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Methods, strategies, and incentives to increase response to questionnaires and surveys among adolescents

Protocol for a methodological systematic review

Summary

Questionnaires and surveys are commonly used for data collection in epidemiological studies, but non-response or poor representativeness reduces the effective sample size and introduces bias.

The goal of this methodological review is to identify effective methods, strategies, and incentives to increase response to questionnaires and surveys among adolescents.

An iterative search strategy to May 2022 developed by an information specialist will be employed. We will assess the eligibility of each trial using pre-defined criteria. We will include randomized controlled trials (RCTs) or quasi randomized in first instance and non-randomized (controlled studies) in the event there are not enough RCTs or quasi RCTs.

To maximize efficiency, we will use machine learning functions in the systematic review software EPPI-reviewer. We will extract data on trial participants, the intervention, the number of randomized to intervention and comparison groups. If data is available, for each strategy we will estimate pool odds ratios and 95% confidence intervals in a random-effect model. We will assess evidence for selection bias if the number of trials allow us. The heterogeneity among trials will be explored using Chi^2 test and the degree of incosistency between trial results with I^2. If statistical pooling is not feasible, we will use the Synthesis Without Meta analysis (SWiM) guideline checklist to report the results narratively.

Title:
Methods, strategies and incentives to increase response to questionnaires and surveys among adolescents.

Protocol for a methodological systematic review

Due date:
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Background

Description of the problem

At 1.8 billion, young people aged 10-24 comprise more than a quarter of the world's population (1). Investing in adolescent health and wellbeing is a priority to achieve the Sustainable Development Goals. Societies typically define adolescence in terms of age and social roles with little consistency between countries. In this project, adolescents are defined as those aged 12–19 years. Other terms found in the literature for this group are "young people" or "youth." Adolescents-are individuals who are going through biological changes and social-role transitions. (2). Other definitions used in this project can be found in the glossary.

Adolescents face many challenges during this period (3). According to a report from the World Health Organization (WHO) leading health issues of adolescents include alcohol and tobacco use, unsafe sex, road injuries, poor diet, inadequate physical activity, diseases such as tuberculosis and mental disorders. In 2019, suicide was the fourth leading cause of death in 15–19-year-old adolescents (4). Health risk behaviors and mental health problems are associated with morbidity and premature mortality among adolescents. Understanding the magnitude of the problem may improve adolescent health status and approaches to prevention. Surveys and questionnaires are common means of collecting data. However, declining response rates are a common challenge to epidemiological research (5). Response rates are particularly low among young people (6) especially low in marginalized populations such as adolescents with mental health or substance use disorders.

Surveys are widely used in the collection of data in epidemiological studies; they "question individuals on a topic and then describe their responses" (7). Survey research can use quantitative strategies (e.g., questionnaires with numerically rated items), qualitative strategies (e.g., open-ended questions), or both strategies (i.e., mixed methods) (8). As stated previously, a current challenge in health-and social care related survey is the declining response rate with many studies having response rates below 50% (9). Non-response bias, sampling bias, or measurement bias can affect the validity of epidemiological studies (10). Several factors may contribute to willingness and motivation to respond in questionnaires/surveys. The literature also reports on factors that enhance survey responses as financial compensation. Also, a possibility to choose time and location could enhance participation.

It is not well known how survey response patterns among general population are affected by different methods of data collection, i.e., online survey, mailed survey and telephone interview. A recent study from Norway that compared mailed, mailed combined with online option, and fully online option for responding found that response rates were above 60% for a group of people receiving only a mailed questionnaire, but only 42% for a separate group of people who only could respond online. In another study from Minnesota, even much lower response rates were achieved using an online only data collection method (14% in the online survey vs. 33% in a mailed survey)(11). The identification of effective methods, strategies or incentives to increase adolescent response to questionnaires could improve the quality of health research (12).

Description of methods being investigated

Strategies and incentives to improve adolescent recruitment to participate in surveys include those designed to generate maximum data return or compliance and follow up procedures that aim to collect data from participants. These methods, strategies and incentives can include how outcomes are collected (e.g., electronic or paper based); who collects the outcomes (e.g., participant reported or routinely collected data), when are collected and consider where outcomes are collected (e.g., home, school).

