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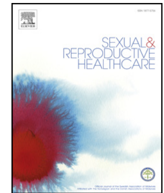
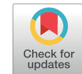


Process evaluation of a comprehensive sexuality education intervention in primary schools in South Western Uganda



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ABSTRACT

Background: We present findings of a process evaluation of a Comprehensive Sexuality Education (CSE) program for young adolescents in 15 schools in South-Western Uganda.
Methods: Using the Medical Research Council (UK) framework for process evaluation and the European Expert Group guidance on evaluation of sexuality education programs, we conducted a mixed methods study comprised of a review of relevant implementation documents, qualitative interviews(16), and focus group discussions(4) distributed among 50 participants including pupils, teachers, student educators and parents.
Results: Delivery of the anticipated 11 CSE lessons occurred in all target schools with moderate to high pupil attendance, however the duration of sessions was often shorter than planned. Facilitating factors for implementation included establishment of a community advisory board, use of multiple interactive delivery methods and high acceptance of the program by key stakeholders. Socio-cultural norms, geographical access, time constraints and school related factors were barriers.
Conclusions: It was feasible to implement a contextually adapted CSE program for young adolescents in schools successfully with overall high acceptance by key stakeholders. Proper coordination of school activities with the program, ensuring linkages of the school based CSE program with community support systems for adolescent SRH and addressing socio-cultural impedances could be beneficial.

Introduction

It has been almost 25 years since the 1994 International Conference on Population and Development (ICPD), during which 179 countries signed a comprehensive plan for sustainable development, which prioritized sexual and reproductive health (SRH) needs and rights, especially among adolescents and young people [1]. However, little progress has been made in achieving good adolescent SRH outcomes especially in low and middle income countries in Sub Saharan Africa (SSA) [2]. The SSA region, not only comprise of the largest population of the world's young people (59%) but also account for two thirds of all deaths of adolescents globally in 2015 [3]. In SSA, most of these deaths result from SRH challenges such as complications of teenage pregnancy or HIV/AIDS [3]. In this paper, we present findings of a process evaluation to establish enabling and hindering factors to the design and implementation of an adolescent SRH intervention among young adolescents in a selected SSA setting, Uganda.

Among the recommendations of the recent review of the ICPD Program for Action in 2015 is to design and implement effective high quality SRH interventions among adolescents, with special attention to young adolescents [2]. Comprehensive sexuality education (CSE) is one such intervention recommended by UNESCO and five other UN organizations. According to the International technical guidance on sexuality education (ITGSE 2018), Comprehensive sexuality education

Abbreviations: CAB, Community Advisory Board; CSE, Comprehensive Sexuality Education; ESA, East and Southern Africa; FGD, Focus group discussion; ICPD, International Conference on Population and Development; IDI, In-depth Interview; ITGSE, International Technical Guidance on Sexuality Education; MRC, Medical Research Council; PIASCY, Presidential Initiative on AIDS strategy for Communication to Youth; RCT, Randomised Controlled Trial; SCT, Socio- Cognitive Theory; SE, Sexuality Education; SRH, Sexual and Reproductive Health; SRHR, Sexual and Reproductive Health and Rights; SSA, Sub Saharan Africa; TPB, Theory of Planned Behaviour; VYAs, Very Young Adolescents

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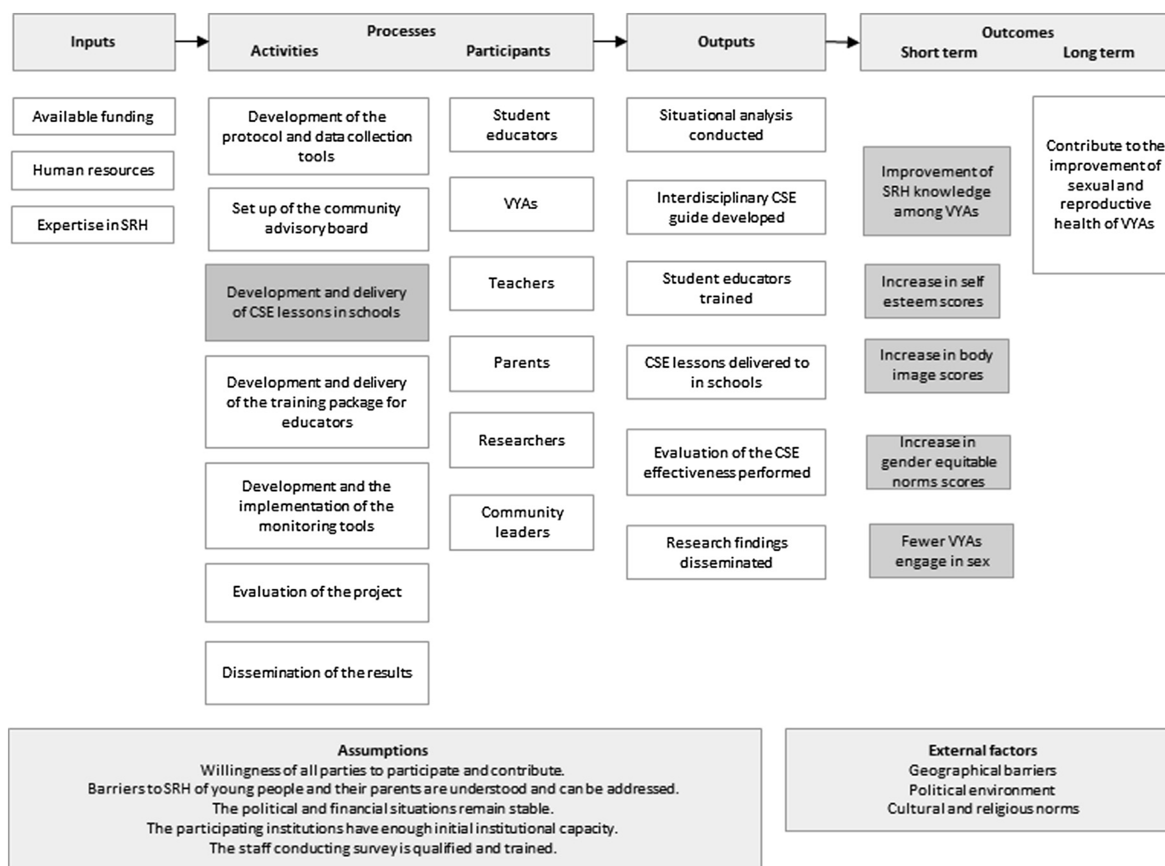

