

# Sexual health promotion for young people delivered via digital media: a scoping review

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## Scientific summary

### Sexual health promotion for young people

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# Scientific summary

## Background

Young people are at risk of poor sexual health and are, therefore, in need of comprehensive, effective sexual health education. Young people are confident users of digital technology, such as the internet and mobile phones, and there are many innovative possibilities for sexual health education. In this report we present the available evidence for the effectiveness and cost-effectiveness of interactive digital interventions (IDIs) for sexual health promotion, what is known about how best to design, develop and implement IDIs and how best to evaluate them. We also comment on the future potential of digital interventions for sexual health.

## Methods

This review considers sexual health promotion for young people aged 13–24 years in the UK, defining sexual health in holistic terms to include physical, emotional, mental and social well-being in relation to sexuality. We focus particularly on *interactive* digital interventions, defined as digital media programmes that provide sexual health information and tailored decision support, behaviour-change support and/or emotional support for sexual health issues. We conducted a literature review to locate and synthesise available evidence on digital interventions for sexual health for young people spanning the last 10 years, integrating the findings with the views of key informants (young people, parents and experts in digital media/sexual health).

## Results

### *Evidence on best practice for digital intervention design and development*

We identified many examples of IDIs for sexual health promotion, particularly from the USA. Good practice for IDI design and development includes (1) developing an understanding of the target population and their behavioural needs, (2) targeting the modifiable mechanisms of the desired behaviour change through research with users, (3) selecting change techniques that match user needs, (4) implementing techniques in forms that are engaging and promote long-term interest/use among users and (5) ensuring that interventions are feasible and sustainable in an implementation context. Young people should be involved at all stages, and the views of other stakeholders can highlight sexual health needs not identified by young people themselves and help to optimise implementation.

Most IDIs focus on reducing sexual risk-taking behaviour and increasing condom use, with few interventions addressing issues such as sexual pleasure and relationships or cofactors such as alcohol and mental health. There are also gaps for risk groups such as young women after pregnancy, looked-after young people (in institutional care), young people experiencing sexual and domestic violence, young people with learning difficulties and lesbian, gay, bisexual and transgender youths. Promising interventions that have already been developed could be adapted for specific target groups and evaluated in UK settings.

There has been rapid innovation in the development and design of digital interventions. More collaboration is needed to capitalise on the knowledge of users and stakeholders, the design and software skills of the commercial sector and the theoretical expertise and evaluation skills of academia. There is a need for mechanisms to assess whether or not interventions meet defined quality criteria for intervention content and to assess potential risks.

### **Evidence on effectiveness of interactive digital interventions for sexual health promotion**

We located 19 studies which were randomised controlled trials (RCTs) of IDIs for sexual health promotion for young people. We extracted data and (where possible) synthesised the findings from these studies to assess the effectiveness of IDIs. IDIs were delivered in a variety of settings (schools, colleges, health-care settings and online) and targeted heterosexual young people as well as young men who have sex with men.

#### **Are interactive digital interventions effective?**

We found that IDIs have statistically significant effects as follows: a moderate effect on sexual health knowledge [standardised mean difference (SMD) 0.54, 95% confidence interval (CI) 0.17 to 0.92], a small effect on self-efficacy (SMD 0.11, 95% CI 0.02 to 0.20) and a positive effect on sexual behaviour [odds ratio (OR) 1.28, 95% CI 1.01 to 1.61], but no significant effects on safer-sex intentions (SMD 0.09, 95% CI -0.01 to 0.19) or biological outcomes (OR 1.18, 95% CI 0.78 to 1.80). There were no data on adverse effects.

#### **Are interactive digital interventions as effective as face-to-face interventions for sexual health?**

The results of one study suggest that IDIs may be as good as, or better than, face-to-face interventions for sexual health knowledge acquisition (SMD 0.51, 95% CI 0.11 to 0.90) and intention (SMD 0.46, 95% CI 0.06 to 0.85), but not for self-efficacy (SMD 0.38, 95% CI -0.11 to 0.77). There were insufficient data to draw conclusions about effects of IDIs on sexual behaviour, biological outcomes or adverse effects.

#### **How do interactive digital interventions work?**

The existing evidence on this topic is limited, as little trial evidence is available.