Why is important to do this review?

Representation is important in the conduct of surveys. A representative sample is one that has strong external validity in relationship to the target population the sample is meant to represent (13). It is important to identify factors associated with health survey response, focusing on a variety of socioeconomic, or health related factors to confirm whether factors associated with survey response differ between type of data gathering strategies (e.g., online, mailed survey, telephone interview) or incentives used (e.g., cash, gifts).

Objective

The aim of this systematic review is to identify effective methods, strategies, and incentives to increase response to surveys among adolescents. Our systematic review primary focus is on mental health and substance disorders.

Methods

This is a methodology systematic review (14). This type of review aims to investigate research methods and possibly their impact on research-related outcomes (e.g., representativeness). Although this protocol is not for a health intervention review, we will follow reporting items for systematic reviews and meta-analysis protocol (PRISMA-P / Appendix 1) checklist with not applicable indicated for items not pertaining to methods review (15). We will also follow guidance to the contents of a Cochrane Methodology protocol and review (16).

Search strategy

Search strategies are required to capture published reports on relevant studies to the review's objectives. We will develop and undertake the literature searches, designing them around the eligibility criteria.

In collaboration with the team (methods and content experts), an information specialist (EH) will plan, execute, and document the process of information retrieval. This will be done in several steps (i.e., iterative process) Figure 1 presents the search strategy and screening process for the reader. The figure presents the process a "linear" (e.g., step 1, step 2) however, this process will require flexibility and adaptation. The steps planned are as follows:

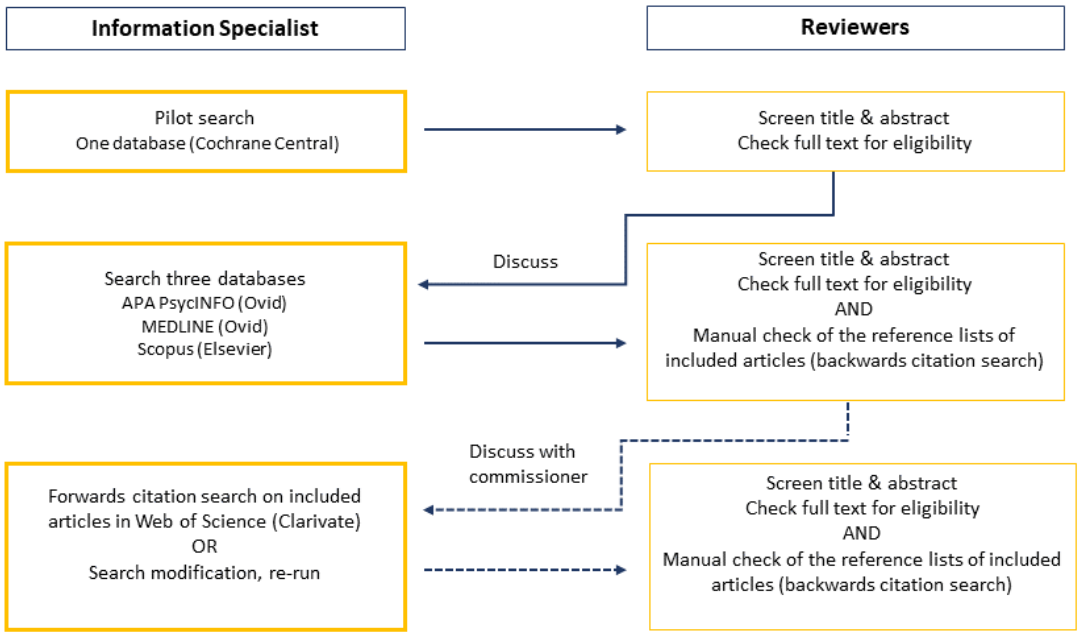
a. A pilot search will be developed and tested in one database. Reviewers will screen and discuss the output with the information specialist. Screening will use Rayyan software at this stage (17).
b. Following, we will search three bibliographic databases, APA PsycINFO (Ovid), MEDLINE (Ovid) and Scopus (Elsevier). The structure of the search will reflect the eligibility criteria (see next paragraph), and combine the following concepts:
    - topic of interest (adolescent mental health and substance disorders),
    - target group (adolescents – 12-19 years),
    - data collection methods (questionnaires/interviews in general with a mental health or substance disorder component/item),
    - outcomes (response rates/representativeness/prevalence estimate variations across methods)
    - study design (randomized controlled trial and non randomized controlled trials for the step wise process mentioned below).