Fig. 1. Conceptualization of the intervention – logical model. Legend for the figure: *VYAs – very young adolescents CSE – comprehensive sexuality education SRH – sexual and reproductive health.

(CSE) is defined as “a curriculum based process of teaching and learning about cognitive, emotional, physical and social aspects of sexuality” [4]. It differs from abstinence only programs which emphasize mainly abstinence for pregnancy prevention or abstinence plus programs that may emphasize abstinence and provide some information on contraception [5]. CSE is a lifelong training providing scientifically accurate, age and developmentally appropriate information. CSE delivery follows a universal human rights approach, emphasizes gender equality and culturally and context appropriateness and provides transformative knowledge and acquisition of life skills to enable learners to make informed choices regarding their sexual health [4]. Ensuring quality in the design and implementation of CSE programs is important to harness maximal benefits. For instance Haberland 2015 established programs that emphasize gender empowerment and rights were are more effective than those that did not [6]. In addition it has been established that lack of fidelity to the program, content of the CSE package or duration of intervention often limits effectiveness of these programs [7,8].

More so, sexuality education is emphasized in most sustainable development goals and is among the indicators for SDG goal 4, target 7. This indicator specifies estimation of the percentage of schools that provide life skills based HIV and sexuality education [9]. Recent evidence from a review of 22 systematic reviews and 77 randomized controlled trials (RCTs) on CSE shows that it can lead to improved SRH outcomes among adolescents, including delayed sexual debut, decreased frequency of sex, reduced number of sexual partners, decreased sexual risk taking, and increased use of condoms and contraceptives [10,11].

Despite the evidence for CSE, uptake in many countries remains low, especially in SSA. Unique contextual factors in the region such as socio-cultural factors with insufficient adaption of CSE to the local context, limited funding, limited prioritisation for delivery of CSE integrated within school curriculum and inadequate involvement of key stakeholder in the development of CSE programs, make it challenging to scale up CSE interventions [12]. Recently, Uganda has shown advances towards implementation of recommendations of the East and South Africa (ESA) ministerial commitments to implement CSE in member countries [13]. This has been achieved through efforts by the Ministry of Education that has since developed a values-based and context-specific sexuality education framework which was published in May 2018 [14]. However, this guideline mainly promotes abstinence and is limited in scope compared to the international guidelines for CSE and has not yet been implemented. Prior to these policy changes, a few school based SE programs had been implemented in Uganda. Evidence on the effectiveness of these programs were modest, often showing increases in SRH knowledge but limited acquisition of skills or changes in attitude or behaviour [15,16].

Sexuality education interventions are usually complex and greatly influenced by the social or cultural context. Effectiveness trials that focus on quantitative evaluation of the effect/outcome may not be meaningful to policy makers who may want to scale up such programs in varied contexts [17]. The Medical Research Council (MRC) updated its guidelines recommending inclusion of process evaluation to be nested in conventional randomized controlled trials (RCTs) that evaluate complex interventions [18]. Process evaluation provides policy makers and researchers with detailed information to assess the quality of the implementation, fidelity to the intervention and replicability of findings in specific contexts [17,18].

Outcome evaluations of sexuality education programs dominate the literature compared with programme and implementation evaluations which are rarely found in academic literature [19]. Although randomised controlled trials, quasi-experimental designs and pre-/post-measurements still tend to be seen as the gold standard for outcome/

impact evaluations, process evaluation embedded within these designs supports the interpretation of intervention outcomes [19].

