School-based relationship and sexuality education intervention engaging adolescent boys for the reductions of teenage pregnancy: the JACK cluster RCT

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Scientific summary

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Background

The need for relationship and sexuality education (RSE) to especially engage with young men and boys to promote positive sexual health for all, and to be gender transformative to challenge the gender inequalities that underlie young women's generally poorer sexual health outcomes (especially in relation to sexual violence, adolescent pregnancy and sexually transmitted infections), is widely endorsed by the World Health Organization and the United Nations Educational, Scientific and Cultural Organization, among others.

Objectives

The JACK trial evaluated the effectiveness and cost-effectiveness of the *If I Were Jack* intervention, a schools-based RSE intervention, which is designed to especially engage young men as well as young women and promote joint responsibility in preventing adolescent pregnancy by avoiding unprotected sex and in promoting positive sexual health and relationships. We assessed whether there would be higher rates of self-reported avoidance of unprotected sex (either by remaining sexually abstinent or by using a reliable form of contraception) among students in schools allocated to use *If I Were Jack* than among those in schools that continued with their usual RSE.

Design

We undertook a multicentre, parallel-group cluster randomised trial of the *If I Were Jack* intervention with schools as the unit of randomisation. We incorporated a health economic cost–consequences analysis and process evaluation.

Setting

The trial was conducted in secondary-level schools across the four nations of the UK.

Recruitment

We sampled schools from Department of Education-listed secondary schools in each nation of the UK (Northern Ireland, Wales, Scotland and England), with consideration of the socioeconomic status of schools [based on the proportion of students eligible for free school meals (FSM) as indicated by the School Meal Census]. In each nation, eligible schools were stratified into two levels according to FSM eligibility rates (schools above and below the median national percentage of FSM for all eligible schools). Independent private, special, and Irish/Welsh-medium and Scottish Gaelic schools and schools with < 30 pupils in the target year group were excluded. In 2018, letters of invitation were sent to sampled schools and a £1000 payment was offered as an incentive to schools that completed all data collection.

Participants

Our study population consisted of students who were aged 14–15 years in the target year groups at baseline (year 11 in Northern Ireland, S3 in Scotland and year 10 in England and Wales) and were aged 15–16 years at follow-up (12–14 months later).

Allocation and concealment

Schools were randomly allocated (1 : 1) using computer-generated random permuted blocks of mixed size to the intervention or control group, stratified by nation and proportion of pupils eligible for FSM. Schools were masked to allocation until after baseline data collection. Fieldwork staff and staff who completed the data entry were masked to allocation throughout the trial.

Intervention

If I Were Jack is an evidence-based, gender-transformative and comprehensive-approach RSE intervention, developed with substantial user co-design and of proven feasibility. *If I Were Jack* includes intentional male engagement and gender-transformative programming (that challenge gender inequalities) and aims to promote joint responsibility in boys and girls aged 14 years in preventing unintended pregnancies and increasing positive sexual health. It is a brief intervention designed to be delivered by trained teachers during four or six consecutive RSE lessons in classroom settings (depending on normal class durations). In preparation for the trial, the intervention was optimised with a UK-wide group of young people and RSE experts to enhance the cultural salience of the intervention components across the four nations of the UK and to ensure that it reflected a comprehensive approach to RSE education.

Schools allocated to the *If I Were Jack* group were provided with the following:

- The *If I Were Jack* opening interactive video drama (IVD), a culturally sensitive film (two versions, locally filmed in both Northern Ireland and England) intended to immerse adolescents in a story of a week in the life of Jack, a young man who has just been told his girlfriend is pregnant.
- Classroom materials for teachers, with four detailed lesson plans with specific classroom-based and homework activities that provide students with sexual health information and opportunities for discussion, skills practice, reflection and anticipatory thinking.
- Ninety-minute face-to-face training session for teachers provided by trained facilitators.
- Online materials for parents/guardians.
- Information brochures and factsheets about the intervention and unintended teenage pregnancy for schools, teachers, teacher trainers, young people and parents.

Comparator

Schools allocated to the control group were asked to continue with their existing RSE.

Primary outcome

Self-reported avoidance of unprotected sex (i.e. remaining sexually abstinent or using reliable contraception at last sex) in the 12–14 months after baseline, among the students as a whole and among those who were sexually active.

