**The Effect of Social Media on Academic Performance, Mental Health and Sleep (SMAMS): A Feasibility Randomized Control Trial**

**Sponsor/s**

Name of organization: King’s College London

Address: Strand, London WC2R 2LS

Telephone: 02078485454

Fax: 02077085800

Email: dennis.ougrin@kcl.ac.uk

**Researcher**

Name: Lea Yerevanian

Address: Child and Adolescent Psychiatry, IoPPN, KCL, SE5 8AZ

Telephone: 07400949012

Email: [lea.yerevanian@kcl.ac.uk](mailto:lea.yerevanian@kcl.ac.uk)

**Researcher**

Name: Nicol Bergou

Address: Child and Adolescent Psychiatry, IoPPN, KCL, SE5 8AZ

Telephone: 07741255110

Email: [lea.yerevanian@kcl.ac.uk](mailto:lea.yerevanian@kcl.ac.uk)

**Academic Supervisor**

Name: Dr. Dennis Ougrin

Address: Institute of Psychiatry, Psychology and Neuroscience (IoPPN) – King’s College London

Telephone: 02078480957

Email: dennis.ougrin@kcl.ac.uk

**CONTENTS**

1. ***Introduction***
2. ***Study Objectives and Design***
3. ***Study Objectives***
4. ***Study Design & Flowchart***
5. ***Study Flowchart***
6. ***Sample Size, Statistics, Selection and Withdrawal of Subjects***
7. ***Study Procedures***
8. ***Sample Handling and Laboratories***
9. ***Assessment of Safety***
10. ***Study Oversight Arrangements***
11. ***Ethics and Regulatory Approvals***
12. ***Data Handling***
13. ***Finance and Publication Policy***

### Study Synopsis

|  |  |  |
| --- | --- | --- |
| Full Title |  | The Effect of Social Media on Academic Achievement, Mental Health, and Sleep |
| Short Title/Acronym |  | SMAMS Trial |
| Protocol Version number and Date |  | Version 1 05/02/2021 |
| Study Duration |  | 6 months |
| Study Design |  | A Feasibility Randomised Control Trial |
| Academic Supervisor |  | Dr. Dennis Ougrin |
| Investigator |  | Lea Yerevanian, Nicol Bergou |
| IRAS number |  | N/A |
| Primary objective |  | To investigate whether social media use has an impact on academic achievement |
| Secondary objective (s) |  | To investigate whether social media has an impact on sleep quality and duration, number of steps and mental health |
| Number of Subject |  | 100 |
| Main Inclusion Criteria |  | Daily social media use |
| Statistical Methodology and Analysis |  | We will use t-tests to compare continuous variables. We will use chi squared tests to compare dichotomous variables. |

|  |  |  |
| --- | --- | --- |
| Device Name |  | Mobile Device |
| Manufacturer Name |  | Iphone or Android (depending on participant’s phone manufacturer) |
| Principle intended use |  | Use as usual |
| Is the device ce marked and used within its purpose? |  | Yes |
| Is the device currently used within the department? |  | Yes |
| Description and Maintenance and storage of device No changes are anticipated. Participants will be using their own smartphone devices. | | |

**Abstract**

**Background:** Social Networking Websites (SNS) and applications are one of the highest drivers of engagement of smartphone use amongst youth. Substantial use of SNS platforms is correlated with worse mental health, increase of symptoms of emotional disorders, self-harm, suicide, and poor sleep. The causal relationship between these variables, however, is currently not established.

**Aim:** To conduct a feasibility randomized control trial (RCT) to assess the impact of social media platform use on sleep, academic grades, and mental health.

**Primary Hypothesis:** 1 month after randomization, university students exposed to social media will have lower grades, fewer hours of sleep, lower sleep quality, fewer steps, and poorer mental health outcomes as compared to those whose access to social media was blocked.

**Method:** Feasibility randomized control trial (RCT) study in London, England. The study will run for 6 months with a sample size of 100 university students. The participants will be allocated to two parallel groups (exposure vs. blocking groups). Students recruited will be social media users and have at least 1 social media account on either or all of the following – Instagram, Facebook, Snapchat, TikTok, and Twitter. The exposure group will use social media as usual, whereas the blocking group will have no access to SNS websites/applications. This will be restricted by having participants deactivate their social media applications. Participants will send weekly screenshots of their social media activity. The primary outcome grades will be quantitatively measured at baseline (T1) prior to randomization, and Time 2, 1 month after the randomization (or when the academic grades become available (T2; the end of the trial). Secondary outcomes will include sleep duration and sleep quality which will be measured via a sleep application available on Android and iOS devices at baseline (T1) prior to randomization, and Time 2 (T2; the end of the trial). Further secondary outcomes will include overall mental health, well-being and self-esteem which will be assessed via an online questionnaire at baseline (T1) prior to randomization, and Time 2 (T2; the end of the trial). The questionnaires are the PHQ8, GAD7, The Warwick-Edinburgh Mental-Well Being Scale and the Rosenberg Self-Esteem Scale. The number of steps will also be measured at baseline (T1) prior to randomization, and Time 2 (T2; the end of the trial) via a screenshot on the device’s application (Health for iOS or Google Fit for Android) . Academic grades will be measured at T1 (baseline) and T2 (one month after randomization).