Description of the school CSE intervention and outcomes

A comprehensive sexuality education program for young adolescents was developed and implemented in primary schools in Uganda between June 2016 and July 2017. The CSE program was designed utilising an adapted intervention mapping model [20]. This involves six essential steps that result into a logical framework (Fig. 1). Firstly, a needs assessment/situational analysis was conducted. Here initial consultative meetings were held with stakeholders and experts in SRHR. Furthermore, a community advisory board (CAB) consisting of relevant cultural, religious and policy representatives was set up to guide the development and implementation process. Finally, a situation analysis which was a quantitative survey was conducted among 1100 Very Young Adolescents (VYAs) in 33 schools to assess their sexual health. Results of this survey have been published [21,22]. The second step involved identification of program objectives and outcomes related to changes in knowledge attitudes or behaviors related to SRH. The third step was the development of the program design – this involved development of the program structure using existing frameworks on CSE while applying behavioural change theories including the Theory of Planned behavior (TPB) and Socio Ecological Model (SEM) The TPB posits that behaviour at the individual level may be influenced by attitudes, subjective norms or perceived control (self efficacy) whereas the SEM posits overlapping systems which illustrate immediate and indirect factors that may affect an individual's behavior. These may occur at individual, interpersonal, community or societal levels [23,24]. These theories were used to develop learning outcomes related to step 2. The fourth step concerned program production which included development of specific content of lessons, delivery methods and sequence of delivery (Table 1). The fifth step dealt with adoption and implementation plans. This involved development of an educator training guide, recruitment of student educators, identification of schools to participate and development of schedules for delivery of the modules. Finally, the sixth step involved monitoring and evaluation – included designing effect and process evaluation questions, establishing assessment methods and plans for evaluation.

CSE intervention lessons

The intervention was a set of 11 lessons on CSE delivered in eight sessions (Table 1). These were developed by an interdisciplinary team using international guidelines on sexuality education as reference materials [4,25]. The lessons were delivered in 15 schools over a one year period. The planned time for lesson delivery varied from 1.5 h to 2.5 h. The lessons were delivered by trained university students (educators).

Evaluation of the effectiveness

We conducted a mixed methods study to evaluate the effectiveness of this intervention, employing a cluster randomized trial (NCT03669913, registered retrospectively on September 13th, 2018), as well as post-intervention qualitative interviews and focus group discussions among study participants in the intervention arm. The trial assessed changes in sexual health knowledge, sexual behavior, body image scores, self-esteem scores and scores on gender equitable norms over a period of one year. Details on how these outcomes were measured was described elsewhere [21,22]. Pre- and post-evaluation surveys were conducted among 864 pupils, 380 from 15 intervention schools and 484 from 18 control schools. Post-intervention qualitative research including in-depth interviews and two focus group discussions were conducted among 20 pupils within the intervention schools.

We found that the odds of having increased SRH knowledge were twice as high among pupils in the intervention schools compared to the control schools (AOR: 2.18, 95% CI: 1.66–2.86) and no significant differences between groups in scores for self-esteem, body image or gender equitable norms. Qualitative data showed perceived acquisition of new knowledge, awareness of SRH risks, reporting bad touches and intentions to report other sexual related offences in future. Furthermore they reported favorable behavioral intentions towards delaying sexual initiation or intentions to protect themselves from acquiring HIV/AIDS and unintended pregnancies (Kemigisha et al., 2018 unpublished data).

Aim and objectives of this study

The purpose of this paper is to understand the context and assess the implementation and acceptability of the sexuality education program. Two recommendations – *Medical Research Council Guidance on process evaluation (2014)* and *Evaluation of Holistic Sexuality Education (HSE): A European Expert Group Consensus Agreement (2016),* were adopted to guide the identification of relevant key constructs and to generate evaluation questions in this study [19,26]. The MRC guidance on process evaluation offers comprehensive instructions and a framework on its conduct including assessment of contextual factors, implementation factors and mechanisms of impact of the intervention. On the other hand, the European Expert group consensus helps to identify relevant components important for the evaluation of sexuality education programs. The latter include evaluation quality of the program development and quality of it's implementation [19,26].

This process evaluation aims to assess weaknesses and strengths in the CSE program development; to evaluate strengths and weaknesses in the program implementation including fidelity, adaptation, dosage, and

Table 1
The CSE intervention lessons.

Session	Lessons	Content/delivery methods	Planned time (h)
1	Growing up- learning about puberty and hygiene	Group activity (naming body parts), mixed gender discussions and small group discussions	2.5
2	Emotions and relationships	Blind fold walk to recognise emotions and importance of relationships, mapping healthy and unhealthy relationships on venn diagrams	1.5
3	Self esteem and	Mapping one's important attributes, using "my star" exercise	2.0
	Decision making skills	Values clarification exercise using should/should-nots, mixed gender small group discussion of case scenarios on decision making	
4	Knowing your rights and responsibilities	Brainstorming, case scenarios, lecture mode	1.5
	Reporting physical or sexual violence	Role play on bad touches, group discussions on reporting of violence	
5	Sexually transmitted diseases (STIs)	Discussion of myths and facts on STIs Lecture mode	1.5
	HIV/AIDS and stigma	Lecture mode, discussions	
6	Reproduction and pregnancy prevention	Activity; labelling internal reproductive system, discussion of myths and facts about pregnancy, discussion on methods of pregnancy prevention	1.5
7	Sexuality and media	Brain storming, group activities, discussions on media representation of beauty, gender, abilities, etc	1.5
8	Gender and sexuality	Facts and myths on gender and sexuality exercise, group discussions	1.5

Table 2
Process evaluation research questions.

