The effectiveness and characteristics of mHealth interventions to increase adolescent's use of sexual and reproductive health services in Sub-Saharan Africa: protocol for a systematic review

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Review question

The aim of the review is to determine which mHealth interventions improve uptake of sexual and reproductive health (SRH) services by adolescents in Sub-Saharan Africa.

Primary objectives are:

(i) Describe the components of mHealth interventions addressing SRH for adolescents in SSA

(ii) Evaluate the effectiveness of mhealth interventions addressing SRH among adolescents in SSA

Secondary objectives are to:

(i) Review the cost-effectiveness of mHealth interventions in SSA.

(ii) Assess feasibility of delivery of mHealth interventions by providers in SSA

(iii) Assess acceptability of mHealth interventions to adolescents, and parents in providing SRH information in SSA.

Searches

An electronic bibliographic database search will be carried out to identify peer-reviewed articles that evaluate mHealth interventions for improving uptake of SRH among adolescents in SSA.

Primarily, the following databases will be searched: MEDLINE, EMBASE, CINAHL, PsycINFO, Web of Science, Cochrane Central Register of Controlled Trials (CENTRAL), Scopus and Academic search premier. In addition, other institutional digital databases (WHO Global Health Library, APHRC, UNFPA, Guttmacher Institute, Population Council, and Family Health International) will be searched for peer-reviewed/non-peer-reviewed published/unpublished articles and other repositories (ProQuest, International Bibliography of social sciences, OpenDOAR, Ethos-British Library, Network digital library of Thesis and Dissertation and ZETOC) will be searched for non-peer reviewed grey literature/reports that evaluated mHealth interventions in improving uptake of SRH among adolescents in SSA. The reference list of included studies and any identified systematic review studies/reports will be crosschecked to ensure important studies that may inform the current study are captured. Articles published in peer reviewed journals and grey literature will be eligible for the study.

The search concepts are grouped into three: (i) Sexual and reproductive health; (ii) mHealth; (iii) Sub-Saharan Africa. The search terms will be iteratively developed within each of these search concepts. The keywords and MeSH terms (e.g. as used in MEDLINE) will be effectively combined using Boolean Operators and truncation/wildcards will be applied and modified where appropriate.

There is no restriction in terms of language or Publication year.

The search date is from April to May 2020.

Types of study to be included

Studies to be included in the review are evaluation studies that assess the effectiveness of mhealth interventions: Randomized control trials (RCTs), other experimental and quasi/non-experimental studies.

Condition or domain being studied

The proposed review is within the domain of mhealth and Sexual and reproductive health (SRH) and we adopted the WHO definition in all the key domains.

mHealth or mobile health is defined as a medical and public health practice supported by mobile devices, such as mobile phones, tablets patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. mHealth offers great opportunity to provide timely, accurate and non-judgemental SRH information and services to adolescents. These perceived benefits of mHealth in improving adolescent's health have led to increasing outputs in mHealth interventions in SSA. A systematic review by Lee et al (2017) reported that 487 mHealth programmes were implemented in SSA between 2006 and 2016. However, most of these mHealth programmes in SSA have not been rigorously evaluated.

Sexual and reproductive health (SRH) defined as "…a state of complete physical, mental and social well-being in all matters relating to the reproductive system". It infers that people are able to have a satisfying and safe sex life, the capability to reproduce, and the freedom to decide if, when, and how often to do so. By SRH services, we mean interventions that covers: family planning/contraception, STI including HIV/AIDS and pregnancy/termination-related issues.

Participants/population

The target population is adolescents defined as any person between ages 10 and 19 years (WHO, 2014). However, interventions that focus on young people aged 10-24 years will be considered also as interventions that focus on young people aged 10-24 may likely not be different from those of adolescents aged 10-19 years.

This review will be based on studies conducted in Sub-Saharan Africa (SSA) as defined by the UN Development Program 2020.