Secondary outcomes

Secondary outcomes were collected 12–14 months after baseline. Knowledge was measured by items selected from the Mathtech Knowledge Inventory and Sexual Knowledge and Attitudes Test for Adolescents. Attitudes were measured by the Male Role Attitudes Scale. Skills were measured through the Comfort Communicating Scale and the Sexual Self-efficacy Scale. Intentions to avoid an unintended pregnancy were assessed using an 'Intentions to avoid a teenage pregnancy scale' developed and psychometrically tested in our feasibility trial. Behavioural outcomes included contraception use at last sex, and whether or not students reported ever having sex without contraception.

Economic evaluation

Resource use included self-reported use of sexual health-related resources and use of teacher resources for delivering RSE. Costs of adolescent pregnancy and sexually transmitted infections were calculated from published sources.

Process evaluation

The process evaluation addressed: (1) context (reasons for school participation), (2) implementation (intervention delivery and fidelity and RSE provision in control schools, and potential contamination caused by any changes to provision that could be due to participation in the trial) and (3) mechanisms of impact (perceptions of effectiveness among pupils, teachers and school principals/head teachers).

Data collection

Baseline paper questionnaires were completed in August–October 2018, and the 12–14 months follow-up paper questionnaires were completed in October 2019 to January 2020. Students completed these in lesson time in classrooms under exam-like conditions, facilitated by trained researchers with teachers present but unable to read student responses. The field workers assisted students with questions that they did not understand and supported students with mild learning difficulties or with limited command of written English to complete the questionnaires.

Analysis

The primary effectiveness analysis was on an intention-to-treat basis, using a multi-level logistic regression model (two levels: pupils nested within schools) adjusting for the baseline outcome and stratification variables (country and schools above and below the median national percentage of FSM). Health economic analysis involved both a within-trial cost–consequences analysis to assess cost per pupil of delivering the intervention and a decision-analytical model to assess costs and consequences over a 20-year time horizon. The process evaluation used a qualitative thematic analysis.

Results

A total of 8216 students completed the baseline questionnaire, and a total of 6561 pupils completed the follow-up questionnaire. Of those who completed the baseline questionnaire, 6556 students (79.80%) also completed the follow-up questionnaires, and these students constitute the analysis population. One intervention school and one control school were lost to follow-up because of COVID-19 school closures, and two other intervention schools withdrew from the study after baseline.

Primary outcome

A total of 86.6% of students in the intervention group avoided unprotected sex (either through sexual abstinence or reliable contraceptive use), compared with 86.4% of students in the control group [adjusted odds ratio (aOR) 0.85, 95% confidence interval (CI) 0.58 to 1.26; $p = 0.42$]. Exploratory post hoc analysis of the two components of the primary outcome showed that the intervention was effective for those students who were or who had become sexually active. Students in the intervention group were more likely than those in the control group to report using reliable contraception at last sex [42/106 (39.62%) in the intervention group vs. 29/110 (26.36%) in the control group; aOR 0.52, 95% CI 0.29 to 0.92; $p = 0.025$). The exploratory post hoc analysis also showed that there was no effect on self-reported sexual abstinence at 12–14 months [2407/3074 (78.30%) in the intervention group and 2511/3209 (78.25%) in the control group; aOR 0.85, 95% CI 0.58 to 1.24; $p = 0.39$].

Secondary outcomes

Knowledge scores were significantly higher for the intervention group [adjusted mean difference (aMD) 0.18, 95% CI 0.024 to 0.34; $p = 0.02$]. Students in intervention schools had stronger intentions to avoid unintended adolescent pregnancy (aMD 0.85, 95% CI 0.19 to 1.50; $p = 0.01$) and improved attitudes towards gender-equitable roles (aMD −0.33, 95% CI −0.64 to −0.02; $p = 0.04$) than students in control schools. There were also positive but non-statistically significant improvements in sexual self-efficacy (aMD 0.021, 95% CI −0.003 to 0.05; $p = 0.08$) and comfort communicating about avoiding pregnancy (aMD 0.003, 95% CI −0.11 to 0.12; $p = 0.95$).

Fewer students (both males and females) in the intervention group reported no contraception use at last sexual intercourse [intervention group 27.53% vs. control group 32.88%; odds ratio (OR) 0.55 (95% CI 0.31 to 0.97); $p = 0.04$] than in the control group. There was no significant difference between the intervention and control group in relation to the number of young people who reported ever having sex without contraception.