	Process evaluation domain	Research question	Methods		
			Documents review	Monitoring sheets	Qualitative data
1	Program development	RQ 1.1 Did the intervention align with internationally recognized quality criteria for sexuality education?	X		
2	Context	RQ 2.1 What were the contextual factors that may have affected the intervention implementation and outcomes?	X	X	X
3	Implementation of the intervention	RQ 3.1 What was delivered in terms of fidelity, dose, adaptation and reach?	X	X	X
		RQ 3.2 Did the implementation align with internationally recognized quality criteria for sexuality education?	X	X	
4	Mechanisms of impact	RQ 4.1 What are participant responses to and interactions with the intervention?		X	X
		RQ 4.2 To what extent was the intervention accepted by stakeholders? (pupils, teachers, parents)	X	X	X
		RQ 4.3 Were there unexpected outcomes following the intervention?	X		X

pupils' participation and to assess acceptability and context. Table 2 presents the research questions addressed by this process evaluation

Methods

This process evaluation adopted a mixed methods design quantitative and qualitative components.

Data sources

We collected the process data alongside the outcome data. Data collection commenced with baseline measures in June 2016 and was completed in July 2017. Sources used to conduct this process evaluation are listed in the Table 3.

Data collection and analysis

Process evaluation data were analysed independently of the intervention effectiveness data. Data obtained from monitoring sheets were summarised using descriptive statistics and mean scores in Excel. Qualitative data were collected after six of the eight sessions in schools. Four schools were selected – two urban and two rural for qualitative data collection. Data collection took place between April and May 2017 within schools. There were 50 participants, 16 in individual in-depth interviews (IDIs) and four focus group discussions (FGDs) with8-12 participants each (Table3). IDIs and FGDs were conducted by research assistants (RAs) who were trained in qualitative methods as well as ethical standards of human subject research and were familiar with the local language and cultural context. Interviews and FGDs were conducted mostly in local language – Runyankole. To ensure reliability among interviewers, interview guides for each group of stakeholders were developed. Each interview or FGD lasted at least one hour. Interviews were audio recorded and subsequently transcribed and translated into English by the RAs. For quality control, a researcher who was fluent in both languages listened to all audios and cross-checked transcriptions to ensure concordance between original recordings and the translations. The interviews and FGDs were analysed using a deductive qualitative approach with pre-determined themes [27]. Using content analysis, data were reduced and codes were generated manually based on common responses during interviews [28].

Assessment of quality of development and implementation process: A content analysis of the proposal documents, CSE training guides and monitoring tools was conducted. Using quality criteria developed by Evaluation of Holistic Sexuality Education (HSE): A European Expert Group Consensus Agreement (2016), we assessed for quality of the development and implementation of the program by developing a three point Likert scale where "0" indicated the criterion not addressed, + for a partially addressed and + + for a fully addressed criterion. A total of eight criteria were considered for quality assessment for the design and such included '*having a positive approach to sexuality*', '*age appropriateness*', '*gender sensitivity*' and so on (see Table 4). Furthermore, we assessed quality of implementation using six criteria including '*educator training*', '*completeness of curriculum*', '*use of multiple methods*' and so on (see Table 6). The criteria assessment was led by the main author assisted by the second and last author. The results of the assessments are presented in Tables 4 and 6.

Ethical consideration

The study was conducted in accordance with the principles defined by the World Health Assembly of 1975 with regard to the ethics principles of research involving human subjects [29]. Ethical approval was received from the Mbarara University Research Ethics Committee (REF MUIRC/7) and Uganda National Council of Science and Technology (SS 4045) as well as Ghent University Hospital Ethical Committee. We obtained informed consent from the school head teachers and parents/

Table 3
Data sources.

1. **Document review**		
Study protocol; Logical Framework Matrix; International and National Guidelines for Sexuality Education; Reports to Funding Agency;	Study Reports for The Baseline Survey, Intervention and End-Line Surveys; Published Articles; Minutes of the Advisory Board; Lesson Summaries	
2. **Monitoring data**		
Name of the source	*Explanation*	
Training record for educators Number of lessons delivered Lesson attendance lists for pupils Time allocated for each session Pupil participation by gender Independent observation for CSE principles in delivery	Monitoring sheets were filled and collected at eight time points between August 2016 and April 2017. They included information on number of educators, independent observations for main CSE principles regarding age appropriateness, gender sensitivity and scientific accuracy, pupil's attendance (numbers, sex and primary school class), pupil's feedback, rating of the lessons by pupils and rating on active participation by educators.	
3. **Qualitative data**		
Stakeholders	*Number of in-depth interviews*	*Number of FGDs*
Pupils	4	2
Teachers	8	0
Parent/teacher associations	2	1
Student educators	0	1
Independent observers	2	0
Total	16	4[a]

[a] The total number of participants in the 4 FGDs were 34.