Intervention(s), exposure(s)

Any single or multi-component mHealth/mobile health interventions that supports delivery of information, decision-making, behaviour change or risk reduction strategies regarding SRH will be included. mHealth may involve interventions delivered via mobile phones, tablets, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. SRH may include but is not restricted to family planning/contraception; STIs and HIV/AIDS; and antenatal/maternal healthcare

Comparator(s)/control

The comparison group is adolescents who receive standard/normal service delivery or usual SRH services in SSA.

Main outcome(s)

Behavioural include:

Self-reported contraceptive use

Self-reported use of male/female condoms

Incidence of STIs including HIV/AIDS

Incidence of pregnancy termination

Incidence of unsafe termination defined as when a pregnancy is terminated either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both (Ganatra, 2017).

Use of Sexual and Reproductive Health, antenatal, delivery, postnatal care services e.g. clinic appointment.

* Measures of effect

None

Additional outcome(s)

Pregnancy intentions using a validated scale such as London Measure of Unplanned Pregnancy (LMUP) or self-reported planned/unplanned pregnancies

Knowledge of target behaviour(s) and/or risk reduction strategies e.g. contraception

Self-efficacy as defined by study authors

Psychosocial health e.g. depression and/or anxiety measured using a validated scale

Health-related quality of life using a validated scale such as EQ5D or HRQOL

Healthcare costs/cost-effectiveness as defined by study authors

User satisfaction with the intervention

Affective attitudes towards use of the intervention

Perceived burden of compliance with the intervention

Other user feedback on use of the intervention

Attrition (drop-outs with reasons) from the study

* Measures of effect

None

Data extraction (selection and coding)

Studies will be selected following the inclusion criteria. First, study records will be exported and managed by Endnote reference manager with all duplicates removed. The initial title screening of the retrieved records will be completed by one reviewer, and excluded records crosschecked by a second reviewer to ensure relevant papers are not left out.

Second, the titles and abstracts of the records will be screened for relevance. This process will be completed by two reviewers and disagreement resolved by the third reviewer. Full-text articles will be independently screened for inclusion by two reviewers. Disagreements will be resolved by discussion with a third reviewer.

The data extraction spreadsheet will be created using Microsoft Excel to record each included study. The WHO developed mHealth Evidence Reporting and Assessment (mERA) Checklist will be used critically assess the transparency and completeness in reporting of mHealth studies. mERA is a checklist consisting of 16 items focused on reporting mHealth interventions.

The Behavioural Change components of mHealth interventions will be coded using Michie et al (2013) taxonomy of BCTs. Data extraction will be completed by at least three reviewers independently and differences resolved by discussion with a fourth reviewer.

Data on the content, context, implementation features, feasibility, acceptability, cost and behavioural change components of mHealth intervention etc. will be extracted and coded.

Risk of bias (quality) assessment

The included studies will be appraised for methodological rigour/quality using the revised Cochrane risk-of-bias tool for randomized trials and the Robins-I tool for non-randomized studies. Risk of bias assessment will be completed by at least two reviewers independently and differences resolved by discussion with a third reviewer.

Strategy for data synthesis

The results of the search will be reported in full and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram. The extracted data for each included study will be presented in tabular form in a manner that aligns with the objective of the review.

For each outcome, and where relevant data are reported, risk ratio (RR) (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals (CI) will be calculated. Where possible, summary statistics (RR or WMD) will be pooled for statistical meta-analysis using the data synthesis tool from the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI). Heterogeneity will be assessed using the I^2 statistic. Where statistical pooling is not possible a narrative summary will accompany the tabulated and/or charted results and will describe how the results relate to the review's objective and questions.

Analysis of subgroups or subsets

None

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Type and method of review

Systematic review

Anticipated or actual start date

09 April 2020

Anticipated completion date

31 July 2020

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Conflicts of interest

Language
English

Country
England

Stage of review
Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
Adolescent; Africa South of the Sahara; Humans; Records; Reproductive Health Services; Sexual Behavior; Telemedicine

Date of registration in PROSPERO
26 May 2020

Date of first submission
09 April 2020

Stage of review at time of this submission
The review has not started

Stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions
26 May 2020