These results show that IDIs are effective tools for learning about sexual health, but there is not enough evidence to be sure of the effects on biological outcomes such as sexually transmitted infections (STIs) or pregnancy.

### **Evidence on methods for economic measurement, analysis and modelling in sexual health**

There is very limited health economic evidence which relates directly to digital interventions for sexual health promotion, and so we draw on evidence and guidance regarding (non-digital) sexual health promotion and (non-sexual health) digital interventions.

Sexual health promotion interventions are likely to be cost-effective if the target groups have a high prevalence of STIs and/or if the intervention is relatively cheap. Once an IDI is developed, the ongoing costs can be relatively low and targeting large numbers of people can, in theory, be relatively cheap and easy. However, the level of uptake and engagement with an intervention and the characteristics of target populations might be more instrumental in determining the cost-effectiveness than intervention efficacy alone.

Cost-utility analysis is the type of economic evaluation recommended in the UK (calculating the incremental cost per quality adjusted life year gained), but this may not be the most suitable type of economic evaluation for sexual health intervention evaluation if it does not capture all of the costs and consequences of interest. Cost-effectiveness analyses (e.g. reporting results as cost per STI case detected or cost per pregnancy avoided) may provide more useful information to a decision-maker in a sexual health context. Decision modelling can potentially capture a wider range of information about long-term impacts of an intervention beyond the duration and scope of a RCT. As most of the costs and benefits of sexual health promotion come from the prevention of potentially rare events (e.g. cases of STIs or unintended pregnancies), it is likely that large, observational data sets will play an increasing role in capturing this information.

Further research and consensus are needed on how best to cost intervention development, implementation and maintenance, how to measure health and well-being outcomes in the sexual health promotion field, particularly long-term outcomes, and the best ways to conduct economic evaluations of digital media interventions for sexual health promotion.

### ***Evidence on implementation of sexual health interactive digital interventions for young people***

The impact of a sexual health promotion IDI will be determined by its **r**each (proportion of the target population reached), **e**fficacy, **a**doption (within the target setting), **i**mplementation (how well it is delivered) and **m**aintenance (sustainability): RE-AIM.

Sexual health IDIs delivered in settings such as a clinic or the classroom have a captive audience, which enables interventions to be delivered with high fidelity over a defined period of time. In contrast, online interventions can allow private and convenient access and reach populations who may not be linked into mainstream services, but require the user not only to find the intervention but also to stay with it. Mixed delivery through complementary routes (in static settings and online) is most likely to maximise the proportion of the target population gaining access.

The reach of IDIs could be enhanced by linking sexual health promotion interventions with existing digital systems, such as STI testing, or with trusted branded websites or popular social networking sites. Face-to-face recruitment and facilitated engagement (e.g. with teachers or clinicians) also encourage young people to access interventions and are more likely to facilitate continued engagement. More research is needed on how social networking sites, mobile phones and gaming can be harnessed for sexual health promotion.

Using the knowledge of local stakeholders (such as teachers or clinicians) is vital for both successful intervention development and implementation. An effective intervention usually requires some adaptation for local contexts, but care is needed in identifying and preserving the core components so that effectiveness is maintained. Technical support, moderation/monitoring and updating are further challenges for implementing sustainable digital interventions.

There are few national policy levers to drive implementation of sexual health promotion IDIs in practice, and responsibility for health and education is being increasingly devolved to local health care and local authority commissioning groups. An increased emphasis on local cross-sectoral working means that there may be more opportunity for shared initiatives and shared (financial) risk.

### ***Evidence on optimum research design and outcome measurement to evaluate digital interventions***

Digital platforms offer quick, convenient and relatively cheap methods for conducting sexual health research. Recruitment via the internet offers opportunities for reaching hard-to-reach, stigmatised populations, although convenience sampling makes sample representativeness more difficult to assess. Online recruitment to trials allows self-registration, online consent, automated randomisation, automated follow-up and online data collection, which can potentially reduce the cost of conducting trials. Using digitally mediated research methods (e.g. computer-assisted self-interviews or mobile phones for data collection) can enhance confidentiality. Requesting several participant identifiers (such as address, telephone number and date of birth) can help to reduce the likelihood of a single participant enrolling in online studies multiple times. Robust measures are needed to ensure the security and confidentiality of data collected using digital methods.