Table 4
Quality assessment of the development process of the CSE program.

Quality criteria	Evidence	Quality assessment category: 0 = not addressed, + = partly addressed, + + = fully addressed
Positive approach to sexuality	Although mutual respect was mentioned in the relationships lesson, there was no evidence for reference to sexual experience as being pleasurable	+
Age appropriateness	The content prepared was appropriate for age as per the international guidelines	+ +
Gender sensitivity	Gender was emphasised in several lessons both in content and delivery modes	+ +
Comprehensiveness	7 of the 8 key topic areas for CSE in ITGSE were covered though not to sufficient detail, e.g. sexual behaviour, sexual diversity was not mentioned	+
Human rights approach	The program included values and emphasis on children rights and no violence, although discrimination due to gender/sexual diversity was not mentioned	+
Pupil involvement	There is no evidence of involvement of pupils in the design of the program	0
Cultural and socially responsive	Set up of a community advisory board to inform the process of development or implementation of the intervention	+ +
Quality educator manual	The training manuals had learning outcomes, described content and delivery modes adequately	+ +

guardians and assent from pupils prior to data collection. Authorization was obtained from the local ethics board to allow teachers to consent as legal guardians for pupils if a parent was not available at the time of the interview, and efforts were made to inform these parents of their child's participation.

Results

Here we present results of the process evaluation using the MRC and *the* European Expert Group Consensus Agreement on evaluation of HSE programs.

Development and design of the intervention

Quality assessment of the development process of the CSE program

The quality assessment for the development of the CSE program was performed using quality criteria (see Table 4) on the development of sexuality education programs developed by European Expert Group on Sexuality Education [5]. Of the eight criteria assessed, this program was of moderate quality whereby half of the quality criteria were fully addressed, three were only partially addressed while one not met at all. The program consulted with a CAB that ensured cultural appropriateness, furthermore the content was appropriate for the desired age group (10–14) according to the International Technical Guidance on Sexuality Education (ITGSE). The partially addressed criteria were – lack of emphasis on having a positive approach to sexuality, incomplete coverage with inclusion of topics related to sexual behaviour and discussions on non- discrimination and tolerance of diversity as a rights-based approach (Table 4).

Context

Contextual factors that affected the implementation process included geographical factors, school settings, socio-cultural factors and the political environment.

Geographical factors

FGDs and reports from student educators indicated the long distance to intervention schools from the university, inadequate transport, and poor access due to uneven terrain especially in rainy seasons made it difficult for them to reach schools in a timely manner. In some cases, this resulted in shortened duration of delivery for planned lessons.

School settings

According to monitoring reports, at least 80% of schools where implementation occurred were in rural areas. In many of the rural

schools, classrooms in which the lessons were administered were not optimal for administering the planned lessons. Many of the lessons required interactive exercises and the space was frequently limited, a few lessons were provided under a tree shed and with a lot of environmental distractions that could alter pupil concentration. More so, there were difficulties in getting appropriate time for lessons due to the busy school schedules.

Socio–cultural factors

The cultural context is restrictive on acceptance of a few topical areas of CSE related to sexual behaviour and diversity. Notes from the CAB meeting indicated hesitancy to discuss topics on the use of contraception because very young adolescents were expected to remain abstinent at this age or until marriage as per religious beliefs. Moreover, IDIs with teachers and pupils, indicated that teachers expressed their lack of competence in delivery of some CSE topics because of "being shy" or uncomfortable with more sensitive topics. More so, there was a perception that some topics were not acceptable to teach to the students, such as issues related to homosexuality. Given the socio-cultural and political pushback around homosexuality, this topic was not included in this program.

Political environment

CSE programs delivered by NGOs in schools were negatively represented in media as being responsible for introducing unacceptable morals in a conservative society such as Uganda. As such, the government of Uganda through the Parliament and the Ministry of Gender instituted a ban in August 2016 just at the beginning of implementation activities [30]. From the CAB meeting notes, it was clear that the ban on CSE created a lot of anxiety and the project lead researchers circumvented this backlash by working closely with the CAB. Because this program was part of an academic research project which had already been approved by the Ugandan National Council of Science and Technology, we were able to continue with our programming. Joint CAB, head teachers and lead researchers meetings were held, the intervention activities were presented, and the CSE lesson content was approved. The CAB played a key role in the program approval during the joint meetings by giving their guidance and censorship of the CSE lesson content tailored to cultural and religious norms.

Implementation of the intervention

Fidelity, reach and dose

We evaluated what was delivered in terms of fidelity (whether all the planned lessons were actually delivered), reach (how many pupils actually participated) and dose (was the content delivered in the planned time duration). Table 5 below summarises the dose, reach and fidelity of the implementation.