Process evaluation findings

The intervention was acceptable to schools (to teachers and students), including faith-based schools. It was feasible to implement, but fidelity to implementation varied. RSE delivery (outside of the *If I Were Jack* intervention) was broadly comparable in intervention and control schools, and RSE delivery did not significantly change in control schools as a result of participation in the trial, although implementation varied. Teachers and students perceived the programme to have triggered realisations around relationships and sex that, combined with practical knowledge, were already creating foundations for the avoidance of unprotected sex and childbearing until the young person was ready.

Economic evaluation

The total mean incremental cost of the *If I Were Jack* intervention compared with standard RSE was £2.83 (95% CI −£2.64 to £8.29) per student. Based on a 20-year time horizon, *If I Were Jack* resulted in 379 (95% CI 231 to 477) fewer unintended pregnancies, 680 (95% CI 189 to 1467) fewer sexually transmitted infections and a gain of 10 (95% CI 5 to 16) quality-adjusted life-years per 100,000 students for a cost saving of £9.89 (95% CI −£15.60 to −£3.83) per young person who receives the intervention rather than standard RSE.

Limitations

The trial is underpowered to detect some effects because four schools withdrew after randomisation and the intraclass correlation coefficient (0.12) is much larger than the intraclass correlation coefficient used in the sample size calculation (0.01), which was based on previous research in this area.

Conclusions

We present, to our knowledge, the first evidence from a randomised trial of a school-based male engagement gender-transformative RSE intervention. The RSE intervention was not effective in increasing avoidance of unprotected sex among all students (measured as either sexual abstinence or use of reliable contraception). However, the exploratory post hoc analysis showed that the intervention was effective in increasing the use of reliable contraception as adolescents became sexually active as well as for those who were already sexually active prior to receiving the intervention. The *If I Were Jack* intervention, which is based on a comprehensive approach to RSE, did not lead to increases in adolescent sexual initiation. The effectiveness of *If I Were Jack* in increasing reliable contraceptive use among students (male and female) who were sexually active at baseline or by follow-up could be important at the population level, given the incremental increase in sexual initiation during adolescence and the scalable nature of school-based interventions. We also found significant positive effects for the intervention for all students in terms of sexual health knowledge, attitudes and intentions to support healthy, positive, gender-equitable, intimate relationships. There was no significant effect on communication and sexual self-efficacy skills. *If I Were Jack* is low-cost compared with other educational interventions; reductions in unprotected sex among sexually active adolescents are also likely to reduce health-care costs over a 20-year period through the avoidance of unintended pregnancies and sexually transmitted infections. To our knowledge, the JACK trial is also the first UK randomised trial to include faith-based schools in a trial of comprehensive RSE and the first randomised trial of a RSE intervention to include the four nations of the UK. The trial demonstrated that comprehensive-based RSE is acceptable and feasible to implement across these environments, despite some variability to fidelity of implementation.

Implications for decision-makers and practice

The added value to the advancement of RSE practice arising from this trial is in demonstrating what can be achieved through male engagement and gender-transformative programming, which could also be integrated into wider RSE. *If I Were Jack* is a brief intervention of low dose not designed to address all RSE needs. Although this study has demonstrated the added value of even such a brief intervention (in terms of increased knowledge and gender-equitable attitudes among adolescents for healthy and positive intimate relationships, as well as a reduction of unprotected sex as adolescents become sexually active), perhaps the greater added value is the rigorous testing of intentional male engagement and gender-transformative components that could be incorporated more broadly into RSE programming. School-based RSE interventions, such as *If I Were Jack*, are likely to be one of the most efficient ways of reducing unintended pregnancies and sexually transmitted infections in adolescence, because of their potential to promote contraceptive use in a population-wide, replicable and sustainable fashion.

Implications for research

We recommend that further trials should consider the longer-term effects of gender-transformative RSE as students become sexually active. Future trials could explore the fidelity, acceptability and effectiveness of the *If I Were Jack* intervention across a range of diverse contexts, including low- and middle-income settings. We have plans under way to adapt and test the intervention in South America and Southern Africa, building on our learning from the current study. We also recommend further exploration of the acceptability and feasibility of conducting RSE interventions in faith-based schools, including in non-Christian faith-based schools. More broadly, we recommend further co-operation between practitioners and researchers to design gender-transformative RSE to address a broader range of sexual health issues, including giving greater attention to the needs of lesbian, gay, bisexual, transgender and questioning (or queer) students.

Trial registration

This trial is registered as ISRCTN10751359.

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