Retention in studies that use digitally mediated research methods (e.g. online trials and longitudinal surveys) can be a challenge. However, the use of multiple strategies, such as offering incentives, sending reminders via text and e-mail and appealing to the altruism of participants, can enhance retention.

Age-appropriate sexual health outcomes should be used in research with young people. If interventions address multidimensional aspects of sexual well-being and other health issues, such as substance use and mental well-being (as users would like), outcome evaluation should also reflect these broader concepts of health. There is a trade-off between producing a specific intervention with clear (narrow) aims and producing an intervention that addresses the complexity of sexual health.

It is difficult to capture impacts on health (e.g. STIs or pregnancy), as these events are relatively rare, especially in younger age groups. It is important to measure determinants of behaviour change (such as knowledge and self-efficacy) to capture shorter-term impacts, and to understand how interventions work. Adequately powered, longer-term studies are needed to assess the impact of digital interventions among young people. Qualitative process evaluations are needed to evaluate how complex interventions work and to assess engagement and implementation in practice.

In conclusion, digitally mediated research methods are acceptable and feasible for recruitment and administration of sexual health research, and there is increasing evidence on how best to ensure good-quality online data and how to maximise retention in studies.

### **Conclusions: current state of play and future potential of interactive digital interventions for sexual health**

There is clear need for better access to sexual health promotion, as many young people in the UK do not currently have access to accurate information about the positive aspects of sex, sexuality and relationships, or sufficient information to assess and minimise risks. Sexual health is a challenging field in which to try to change behaviour because of the complexity of behaviours and social taboos. Public health/medical perspectives on sexual health have tended to focus on negative outcomes rather than the positive dimensions of sex and sexuality and its potential to enhance health and happiness.

Internet access is almost universal for young people in the UK, and sexual health promotion via digital media is a highly appropriate way to reach young people. Accurate information is a vital first step towards sexual self-determination, and digital interventions can meet young people's need for this. We need stronger evidence on the best designs for interventions (e.g. choice of behaviour-change mechanisms and interactive features), evidence on the best models of delivery (e.g. setting, modes of delivery, methods of facilitation and support for engagement) and evidence on cost-effectiveness. More evidence is needed on how to impact on sexual behaviour, on biological outcomes (STIs and pregnancy) and on sexual well-being.

At the time of writing (2015), in the UK there are pockets of local innovation but no co-ordinated national programme to exploit the potential of IDIs for sexual health promotion. Young people have a big appetite for IDIs for sexual health, the commercial sector is keen to exploit opportunities to develop digital media interventions for health and there is political will to deploy IDIs for health. However, there are important obstacles to the widespread implementation of IDIs in clinical settings (e.g. technical issues, access problems and engrained patterns of working), in schools [e.g. lack of compulsory sex and relationships education (SRE), teacher and parent reservations and blocks to websites with sexual health content] and online (e.g. lack of financial incentives to develop or implement freely-available interventions). More research is needed on how to understand obstacles to implementation and how best to address these.

We located many examples of IDIs (mostly from other countries) which were developed with young people's input, which utilise imaginative interactive features and which are underpinned by Behaviour-Change Theory. We did not identify any IDIs which are ready for implementation in the UK, either because evidence of the effectiveness of the intervention was lacking or because interventions shown to be effective in other countries would need to be adapted and evaluated in the UK before implementation.

Collaboration between stakeholders (including young people themselves, developers, academics, educators, parents, teachers, school boards, clinicians, NHS managers and policy-makers) is key to successful design and implementation. We need better mechanisms for bringing together the creative energy of young people and of the commercial sector with academic expertise which can ensure that interventions are theoretically sound and rigorously evaluated before roll-out. We need to ensure that interventions can be developed and evaluated within reasonable time scales while also ensuring that the quality and effectiveness of intervention content is known and that risks to users' privacy and safety are minimised.

Interactive digital interventions have a potentially far reach and, if proven effective, would have significant potential to impact positively on the sexual health of young people in the UK. They could be cost saving, as well as reaching young people who do not currently have access to high-quality SRE (in or outside school). IDIs could usefully form a component of sexual health education in schools, in clinical settings and online.

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