

Can text messages increase safer sex behaviours in young people? Intervention development and pilot randomised controlled trial

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Scientific summary

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Younger people bear the heaviest burden of sexually transmitted infections (STIs) such as chlamydia and gonorrhoea and their long-term adverse health effects including ectopic pregnancy and subfertility. The risk of adverse health effects increases with repeated infections. Those with a STI are more likely to acquire further STIs and human immunodeficiency virus (HIV), if exposed. The highest prevalence of STIs is in socioeconomically deprived areas and among people with larger numbers of sexual partners. Reinfection rates following treatment are high: up to 30% for chlamydia and 12% for gonorrhoea at 1 year. Partner notification, condom use and STI testing can reduce infection and reinfection. There is some evidence that existing interventions delivered face to face that target partner notification, condom use and STI testing may be effective, but they are limited in their reach or too costly for widespread application. Existing interventions delivered through the media have high reach but their effects have yet to be established. Effective ways to increase partner notification in specialist and primary care settings are needed.

Mobile phones have the potential to provide effective, low-cost health behaviour support. However, the effect of mobile phone support for safer sex behaviours such as condom use, partner notification and STI testing is equivocal. We searched MEDLINE, EMBASE, Global Health, Web of Science, PsycINFO and The Cochrane Library (January 1990–November 2014) to identify trials of mobile phone-based support to increase safer sex behaviours and identified seven trials. Four interventions targeted testing for STIs, one aimed to delay resumption of sexual activity until 42 days after circumcision and four targeted condom use. None of the interventions had as its goal an increase in partner notification. Interventions included a limited number of behaviour change techniques (BCTs) (up to three). None of the trials had a low risk of bias. One study reported that their mobile phone-based intervention increased discussion of sexual health with a health-care professional [odds ratio 2.92, 95% confidence interval (CI) 1.66 to 5.15] and increased STI testing in women (odds ratio 2.51, 95% CI 1.11 to 5.69). A further study demonstrated a statistically significant increase in chlamydia testing with text message reminders in one arm of their trial (relative risk 4.5, 95% CI 1.05 to 19.2), but in another arm the effect of text message reminders plus an incentive on chlamydia testing did not achieve statistical significance (relative risk 4.3, 95% CI 0.98 to 18.5). One trial reported statistically significant increases in self-reported condom use with new partners in the preceding 3 months (relative risk 1.36, 95% CI 1.04 to 1.77).

Our intervention development work and pilot trial

The National Institute for Health Research commissioned us to develop a safer sex intervention delivered by text message and to evaluate its acceptability to young people and the feasibility of a trial to establish its effects. We developed the messages based on behaviour change theory; evidence-based BCTs; the content of effective face-to-face safer sex interventions; the factors known to influence safer sex behaviours; the views of 82 young people collected in focus groups; and a questionnaire completed by 100 people aged 16–24 years. Our theory- and evidence-based intervention employs 12 BCTs and is designed to reduce STIs in young people by supporting them in telling a partner about an infection, using condoms and obtaining testing before unprotected sex with a new partner.

Messages were written and adapted based on young people's preferences expressed in focus groups. Participants expressed a preference for messages with a non-judgemental and credible tone, short messages written in a positive style and those providing practical information regarding what needed to be done, why and how. Young people wanted messages that were easy to understand, avoided slang and avoided exclamation marks (which were experienced as patronising). They wanted no more than four messages a day and wanted the message frequency to reduce within the first 2 weeks. Content regarding gender roles, sexual pleasure and relationships was considered too personal and intrusive when delivered via short messages and so was removed from the intervention. Messages encouraging participants to make

action plans to carry out behaviour were also considered too intrusive, but were acceptable when modified to provide suggestions regarding when and where risk reduction behaviours could be carried out. Text messages encouraging participants to set goals were also considered too intrusive and were removed from the intervention. In total, 100 participants completed a questionnaire. All messages were scored as 'easy to understand' and none was disliked. Six messages were removed or adapted as < 40% of participants scored them as 'relevant'.

The agreed parameters for judging the success of the intervention development work and pilot trial were the acceptability of the intervention, the recruitment to the pilot trial on time and achieving $\geq 80\%$ follow-up for STI tests at 12 months. We have met all of the prespecified criteria for progression to a main trial. In a qualitative study with 20 young people, recipients reported that the tone, language, content and frequency of messages was appropriate. Messages reportedly increased knowledge of and confidence in how to use condoms and reduced stigma, enabling them to tell a partner about a STI. Sharing messages with their partner enabled participants to negotiate condom use. Based on their feedback we have further refined the intervention for the main trial. We have ensured that messages are relevant to men who have sex with men and women who have sex with women, for example by ensuring that pronouns used are gender neutral. We have included additional content providing examples of how others negotiated condom use in ongoing sexual relationships. Our pilot trial demonstrates that a main trial is feasible. Over 97% of text messages sent were successfully delivered to participants. We achieved our recruitment target early. We achieved 86% follow-up (171/200) for STI tests at 3 months and 81% follow-up (162/200) for the cumulative incidence of chlamydia at 12 months. For self-reported data, we achieved 92% follow-up (183/200) at 1 month and 82% follow-up (163/200) at 12 months.

A randomised controlled trial designed to reliably establish the effects of the intervention delivered by text message on the cumulative incidence of chlamydia and gonorrhoea at 1 year is needed.

Trial registration

This trial is registered as ISRCTN02304709.

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