Keywords

*Social media, youth, health, education*

1. **Introduction**

Increasing social media use has shown a correlation between social media use and decreased mental health among young people (1). Younger age groups are accessing smartphones at an increasingly younger age, with the average age of receiving the first mobile device at age 10 (2). Social Networking Sites (SNS) are the highest drivers of engagement on smartphones among youth and adolescents. SNS websites enable users to upload media (photos and videos) as well as communicate through likes, emojis, and direct text messages with other users labelled as “followers” or “friends” from anywhere on the go. Studies suggest that derived feedback in the form of “likes” on these platforms share the same principles as social rewards which activate the same dopaminergic reward pathways in the brain as positive recognition by loved ones (3). NHS Digital has reported an increase in the prevalence of mental health disorders which accompany the increase of SNS amongst youth (4). Eight systematic reviews published to date have reported a correlation between increased screen time and decreased mental health (5). There is also evidence which suggests that excessive internet use is correlated with poorer sleep (6).

Correlations between social media use and decreased mental health have primarily been investigated using cross-sectional designs, therefore no study to date has established the direction of these associations. A feasibility randomized control trial (RCT) design, in which one group of participants is allocated, at random, to having social media access blocked and another to continuing using social media as usual, may be able to shed some light on whether it is feasible to undertake a larger study to test the effect of social media use restriction on mental health, sleep, academic grades, the number of steps and to establish the likely direction of any effects.

**2.Study Objectives and Design**

**2.1 Study Objectives**

**Primary Objective**

To assess if more than 80% of participants allocated to the intervention group can entirely disconnect from social media platforms (Facebook, TikTok, Instagram, Twitter and Snapchat) for 1 month.

**Secondary Objective**

To measure if social media use has an impact on academic performance (grades), sleep quality, sleep duration, physical activity (steps), overall mental well-being and self-esteem.

**Primary Endpoint**

Social media use will be measured by weekly screenshots of social media screen time activity for 1 month.

**Baseline Measures and Secondary Endpoint**

These will be measured at T1 and T2, 1 month following the initial randomization

* Overall academic achievement is measured by grades in Term 1, compared to grades in Term 2, 1 month following the initial randomization
* Sleep outcomes: sleep duration and sleep quality measured via a validated smartphone app
* Mental health: overall mental well-being and self-esteem will be measured via a validated mental health questionnaire (PHQ8, GAD7, The Warwick Edinburgh Mental-Well Being Scale, and The Rosenberg Self-Esteem Scale)
* Number of steps and physical activity will be measured via the built-in health app on iOS devices, and Google Fit on Android devices

**Additional Baseline Assessments**

In addition to the outcomes detailed above, socio-demographic variables will also be collected as follows: Age, Ethnicity, Gender. University and whether they are postgraduate or undergraduate students.

**2.2 Study Design and Flowchart**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Screen Online Visit | T1 (Baseline Assessment) | T2 (1 month post-baseline) |
| Participant Information and Informed Consent | X |  |  |
| Sociodemographic Variables |  | X |  |
| Sleep Quality and Duration |  | X | X |
| Grades |  | X | X |
| Mental Well-Being |  | X | X |
| Number of Steps |  | X | X |

*\*Screenshots of Social Media Activity (Screen-Time) will be collected on a weekly basis*

**Methodology**

A feasibility RCT will be conducted to establish whether blocking access to social media has an impact on mental health and wellbeing, academic achievement, number of steps (physical activity), and sleep quality and duration; and to estimate the likely effect size of social media use on these variables. University students will be randomly allocated to deactivate all their social media accounts (Facebook, Twitter, Snapchat, Instagram and TikTok) or continue using their social media accounts as usual (blocking vs exposure).

**Recruitment and Data Collection**

Using online recruitment strategies such as placing adverts on social media platforms and through university student group channels will allow for adequate recruitment of participants

**Inclusion Criteria**

University students aged 18+ years who are active social media users (at least daily use)

**Exclusion Criteria**

Participants who use sleep or sedative medication

**Criteria for Premature Withdrawal**

A subject unwilling to continue with the study.

**Procedure**

Baseline outcome measures will be completed following consent using an online mental health questionnaire to measure mental health, wellbeing and self-esteem; academic grades will be self-reported; number of steps will be collected via a screenshot; social media screen activity will be established via a screenshot, and sleep quality and duration will be measured via a sleep-measurement mobile device application (T1). Following this, participants will be randomized to undergo one of the two possible conditions: 1. Deactivation of all SNS accounts as listed above; 2. Carry on using their social media accounts as usual (no intervention). All participants will be followed up after 1 month, and the outcomes will be measured using the same method as at baseline (T2).