For each concept, we will use keywords in title and abstract as well as terms from the database indexing language in MEDLINE and PsycINFO. The strategies will then be adapted to the search syntax and functionality of the databases. Prior to executing the searches, another librarian will peer review the strategies. The search strategy used in MEDLINE is shown in Appendix 2.

c. Then, two reviewers (JB, JFME, EH) will proceed to screen title/abstract as well as full text. See *Screening* section below for further details.
d. The reviewers will then manually check the *reference lists* of included articles for further relevant studies (i.e. backwards citation searching). Reviewer will screen title/abstract as well as full text.
e. If step "d" identifies either > 10% relevant references missed by the database searches, we will discuss with the content experts wheather we have retrieved enough documentation for their needs or wheather we should either:
    - modify the search strategies, and rerun them,
    - run forwards citation searches on included articles in Web of Science (Clarivate).

We will document the steps of the information retrieval process and provide complete search strategies in the final report to meet standard requirements for clear formal reporting.

Figure 1. Search strategy and screening process



Where possible, the search results will be downloaded to a bibliographic software (i.e. EndNote) for semi-automated deduplication based mainly on the title, author and digital object identifier (DOI) fields of records. We will then upload the unique references to EPPI Reviewer software (18) for screening.

Eligibility Criteria

The elements suggested for inclusion in this review are listed in Table 1.

Table 1. Elements considered for inclusion in this review

Type of studies	We will include completed randomized-controlled trials (RCTs) even if the methods used to generate the random sequence were unclear or unreported or if the methods to allocating participants was likely to be quasi-random (i.e., that is have used alternation, date of birth or case record number as a method of randomly allocating participants) trials in first instance. We will consider non-randomized (controlled studies) in the event there are non-enough RCTs or quasi randomized trials that answer our research question or if the RCTs have contrasting evidence (e.g., less than 5 RCTs or small unpowered trials i.e., including <50 participants). Parental consent for participation may be mandatory in several countries. We will include studies where parents or guardians complete the questionnaire on behalf of or with the adolescent.
Type of data	We will include data that assessed the effects of methods, strategies, and incentives to increase adolescent response to surveys. Adolescents of all genders, ethnic and cultural groups shall be included in the studies. Strategies within real settings are eligible for this review. Studies of hypothetical survey studies (that ask potential adolescents whether they would take part in a survey if it was run but the survey does not actually exist) are not eligible. We will not include studies of recruitment or retention strategies. Studies addressing mental health and substance disorders (including all disciplines and disease areas) will be considered.
Type of methods and comparisons	Any methods, strategies, and incentives designed to increase response rate are included; of specific relevance are modes on how to administer the study questionnaire or survey. They can be compared to each other or to usual study procedures. We describe some potential scenarios below, but other strategies and incentives identified during the review process will be included. Potential (but not exclusive) methods, strategies and incentives could include the following: **Motivational**, for example

