understanding of its impact on sleep. Therefore, future work should involve young people in co-production to gain insight into these questions and how best to measure their social media activity.

Second, there is a need to explore how social media affects at-risk groups who may be particularly vulnerable to sleep disturbances. These groups include children with mental health conditions or neurodevelopmental disorders, children in care, LGBTQ + youth, and preschool-aged children. Usage patterns differ among pre-school-aged children, with 84 % of UK preschoolers going online in 2023, and the

majority of this digital activity taking place on tablets (Ofcom, 2024). Furthermore, recent work highlights that adolescents with mental health conditions report greater time spent on social media and lower satisfaction with the number of online friends (Fassi et al., 2025). Therefore, it is important to understand how social media use in these different groups is associated with sleep outcomes.

Although we reviewed recent longitudinal studies, the directionality of the relationship between social media and sleep needs further investigation. Tavernier and Willoughby (2014) found that sleep problems predicted greater time spent on social media but not vice versa, suggesting that increased use may serve as a coping strategy to fill time otherwise spent trying to fall asleep. Similarly, X. Li, Li, and Luo (2024) reported that sleep problems at T2 significantly predicted social media use at T3, whereas the reverse pathway was weaker and less consistent. This pattern aligns with the Uses and Gratifications Theory (Ruggiero, 2000), which proposes that individuals engage with technologies to fulfil needs such as relaxation, social interaction, and escapism, and may help explain why social media use is particularly appealing for individuals experiencing sleep difficulties, given its capacity to evoke positive emotions and heightened arousal (Mauri et al., 2011). X. Li, Li, and Luo (2024) further suggested that the effects of social media use on sleep may be more stable and enduring, while the influence of sleep problems on social media use appears more variable and short-lived. Taken together, these findings suggest a potentially bidirectional and cyclical relationship between social media use and sleep, highlighting the need for nuanced, multi-faceted approaches to understanding the social media-sleep connection.

Furthermore, future studies should aim to capture the different temporal pathways through which social media might influence sleep, such as effects that occur over the course of a single day versus those that accumulate across multiple nights, weeks or years. Methodologies such as experience sampling can provide fine-grained day-to-day data linking social media use to the same nights' sleep outcomes. Combining experience sampling with objective indicators, such as passive sensing for social media use and wearable devices for sleep, offers a feasible approach to enhance measurement precision. Future studies should also examine how nighttime social media use specifically interferes with subsequent sleep, to clarify how social media habits impact sleep outcomes depending on the time of day.

Finally, it is critical that studies control for relevant confounding factors that may influence both social media use and sleep. These include, but are not limited to, socioeconomic status, mental health issues (both in young people and their parents), income level, number of siblings, ethnicity and cultural background, and parenting styles. Accounting for these variables will help to strengthen the validity and interpretability of future research findings.

4.4. Recommendations for professionals and carers

Professionals working with children and young people and carers should be aware of the growing body of evidence linking social media use (particularly problematic and nighttime use) to sleep difficulties in young people. When sleep problems are raised, especially in the context of co-occurring mental health concerns, it is important to include social media habits as part of the assessment and conversation.

Guidance on reducing nighttime social media use can be a helpful part of intervention strategies. Professionals might recommend practical steps such as enabling "Do Not Disturb" mode, turning off notifications, or placing devices outside the bedroom at night, which have been shown to reduce problematic social media use (Kalk et al., 2024). Recent evidence also demonstrates that restricting bedtime smartphone use (including social media) for 30 minutes prior to bedtime can reduce sleep onset latency, improve sleep quality and increase sleep duration, suggesting even modest reductions in evening use may be beneficial (He et al., 2020).

In addition, professionals should promote family-based approaches

that encourage healthy digital habits across all members of the household. When carers and siblings model balanced and mindful use of technology, combined with a collaborative approach, this may help to reinforce healthier digital behaviours for children and adolescents.

Professionals should also remain mindful of possible gender differences. Current research suggests that females may be more negatively affected by the impact of social media on sleep compared to males, and this should be taken into account when tailoring advice and interventions.

Finally, at a broader level, professionals and carers can play an important role in shaping community norms around sleep and digital wellbeing. They can encourage families, schools, and peer groups to adopt collective agreements such as device-free times in the evening or group efforts to silence notifications before bed which can foster healthier social media use and better sleep hygiene.

Nonetheless, professionals and carers should recognise that such strategies are not always easy to implement. Adolescents may resist device restriction due to FOMO (Servidio et al., 2024), and variability in family contexts, for example, differences in carers' monitoring capacity or resistance to reduce their own screen use, household routines, or living arrangements, may limit the feasibility of consistent restrictions. Promoting autonomy in selecting practical approaches may increase adherence. Recent work has shown promising effects when adults chose the extent to which they follow ten strategies to reduce problematic smartphone use (e.g. hiding social media apps in a folder off the home screen, keeping phone on silent and out of reach when going to sleep etc), suggesting that offering flexibility and choice may lead to higher compliance and greater effectiveness in the longer term (Olson et al., 2022).

4.5. Conclusions

Despite the heterogeneity observed across recent studies, longitudinal evidence generally points to a predominantly negative impact of social media use on subsequent sleep. In particular, findings highlight a link between problematic social media use and bedtime usage with later bedtimes and longer sleep onset latency. These findings underscore the limitations of examining social media use solely through the lens of frequency, as this approach fails to capture the complex and multifaceted relationship between social media use and sleep outcomes. Importantly much of the existing literature relies heavily on self-report and non-validated questionnaire items, limiting the strength of conclusions that can be drawn. To advance this rapidly evolving field, we have proposed several recommendations for researchers and professionals aimed at improving methodological rigor and providing more robust evidence on the long-term effects of social media use on sleep.

CRediT authorship contribution statement

Emma C. Sullivan: Writing – original draft, Validation, Methodology, Investigation, Data curation, Conceptualization. **Bernadka Dubicka:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Hannah Kirsop:** Writing – review & editing, Validation. **Lisa-Marie Henderson:** Writing – review & editing, Supervision, Methodology, Conceptualization.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chbr.2025.100908>.

Data availability

No data was used for the research described in the article.

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