**Randomization and Masking**

Randomization will take place after the baseline research assessment. Randomization will be carried out at an individual level, at a 1:1 ratio and will be stratified by university using a non-deterministic minimization algorithm. It will not be possible to mask the participants to whether they are using social media or not. All study investigators will be unmasked. Academic markers will not be aware of the participants’ allocation.

**2.3 Study Flowchart**

T2 Follow-up assessment

T2 Follow-up assessment

Analysis: N~80

allowing for ~20% drop-out

Obtain consent, conduct baseline assessments (T1; N=100)

Exposure (N=50)

Blocking (N=50)

Randomization

**6. Sample Size, Statistics, Selection and Withdrawal of Participants**

**Recruitment and Data Collection**

Using online recruitment strategies, such as placing adverts on social media platforms and through university student group channels will allow for adequate recruitment of participants

**Inclusion Criteria**

University students aged 18+ years who use social media daily

**Exclusion Criteria**

Individuals taking any sedatives or sleep medication

**Criteria for Premature Withdrawal**

A subject unwilling to continue with the study

**7. Study Procedures**

**Informed Consent Procedure**

Participants will be asked to complete electronic consent forms prior to participation in the study. Participants will be asked to read information sheets with explanations of the aims, methods and potential hazards of the study. Prospective participants will be given a week to consider giving consent to participate in the study. The document will also highlight the fact that individuals may refuse any involvement in the study or opt out at any point during the study as well as have their data destroyed.

**Risks/Burdens**

Deactivating SNS platforms may be a burden to some participants. Reactivating accounts can be done simply by logging into the platform again. Participants will be free to do so at any point during the study.

**Screening Procedures**

The screening procedure a subject will undergo prior to their eligibility/entry into the study is to ask if they take any medication which specifically alters/mediates sleep (such as the use of sleeping pills).

**Randomization Procedures**

Randomization will take place after the baseline research assessment. Randomization will be carried out at an individual level, at a 1:1 ratio and will be stratified by university and age group using a non-deterministic minimization algorithm. It will not be possible to mask the participants to whether they are using social media or not. All study investigators will be unmasked.

**Follow up Procedures**

Follow up will be conducted to measure any changes in sleep duration and quality, grades, self-esteem, number of daily steps and overall mental health and wellbeing at T2, one month after baseline measurements. These will be measured using the same methods at baseline, in the form of an online questionnaire.

**End of Study Definition**

Once T2 measures are taken and the data is coded into statistical software.

**8. Sample Handling and Laboratories**

**Data Recording/Reporting**

The data will be collected by Qualtrics and exported into a statistical software programme. The data will be destroyed and deleted after 7 years.

**9. Assessment of Safety**

There are no serious adverse effects that are expected to occur during this study. All data collection will be done by Qualtrics and contact with the participants in the study will be done via emails or online calls.

**10. Study Oversight Arrangements**

All data monitoring will be done in line with standard GDPR regulations

**11. Ethics & Regulatory Approvals**

Ethics will be obtained via King’s College REMAS

**12. Data Handling**

**Confidentiality**

To ensure that anonymity from the onset of the study, recruited participants will be allocated a study number. No one other than the research team will have access to the information to ensure that subject anonymity is protected and maintained.

**Record Retention and Archiving**

All anonymized records will be deleted after 7 years

**Compliance**

The trial will be conducted in compliance with the principles of the Declaration of Helsinki (1996) and in accordance with all applicable regulatory requirements including but not limited to the UK policy framework for health and social care research, Trust and Research Office policies and procedures and any subsequent amendments.

**13.Finance and Publication Policy**

No funding will be required for the study. The study will be registered on ISRCTN.

**References**

1. Trust SLaMNF. Mental Health of Children and Young People in England - new data published: South London and Maudsley NHSFoundation Trust 2018; 2018 [Available from: <https://www.slam.nhs.uk/media/news/mental-health-of-children-and-young-people-in-england-new-data-published>

2. Rideout V. The Common Sense Census: Media Use by Tweens and Teens. 2015

3. Marchant A, Hawton K, Stewart A, Montgomery P, Singaravelu V, Llyod K, et al. A Systematic Review of the relationship betweeninternet use, self-harm and suicidal behavior in young people: The good, the bad and the unknown. (1932-6203)

4. Ofcom. Children and Parents: Media Use and Attitudes Report 2018. Ofcom; 2019

5. Stiglic N, Viner RM. Effects of screentime on the health and well-being of children and adolescents: a systematic review of reviews.BMJ Open. 2019;9(1):e023191

6. Alimoradi Z, Lin CY, Brostrom A, Bulow PH, Bajalan Z, Griffiths MD, et al. Internet Addiction and sleep problems: A systematic review.Current Psychiatry Reports. 2014; 16(4):444