	Monetary, gifts and non-monetary **Communication**, for example Personalization of letters, birthday cards Assurance of anonymity Video conferencing (i.e., zoom, Teams, Skype) **Methodological**, for example Alternative lengths or styles of questionnaire Alternative format/delivery (paper-based, web based) **Social**, for example Scheduling research assessments together with others Strategies encouraging family support.
Outcomes	a. Response rate: Including but not exclusive to proportion of completed survey/questionnaires returned after first round or all rounds if available b. Representativeness: including but not exclusive to descriptors of the sample such as racial identity, geographical distribution, socio-economical characteristics, mental health status, health status c. Prevalence estimates variations across different methods, strategies and incentives Where possible thorough descriptions will be made of survey/questionnaire design and strategies on recruitment.
Setting	General population or population with mental health and substance disorders in a community setting (e.g., high school, home). Studies conducted in high income countries according to the World Bank classification.
Language	Inclusion will be limited to articles the team can translate (Spanish, Italian, French, Portuguese, Scandinavian languages, English)- We will list articles meeting our criteria that the team cannot translate identified via an English title/abstract
Year	2007 (inception of the smart phone) to present

Exclusion criteria

- Cohort studies with embedded randomised trials will be excluded.
- Studies in which ≥ 51% of subjects are <10 or >19 years.
- Studies with a publication date earlier than 2007.
- Setting including institutionalization (i.e. mental health institution or healthcare facility, detention centres).

- Editorials, comments will be excluded at search stage; conference abstracts will only be considered if they provide additional information for trials published in full.

Screening

Record assessment involves several stages:

- The *titles and abstracts* of records will be assessed for relevance against the eligibility criteria by double independent reviewer selection with disagreements adjudicated by a third reviewer.
- We will obtain the *full text* of potentially relevant trials, and these will be assessed for relevance against the eligibility criteria by double independent reviewer selection with disagreements adjudicated by a third reviewer.
- We will record the number of records included and removed at each stage in the PRISMA flow diagram including any machine-assisted decisions (19, 20). Studies excluded after assessment of the full document will be described in a table with the reasons for exclusion.
- We will obtain electronic or paper copies of potentially relevant full papers meeting the eligibility criteria in liaison with the Norwegian Health Library (Helsebibliotek) or via local access routes.
- We will share the final selection of studies with our teammates, and we will discuss any issues before proceeding to the second search phase.
- Where results for one trial are reported in more than one paper, all related papers will be identified and grouped together to ensure that participants in individual trials are only included once.

Screening will be done iteratively and using a stepwise strategy following the search described above:

a. The eligibility criteria (Appendix 3) will be piloted in approximately 200 studies by two reviewers (JB and JM) independently to ensure its consistent application.
b. We will use a stepwise inclusion strategy with RCTs and quasi RCTs being screened first, and non-randomized at a second stage, if needed. See *machine learning functions* below for further details.
c. The search strategy will be reviewed and adapted as needed and screening following the steps above repeated following the second search.

Machine learning functions

To maximize efficiency, we will use machine learning functions in the systematic review software EPPI-reviewer (21) in the screening and study selection processes. Simply put, the supervised machine learning methods that we use are trained on our decisions, such that they can predict how we would make those decisions consistently on unread studies. This allows us to reduce the amount of manual assessment. We expect to save 60-90% time in the screening phase using these machine learning methods compared to manual procedures (22). Guidance will be provided by the machine learning team at NIPH, of which JFME is also a member.

We will run the Cochrane RCT classifier to identify and automatically exclude the studies that are least likely to be RCTs, without having to assess them. The classifier also helps us to prioritize the most likely RCTs to be assessed for eligibility first. We will automatically discard all studies with <0.27% predicted likelihood to be an RCT. Automatically excluding studies under this prediction threshold provides a recall of more than 99%. The Cochrane RCT classifier has been built, tested, and validated with tens of thousands of studies from the CENTRAL database and is a recommended practice for all Cochrane authors (23).

Throughout screening, we will use EPPI Reviewer's "priority screening" function. Priority screening is a ranking algorithm that continuously learns from reviewer decisions of screening based on title and abstract text and pushes relevant studies to the front of the screening queue. It allows relevant studies to be identified and included almost immediately by reviewers in the screening process; conversely, studies reserved for the end of the queue are very likely irrelevant (22, 24). We will establish the baseline inclusion rate by manually screening and piloting inclusion criteria on a random sample of 300 studies, before using a ranking algorithm. After a plateau of irrelevant studies has been reached (we anticipate 200 in a row), we will cease manual assessment and confidently assume the remaining unread studies are irrelevant.