With regard to the reach, the program was endorsed by the school authorities and made obligatory for all eligible pupils. As such, both the pupils who were part of the evaluation surveys and those who were not part of the survey but belonged to the classes of primary five to seven attended. Notably, the program was able to achieve moderate to high attendance in most of the schools (70% and above of the target in eight schools, 55–65% of the target in four schools and low attendance of at least 33% of the target pupils in three schools). The reasons for low attendance of the lessons in three schools were related to certain head teachers restricting attendance of pupils in primary 7 who were preparing for final exams (school 13) and high rates of pupil absenteeism and school dropout were common (schools 7 and 9 which were located in very rural and hard to reach areas). With regard to the dose, all the planned lessons were delivered in eight sessions per school in all 15 intervention schools.

The CSE lessons were often delivered in half or less than half of the allocated time in the lesson guides (Table 5). The factors that contributed to less time allocation included busy schedules in schools, lack of proper communication between coordinators of the trainings and school head teachers, handling large classes that required more time and delays due to activities in schools that in turn affected the time schedules for educators (to fit in the university schedules). Limited time allocated to CSE was quite challenging for educators and pupils as well. Pupils sometimes lacked enough time to ask questions and get feedback. Some of these are elaborated in the quotes below:

> '*They [school authority] are usually not aware of our coming, because of that, then giving us 30 min is justifiable' …. In [School 13] they gave us 20 min, the head teacher said "no, you don't have to enter my time! Am having pupils in candidate [end of primary level national examination preparation] class!"* (FGD, Student educator).
> '*Come when you have enough time for us so that we can get an opportunity to ask questions*' (IDI, Pupil, School 2).

Adaptation

There were two notable adaptations to the intervention strategy. First, the lesson on pregnancy and contraception had modifications to emphasise mainly abstinence messages as it was recommended by the CAB. Although the content of lessons on condoms and contraception was discussed, adoption of abstinence received more attention. The second adaptation was related to the language of instruction. The delivery of lessons was modified to use local language (Runyankole) instead of English only as earlier designed. This was unplanned and not standardised and could have created differential understanding of the lessons being given.

> "*We found it difficult to translate the terms "self-esteem" or "decision making" from English to the local language" (Student Educator Reports, Schools 4 and 7)*

Implementation quality criteria

Only two of the six quality criteria of the implementation of SE using European Expert Group Guidelines [5] were fully addressed, whereas three of six were partially addressed and one was not addressed at all (Table 6). The criteria fully addressed included use of multiple methods and having an obligatory program. Evaluation of monitoring sheets and feedback from pupils showed that the program was made obligatory for intended pupils, and that the school teachers coordinated that. More so, lessons were delivered interactively, using a wide array of activities such as songs, role plays, group discussions, illustrations and brain storming sessions. However, implementation quality was limited due to the insufficient training period for educators and lack of allocation of adequate time. These could have affected indepth coverage of the intended lessons as planned. Furthermore, a favourable group atmosphere for free participation of pupils could not be ensured in most cases due to crowding of classrooms and having teachers that were in attendance. The other quality criteria regarding linkage of the program with existing SRH services in the community was not adequately met (Table 6).

Mechanisms of impact

Here we describe the different ways the intervention had a perceived impact among users with regard to acceptability and changes in practices.

Acceptability of the intervention

Pupils' feedback. From the monitoring sheets and qualitative interviews with pupils, there was high attendance of the sessions and high recall of the key messages in the lessons delivered. They found the lessons interesting because of the unique delivery methods, i.e. use of song, role play, individual exercises and group discussions. The program was perceived to enhance their knowledge on SRH topics, equip them with new SRH skills and change their SRH practices. Pupils were able to

Table 5
Fidelity in implementation of CSE in schools.

School	Target number pupils at the start of the intervention (n)	Average class size (% of target)	Sessions delivered/8	Duration for the sessions (dose)		
				As planned n (%)	Less than planned n (%)	Unrecorded duration n (%)
1	80	63 (78.7)	8	4 (50)	3 (37.5)	1 (12.5)
2	83	53 (63.6)	8	4 (50)	2 (25)	2 (25)
3	72	57 (79.2)	8	4 (50)	3 (37.5)	1 (12.5)
4	103	58 (56.3)	8	3 (37.5)	3 (37.5)	2 (25)
5	77	56 (72.7)	8	4 (50)	2 (25)	2 (25)
6	82	65 (79.3)	8	2 (25)	6 (75)	0 (0)
7	57	18 (31.5)	8	4 (50)	4 (50)	0 (0)
8	46	35 (76.1)	8	3 (37.5)	3 (37.5)	2 (25)
9	74	28 (37.8)	8	3 (37.5)	2 (25)	3 (37.5)
10	90	52 (57.7)	8	3 (37.5)	3 (37.5)	2 (25)
11	60	44 (73.3)	8	4 (50)	4 (50)	0 (0)
12	65	46 (70.7)	8	2 (25)	5 (62.5)	1 (12.5)
13[a]	92	30 (32.6)	8	1 (12.5)	6 (75)	1(12.5)
14	81	55 (67.9)	8	3 (37.5)	3 (37.5)	2(25)
15[b]	217	139 (64.1)	8	1 (12.5)	4 (50)	3 (37.5)

[a] Head-teacher usually allocated less than an hour to trainers for the session.
[b] Large class size that required multiple subdivision and extra trainers.

apply acquired skills to improve their current practices such as improvement of body hygiene, handling body changes during puberty and perceived behavioural intentions to practice safe sex and prevent unintended pregnancy. They also shared the lessons learnt with their family members including siblings and parents/guardians.

