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# mHealth interventions: Are they effective in enhancing adolescent sexual and reproductive health service uptake?

*Globally, adolescents face challenges regarding their sexual and reproductive health (SRH), such as limited access to contraceptives, condoms, and information on safe sex practices. The widespread use of mobile phone devices has prompted experts to develop mobile health (mHealth) interventions to reach young people more effectively. HSRC researchers have scoped the literature to estimate how these interventions have enhanced SRH knowledge and attitudes among adolescents in low-, middle- and high-income countries. The findings showed that although mHealth interventions may improve SRH knowledge, more research is required to understand the effect of the interventions on influencing SRH behaviours and practices. By **Nazeema Isaacs, Xolani Ntinga, Allanise Cloete and Candice Groenewald***

According to [Census 2022](#), more than 92% of South African households owned at least one working mobile phone, up from 3.3% in 2001. This widespread mobile phone ownership has made cellphone-based interventions a popular method for many forms of public communication. Particularly, mobile health (mHealth) interventions have received growing attention, with much emphasis on the development of interventions that target the sexual and reproductive health (SRH) of young people.

[Evidence](#) suggests a decline in the use of SRH services in various contexts, especially in low- and middle-income countries. This [decline is particularly pronounced among young people aged 10–24](#), who face unequal access to SRH education, services and quality healthcare. Various factors hinder access to SRH services, including social stigma, restrictive policies and procedures regarding abortion and family planning for girls, and the attitudes and behaviours of healthcare professionals towards adolescents.

Over the past decade, researchers in community-based clinics have leveraged digital communication via the Internet, text messaging, and social media to disseminate SRH information to young people. However, providing information alone does not always lead to action or behaviour change. This raises the question of whether mHealth interventions can improve the uptake of SRH services among adolescents.

To address this, HSRC researchers have conducted a [scoping review](#), a type of evidence synthesis that identifies and maps relevant literature related to a specific topic that is of interest to researchers. [The review](#) included published literature that evaluated mHealth interventions and the extent to which the interventions promoted SRH outcomes among young people worldwide. The scoping review analysed 636 articles from four databases – EBSCOhost, Scopus, ProQuest and Cochrane – published between 2012 and 2022. Out of these, 12 relevant articles were identified,

critically appraised and analysed using the [knowledge, attitudes, practices and behaviour \(KAPB\) model](#).

### Findings

The review revealed that some mHealth interventions can potentially improve SRH knowledge among young people. Promising interventions included the [Health Education and Relationship Training \(HEART\) programme](#), the [miPlan app](#), and the [Sexual Health and Youth \(SHY\) intervention](#). While knowledge acquisition seemed to be a favourable outcome, researchers generally agreed that knowledge and awareness of SRH information did not necessarily lead to the adoption of protective SRH behaviours.

Many interventions concentrate on increasing knowledge rather than implementing effective strategies to bring about behavioural change. Behavioural change is complex and multifaceted, often requiring long-term evaluations beyond the scope of many studies. The complexity of adolescent behaviour is influenced by various socioeconomic factors, such as peer pressure, cultural norms, and family dynamics, which result in a gap between knowledge acquisition and behaviour modification.

Practical strategies for behaviour modification can be gleaned from successful interventions that target attitudes and behaviours. For instance, [the HEART intervention](#) showed rapid positive changes in attitudes and assertiveness among adolescent girls. Its effectiveness over a long-term period underscores the importance of addressing specific behavioural domains.

For example, [the intervention recruited](#) participants from four rural, low-income high schools in the United States, who participated in a 45-minute digital sexual health web programme online, featuring interactive games and quizzes aimed at increasing knowledge about HIV and other STDs. Participants gained access to content on five key areas of sexual decision-making: [safer sex motivation, HIV/STD knowledge, sexual norms/attitudes, safer sex self-efficacy and sexual communication](#)

[skills](#). After four months, follow-up with the participants who completed the programme [revealed positive results](#).

### **A need for inclusivity**

The review highlighted a lack of studies that use [mHealth interventions](#) that could provide adolescents with accurate and non-judgmental SRH information and services. Still, none of the studies in [this review](#) specifically focused on lesbian, gay, bisexual, queer and intersex+ (LGBTQI+) youth. Further research is required to elaborate on the scope of current studies and promote a comprehensive understanding of SRH for diverse populations.

SRH initiatives typically prioritise maternal and other reproductive healthcare services aimed at assisting heterosexual and cisgender women, often overlooking the needs of diverse

populations such as transgender individuals. Achieving effective mHealth interventions and improving SRH uptake requires inclusivity, such as access to non-judgmental and gender-affirming SRH services for LGBTQI+ individuals.

### **The way forward: Personalised messages**

To fully unlock the potential of mHealth interventions, it is vital to bridge the gap between knowledge enhancement and behaviour modification. A comprehensive approach is needed, encompassing diverse SRH topics, contextually relevant content, technological advancements, and inclusive techniques to bridge the gap and help young

For example, leveraging artificial intelligence (AI) can enhance SRH outcomes for young people globally by personalising and targeting interventions. With the [current developments](#)



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[and improvements](#) in AI, mHealth interventions could be supported by chatbots or AI-supported educational modules to provide tailored and accessible solutions for SRH education and behaviour change. AI systems can analyse user data to offer customised SRH recommendations based on adolescents' requirements and preferences.

[Researchers](#) who have used machine learning techniques [have argued](#) that personalisation increases engagement and the relevancy of the material, leading to a more effective intervention. [Others believe](#) machine learning algorithms can be used in mHealth interventions to target demographics and regions that need them most, resulting in a more efficient approach. AI can also analyse user behaviour patterns to provide insightful data on intervention efficacy.

Hence, in presenting the currently available evidence, our scoping review advances the science of enhancing the uptake of SRH mHealth interventions for young people by identifying the gaps and mapping out the best practices, such as using digital platforms to disseminate SRH knowledge and information on SRH services.

## The importance of conducting scoping reviews

Conducting scoping reviews such as [this one](#) is an integral part of researchers' work at the HSRC. These reviews allow researchers to consolidate current evidence on the topic under study. A clear understanding of the existing research findings helps researchers to identify gaps and provide recommendations for future research studies on the topic. This also helps to prevent the unnecessary duplication of existing work, thereby supporting the HSRC and the broader South African research community to apply their limited research funding and other resources optimally to serve South Africa's developmental challenges.

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