The eligibility assessment of the studies predicted to be an RCT will be conducted in two steps. First, we will go through the studies predicted to be an RCT with more than 9% likelihood. We will then assess the studies that obtained ≤9% likelihood of been an RCT to capture additional relevant studies that might have been missed considering the research question's complexity. We will follow the procedures described in the screening section above (e.g., two independent and blinded reviewers).

If there are many studies left to be screened, we will test and train a custom classifier. A custom classifier learns from dichotomous screening decisions and gives a prediction of the likelihood that remaining unscreened studies will match the inclusion criteria. We will test our classifier on at least 50 studies, with three iterations, and will attempt to select a cut-off for automatic exclusion, below which no relevant studies would have been misclassified, i.e., a recall of 100% (22). We will automatically screen these studies and manually screen the remaining. We will report the size, characteristics, and precision/recall statistics of training and testing data used to build the classifier.

Data extraction

Data extraction will be done by double independent reviewers; we will pilot data extraction forms on a sample of five included studies to ensure consistent coding. We will extract data on the characteristics of the studies, method evaluated, population, risk of bias (described further below), response proportion achieved at first and consequent questionnaires attempts. If time allows, trialist will be contacted where information is missing. Where details on questionnaire/survey design is available, we will describe it. Any disagreement will be arbitrated by a third author.

Data synthesis

Narrative Summary

We will provide a narrative review that critically appraises individual studies and presents their results in the table format suitable for journal submission.

Meta-analysis

We will assess whether there is sufficient similarity and availability of data in the studies to undertake statistical pooling in the form of a meta-analysis. The meta-analysis will include subgroup and sensitivity analyses, which we describe bellow.

Data analysis: trials will be grouped according to the type of methods/incentives evaluated. Statistical evidence of heterogeneity trials' results will be sought by standard methods and funnel plots and regression test conducted if possible. The effects will be expressed as response proportion differences with 95% confidence intervals.

For dichotomous outcomes (response rates) risk ratios and their 95% confidence intervals will be calculated to determine the effect of methods, strategies, and incentive. It is not clear how participant responsiveness will be measured (if at all), so we will examine the data available and then determine the most appropriate effect measure.

If statistical pooling is not feasible, we will use the Synthesis Without Meta analysis (SWiM) guideline checklist to report the results narratively (25).

Subgroup analyses and investigation of heterogeneity

To explore whether different aspects of the trial design influence the effect of strategies or incentives, subgroup analyses are planned according to:

- The type of strategy used (for example, for incentives, the value of the incentive will be considered and the type of gift; and for communication strategies, the types of communication strategies could include electronic, postal, telephone, social, educational, or motivational).
- Whether the strategy was compared with usual follow-up or other strategies.
- Whether in community or school settings.
- Whether assessment of strategies or incentives was immediate or longer term (for example, if a response to a questionnaire is expected immediately or at time points in the future).

These analyses will focus on the primary endpoints of response rate and representativeness. Trials will again initially be pooled within subgroups using the fixed effect model and heterogeneity quantified. We will assess whether these subgroups have a differential impact on response rate and representativeness using the test for interaction. If any heterogeneity cannot be explained either within subgroups or across all trials, we will use the random effects model to assess the robustness of the results to the choice of model. If these results are very inconsistent and/or heterogeneity is excessive (i.e. >70%), we will consider not pooling trials.

Sensitivity analyses

If any quasi-randomized trials are identified, we will conduct sensitivity analyses to assess the robustness of the results to the inclusion and exclusion of these trials. Further issues suitable for sensitivity analysis will be identified during the review process.

We will evaluate the influence of risk of bias on our results with a sensitivity analysis. We define trials at 'low risk of bias' as having low risk of bias on all domains and trials with one or more unclear risk of bias domain as trials at 'high risk of bias'.

Quality appraisal

Following systematic review guidance, two reviewers (JB, JFME) will assess the risk of bias of RCTs and quasi RCTs using Cochrane's risk of bias tool (RoB) 2.0 (26).
The Cochrane RoB 2 tool is available online website.