"*I now know how to avoid early pregnancies*". (IDI, Girl, School 3).
"*There are days you would get a wet dream and you refuse to go to school but now I know how to go about it*". (IDI, Boy, School 3).
"*I know where to report violence*". (FGD, Pupil, School 14).

Teachers' feedback. IDIs with school teachers indicated that teachers found the CSE program interesting. The teachers attested that the program bridged essential gaps in CSE in schools. These included supplementing the fading government SE program – PIASCY (Presidential Initiative on AIDS strategy for Communication to Youth), which was hardly emphasised. There was perception that this program complemented their teaching, especially the content in science lessons.

"*Topics like STIs, HIV, and family planning are subtopics in upper primary syllabus. You have actually taught them information that will be useful in answering their questions in the curriculum*". (IDI, female Teacher, School 3).
"*Society was condemning sexuality education. What we were hearing about sexuality education is not what we are seeing you teach. We are still worried though that you are about to teach homosexuality*". (IDI, male Teacher, School 12).

A few admitted to their personal discomfort or "*feeling shy to discuss a few SE topics.*" They felt the program had a positive impact on pupils' as well as teachers' SRH knowledge, attitudes and practices. These practices included an increase in consultations on their SE issues, mutual respect for one another and support for girls during menstruation. For example, one teacher noted that the program helped to breakdown stigma surrounding menstruation, especially among males.

"*Previously, a male teacher discussing menstruation would generate murmurs in the classroom and contention but now when you speak those words that were previously thought of as taboo, the children do not even blink; they are informed*". (IDI, male Teacher, School 12).
"*You are helping us to teach some topics we feel shy to talk about*". (IDI, Male teacher, School 12).

Parent's support. A few pupils shared their learning experiences with family members including sibling, parents and grandparents. Feedback indicates that parents were supportive of the program and encouraged their children to attend.

"*When I reached home, I told my mother everything that was taught to us and she said that I should continue attending because they are helpful to me.*" (FGD, Pupil).

Table 6
Quality assessment of the Implementation processes of the CSE program.

Quality criteria	Evidence	Quality assessment category: 0 = not addressed, + = partly addressed, + + fully addressed
Educator training/skills	Training records indicated all student educators had training for 5 days.	+
Completeness in curriculum delivery	Evidence from pupil attendance lists indicated that all lessons were delivered as scheduled, the completeness of content cannot be verified but there's qualitative evidence of insufficient time allocated and lack of in-depth delivery	+
Multiple method use	The lessons were interactive with multiple method use that stimulated learning	+ +
Obligatory program	The teachers in schools mobilised all the pupils within target classes for the program and attendance lists showed regular participation. However, in-case of other activities in the schools, these were prioritised instead of the program	+ +
Ensuring a convenient group atmosphere for adolescents to express themselves freely	In most of the sessions the teachers were in attendance which could have compromised on the privacy/confidentiality for pupils	+
Linkages with relevant sexual and well-being services	The program lacked direct linkage with health care providers to provide SRH services if needed	0

The parents also expressed a need for the CSE training to enhance the training their children receive at school.

> "*Now that you have taught our children, I think you need to teach us parents. Some of the challenges our children face, come from our homes*". (IDI, Parent rural).
> "*….we should think of teaching parents as well because what you speak with the children at home should relate to what the teacher says and also what you teach them as a project. When they relate those three they [pupils] may be helped better*". (FGD, female Parent).

Unexpected outcome of the program

Sexual violence reporting. The program opened up avenues for pupils to report experiences of sexual violence in the past or ongoing through the intervention period. These were documented in the cross-sectional surveys as well as reports from teachers in schools.

> "*Teachers asked us what we are teaching their children because there was high rate of reporting like bad touches [in school 4]*." (IDI Observer, Female).

This unexpected outcome led to a need of not only supporting structures in schools, but also involvement of parents and health services (psychotherapy/psychiatry) for counselling and management of trauma. Furthermore, the CAB was consulted to give guidance on how to resolve these issues.

Discussion

This study incorporated recommendations of the MRC process evaluation framework and guidance for evaluation of sexuality education programs by the European Expert Group to evaluate the development and implementation processes of a school based CSE program among very young adolescents in Uganda. Three main points for the discussion can be drawn.