The data extractors will independently categorize the risk of bias domains according to the guidelines in the *Cochrane Handbook for Systematic Reviews of Interventions (27)*. The RoB 2 is outcome based and appraises the following domains: bias arising from the randomization process; bias due to deviations from intended interventions; bias due to missing outcome data; bias in measurement of the outcome; bias in selection of the reported result; and an 'Overall risk of bias'. The overall risk of bias judgement will be categorized as "low" risk of bias; as "some concerns", or "high" risk of bias.

The risk of bias of non-randomized trials will be assessed with QUIPS or Newcastle Ottawa Scale depending on the study design.

We will assess conflicts of interest in the included studies as a separate bias category outside of Cochrane's risk of bias tool. We will assess both financial and non-financial conflicts of interest.

Certainty of Evidence

We will use the GRADE approach to construct a summary of findings table to document review outcomes. GRADE evaluates the quality of a body of evidence based on the confidence that an effect estimate or association reflects the item being assessed. These considerations will be based on within-trial risk of bias, directness of evidence, heterogeneity of data, precision of effect estimates and risk of publication bias (28). Table 2 presents GRADE working group grades of evidence.

Table 2. GRADE working group grades of evidence.

High quality	⊕⊕⊕⊕	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate quality	⊕⊕⊕◯	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality	⊕⊕◯◯	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low quality	⊕◯◯◯	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Other assessments

No ethics approval was required as no human subjects were involved.

Deliverables

Main deliverable

The main deliverable from this work will be a systematic review in journal article form. We plan to publish the full study open access in a peer reviewed journal, and disseminate the findings via social media (Twitter, and author affiliated websites).

Another deliverable

We will (upon mutual agreement) hold a presentation of results from this process. This protocol will be registered in Cristin (cristin.no) and be posted on www.fhi.no.

Peer review of project plan and report

This protocol has been peer reviewed internally (HK) prior to its web publication.

Team (review authors) and adolescent involvement

The project team are employees of two departments at Norwegian Institute of Public Health including content experts from the Department of Child and Development (LB, HA, GSB) and methods experts to the Division of Health Services (JB; JFME; EH). The team will meet regularly to discuss progress, to clarify procedures, and to work collaboratively in the production of this review.

Adolescents, or their parents or guardians, were not involved in the design of our research protocol.

Financial support, sponsor, role of sponsor

The Department of Child and Development and the Division of Health Services are two departments within the Norwegian Institute of Public Health. Project authors are government employees; however the Norwegian Government had no role in study design,

or will have in data collection and analysis, decision to publish, or preparation of the manuscript.

Timetable

Start date: 05.04.2022 date for clarification of questions for interests
Delivery date : 01.12.2022, agreed date for submission to the Department of Child and Development

The following timetable is made assuming max 20 included studies; adjustments will be necessary if the number exceeds 20.

Steps/process	**From**	**To**
Development and publishing of project plan	05.04.2022	28.06.2022
Development and conduct of literature search	25.04.2022	13.05.2022
Screening phase I: title and abstract full text	13.05.2022	28.06.2022
Screening phase II: title and abstract full text	28.06.2022	15.07.2022
Data extraction, assessment of risk of bias	15.07.2022	12.08.2022
Initial grouping and draft analyses plan	12.08.2022	31.08.2022
Analyses	01.09.2022	30.09.2022
Assessment of confidence in the results	03.10.2022	07.10.2022
Collaborative writing of manuscript first draft	10.10.2022	31.10.2022
Circulating final manuscript and journal formatting	07.11.2022	25.11.2022
Submission	07.12.2022	

Measures in case of delay

- If conditions arise that pose a risk for what the delivery deadline cannot be met, such as unforseen long term absence among the project staff, or larger number of hits or included studies than expected, one or more of the following measures will be taken:
    - Increased or replacement of project staffing to meet the agreed deadline,
    - Further delimitations in inclusion criteria (in agreement with stakeholders),

Glossary

Adolescent: The WHO has traditionally defined adolescence to be the age between 10 and 19 years, youth between 15 and 24 years, and young people between 10 and 24 years (29). Adolescence can be further divided into early (10-13 years), middle (14-16 years), and late adolescence (17-19 years) according to Sawyer et al. (30)

Bias: A systematic error or deviation in results or inferences from the underlying 'truth'. See also selection bias; performance bias; attrition bias; detection bias and reporting bias.

Child: Defined by the Convention on the Rights of the Child (1989) as a person younger than 18 years, unless majority (i.e., the legal threshold of adulthood) is attained at a younger age in a particular country (31).

Cross sectional study: A study that examines the relationship between diseases (or other health related characteristics) and other variables of interest as they exist in a defined population at a particular time.

Estimate of effect: The observed relationship between an intervention and an outcome expressed as, for example odds ratio, risk difference, risk ratio, hazard ratio, standardised mean difference, weighted mean difference, number needed to treat.

Funnel Plot: A graphical display of study precision such as the standard error plotted against effect size that can be used to investigate biases associated with small trials (including publication bias).

Heterogeneity: In systematic reviews heterogeneity refers to variability or differences between studies. A distinction is sometimes made between statistical heterogeneity – differences in the effect estimates methodological heterogeneity – differences in study design clinical heterogeneity – differences in participants, interventions or outcome measures

Meta analysis: Statistical techniques used to combine the results of two or more studies and obtain a combined estimate of effect.

Prevalence: the proportion of a population who have a specific characteristic in a given time period (32). Ways to estimate prevalence:

- **Point prevalence** is the proportion of a population that has the characteristic at a specific point in time.

- **Period prevalence** is the proportion of a population that has the characteristic at any point during a given time period of interest. “Past 12 months” is a commonly used period.
- **Lifetime prevalence** is the proportion of a population who, at some point in life has ever had the characteristic.

Quasi randomized study: unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria.

Randomization: The process of allocating participants to one of the groups of a randomized controlled trial using (i) a means of generating a random sequence and (ii) a means of concealing the sequence, such that those entering participants to a trial are unaware of which intervention a participant will receive. This should ensure that intervention groups are balanced for both known and unknown factors.

Randomized controlled study: These are trials where participants (or clusters) are randomly allocated to receive either intervention or control. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment (33).

Response rate: The number of respondents who complete a questionnaire compared to the number assigned, usually expressed as a percentage. (34)

Survey: An epidemiologic **survey** consists of simultaneous assessment of the health outcome and exposures as well as potential confounders and effect modifiers. A survey is considered a cross-sectional study. Some epidemiologists may call it a prevalence study (35).

Sensitivity Analysis: an analysis used to test the robustness of findings and determine how sensitive results are to the data that were included and/or the way that analyses were done.

Teenager: Refers to people aged 13–19 years. The term was first used in the USA in the 1920s, and became widely used within popular culture after World War II.

Young people: A less formally defined term that generally refers to people aged 10–24 years, as does the composite term adolescents and young adults (36). When data are reported, the 10–24 year age range is increasingly being divided into three categories: 10–14 years (early adolescence); 15–19 years (late adolescence); and 20–24 years (young adulthood) to appropriately examine the extent of changes in health that take place during these years.(37)

Youth: The United Nations defines youth as people aged between 15 years and 24 years, a definition made in the lead up to the International Youth Year of 1985.

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Appendices

Appendix 1. PRISMA Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al**:** Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 **4**:1

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	X		1-5
Update	1b	If the protocol is for an update of a previous systematic review, identify as such		X	NA
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract		X	NA
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	X		Page 2 See Cristin
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	X		Methods section and page 13
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments		X	NA
Support					
Sources	5a	Indicate sources of financial or other support for the review	X		13-14
Sponsor	5b	Provide name for the review funder and/or sponsor	X		13-14
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	X		13-14
INTRODUCTION					

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
Rationale	6	Describe the rationale for the review in the context of what is already known	X		3-4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	X		4
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	X		7-8 and appendix 3
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	X		5-6
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	X		Appendix 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	X		9-10
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	X		9-10
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	X		10
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	X		7-8
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	X		7-8
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	X		12
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	X		11