(1) Implementation of CSE is feasible in culturally conservative contexts. In a culturally conservative context such as Uganda where CSE implementation has faced resistance from religious and political groups, this study in a single district demonstrates that implementation of culturally adapted CSE program may be feasible. Active involvement of key stakeholders (pupils, teachers and parents) as well as working closely with a community advisory board consisting of interreligious and relevant policy representatives was an enabling factor in fostering acceptance of the CSE intervention. These important CSE implementation strategies have been emphasized in the International Guidance on Sexuality Education 2018 and other reviews which promote involvement of potential gatekeepers of CSE to improve effectiveness of CSE programs. Indeed such strengths have been demonstrated in the national scale up of CSE in Nigeria [10,31].

Although it is important for CSE interventions to be culturally appropriate, especially promoting acceptance, this aspect in culturally conservative settings may lead to a compromise in desired international quality standards [5]. Findings in this evaluation illustrate that certain culturally undesirable topics related to sexual diversity and having a sex positive approach were not discussed. It may be argued that CSE may not be a one-size-fits-all kind of intervention because programs that are not culturally sensitive often face major challenges during implementation [12]. It is also true that CSE programs delivered partially, such as in this intervention, may not be as effective as those with more comprehensive content [7]. However, more evidence is needed to evaluate effectiveness of partially adapted CSE programs in cultural conservative settings such as Uganda.

(2) The need to address practicalities of CSE implementation in school settings. It was noted that fidelity to the program was often compromised during implementation especially with regard to having shorter duration of the lessons than planned. The main factor that contributed to this challenge was competing school schedules, whereby schools often provided a limited amount of time compared to the original plan. Lack of prioritisation of sexuality education in schools has been established before, as sexuality education is viewed as a non-examinable subject and priority is given to other subjects [12,32]. Yet, lack of fidelity potentially limits the effectiveness of CSE programs [7,8]. Proper scheduling, including multiple short sessions within allowable time provided by the school and planning in advance for allocation of time on the regular school schedule for CSE, may be essential for smooth delivery to allow end users to maximise benefits of the program.

(3) *What then after empowering young people through CSE*? One important finding of this study is that CSE can empower young adolescents to improve their health and wellbeing by connecting them to SRH resources. The program experienced high reporting of sexual violence and abuse ranging from bad touches to forced sexual experiences. Reporting of sexual offences might have been influenced by the program as pupils were equipped with more knowledge and enhanced recognition of SRH risks as well as awareness of reporting procedures. Furthermore, we presume that the program improved communication and trust between pupils and teachers or parents to facilitate the reporting. We do consider it of a great importance for the development of the future SRH programs. Addressing these sexual offences required involvement of parents as well as offering mental health services for those who had experienced sexual violence. This exemplified that CSE programming can serve as an opportunity to connect young adolescents to other resources in their community. Adolescents expressed intentions to utilise SRH services if they decided to engage in sexual activity. Ensuring that they actually have access to these services requires engaging other stakeholders, especially health facilities who provide these services. Linkages with health services is an important quality criteria in implementation of CSE programs [5,7,10]. CSE implementation calls for a multi-pronged approach with involvement of different stakeholders including parents, health workers, and legal services in order to address barriers to accessing SRH services [7].

Limitations

The study had notable limitations including lack of reliable evidence on actual CSE lessons content delivered in schools in the absence of video recording of sessions or active observations by the evaluation team. Thus, we were unable to verify the completeness of the content in lessons during delivery. However, there were verifiable observer reports and student educator reports as well as pupil feedback that were proxy evidence for this. Additionally, the evaluation was conducted by the same researchers who implemented the project, which may have lead to a biased interpretation of the results. However, to minimise reporting bias strict international evaluation guidelines were followed.

Conclusion

It was feasible to implement a contextually adapted comprehensive sexuality education program for young adolescents in schools successfully with overall acceptance by key stakeholders. Notable successes of the program, which are potentially replicable in similar culturally conservative settings, were attributed to the program relevance to the stakeholders (pupils, teachers and parents) and having a community advisory board that ensured cultural appropriateness of the CSE content. However, implementation of the program was challenging and fidelity was often compromised, which limited its effectiveness. Proper planning to coordinate school activities with the program and linkages of school based CSE programs with community support systems for adolescent SRH could be beneficial.

Declarations

Ethical approval and consent to participate

Institutional ethical approvals were obtained from Mbarara University of Science and Technology in Uganda, reference MUIRC 1/7, the Uganda National Council of Science and Technology (reference SS 4045) and Ghent University in Belgium. Written consent from head teachers of participating schools, parents and assent from pupils were obtained prior data collection.

Consent to publications

This is not applicable (we have not included names, images or videos that need obtaining consent).

Availability of data and material

The source documents and transcripts used and/or analyzed during this study are available from the corresponding author on reasonable request.

Declaration of Competing Interest

The authors declare that they do not have any competing interests.

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Authors' contributions

EK participated in design, data analysis and writing of the initial manuscript. OI participated in the data analysis, writing and editing of the initial manuscript. KM and VNN participated in data analysis and manuscript editing. KB, KR, GNR, WM, GC, ABN and EL participated in editing of the manuscript. All authors read and approved the final manuscript.

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Appendix A. Supplementary material

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