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	X		11
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	X		11-12
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	X		11
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	X		NA
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	X		12-13

Appendix 2. Search strategy used in Ovid MEDLINE
Database(segment): Ovid MEDLINE(R) ALL <1946 to [Month Date] 2022>

#	Search terms
1	Adolescent/ or (adolescen* or teen? or teenager? or young people or youngster? or youth).ti,bt,ab,kf. or (freshm?n or ((grammar or high or intermediate or middle or second*) adj2 school*) or gymnasia or gymnasium or highschool* or sixth form or sophomore?).ti,bt,ab,kf. [age group; incl. schools]
2	"Mental Health"/ or "Adolescent Health"/ or ((emotional* or mental* or psycho* or social*) adj3 (health? or well-being or wellbeing)).ti,bt,ab,kf. or (addict* or ADHD or adolescent health or affective or alcohol or anxiety or behavior* or behaviour* or cannabis or cognitive* or ((conduct or disruptive or eating or oppositional defiant) adj disorder?) or depress* or distress* or emotional* or feeling? or happiness or hyperactivity or maladjust* or mari?uana or mental* or mood or neuro-development* or neurodevelopment* or psychiatric* or psychological* or psychosocial* or recilien* or restless* or self-efficacy or self-esteem or (self adj (harm or injur*)) or smoking or social* or "strength and difficulties" or substance or suicid* or tobacco or wellbeing or well-being).ti,bt.
3	Cross-Sectional Studies/mt or Health Surveys/mt or "Surveys and Questionnaires"/mt or Interviews as Topic/mt or Interview, Psychological/mt or ((Cross-Sectional Studies/ or Health Surveys/ or "Surveys and Questionnaires"/ or Interviews as Topic/ or Interview, Psychological/) and (Bias/ or Methodology/ or "Patient Selection"/ or "Selection Bias"/))
4	((interview* or questionnaire? or survey?) adj10 (bias* or instrumentation or mode or modes or non-participat* or nonparticipat* or nonrepresentativ* or non-respon* or nonrespon* or over-represent* or overrepresent* or refusal* or representativ* or response frequenc* or response rate* or sampl* error* or sampling or selection error* or underrepresent* or underrepresent*)).ti,bt,ab,kf.
5	1 and 2 and (3 or 4)
6	limit 5 to yr="2007 -Current"

Appendix 3. Screening criteria

Level One screen

Based on stepwise screening (RCT[1] then nRCT[2]) title and abstract of the report:

1. Does the study deal with methods, strategies and incentives to increase response to surveys among adolescents with mental health and addictions

No – exclude, **Yes or uncertain** - go to step two

2. Does the study include potential methods, strategies and incentives data such as different survey technologies (paper-and-pencil, web-based, phone, face-to-face) monetary incentives, length of survey, etc?

No – exclude, **Yes or uncertain** – go to step two

3. Does the study deal exclusively community setting (e.g., school)

No – exclude, **Yes or uncertain**- go to step two

4. Does the study include outcomes of interest (at least one)

No – exclude, **Yes or uncertain** – go to step two

5. Is it an RCT or nRCT with appropriate SDMO[3]?

No – exclude, **Yes**– go to step two

Level Two screen

Based on the full text of the report or protocol:

1. Is it an RCT (the study uses terms such as "random", "randomized", "RCT", or "randomization" to describe the study design or assignment of subjects to groups)?

No – exclude reason study design**, Yes -** include and move to data extraction,

2. Does the study deal with adolescents (at least 51% are adolescents included are 10 to 24yrs)?

No – exclude reason population/age group, **Yes** - include and move to data extraction

3. Does the study include potential methods, strategies and incentives data such as different survey technologies (paper-and-pencil, web-based, phone, face-to-face) monetary incentives, length of survey, etc?

No – exclude based on wrong methods, **Yes** – include and move to data extraction

4. Are the outcomes of interest included (at least one) and if yes between-group data provided for the outcomes?

No – exclude, **Yes** – include the study and move to data extraction