Implementation of The World Starts With Me, a comprehensive rights-based sex education programme in Uganda

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Abstract

This article presents a process evaluation of the implementation of the sex education programme the World Starts With Me (WSWM) for secondary school students in Uganda. The purpose of this mixed-methods study was to examine factors associated with dose delivered (number of lessons implemented) and fidelity of implementation (implementation according to the manual), as well as to identify the main barriers and facilitators of implementation. Teachers’ confidence in teaching WSWM was negatively associated with dose delivered. Confidence in educating and discussing sexuality issues in class was positively associated with fidelity of implementation, whereas the importance teachers attached to open sex education showed a negative association with fidelity. Main barriers for implementing WSWM were lack of time, unavailability of computers, lack of student manuals and lack of financial support and rewards. Other barriers for successful implementation were related to high turnover of staff and insufficient training and guidance of teachers. Teachers’ beliefs/attitudes towards sexuality of adolescents, condom use and sex education were found to be important socio-cognitive factors intervening with full fidelity of implementation. These findings can be used to improve the intervention implementation and to better plan for large-scale dissemination of school-based sex education programmes in sub-Saharan Africa.

Introduction

Reviews of school-based sex education programmes show mixed evidence for the effectiveness of such interventions [1–4]. Most evaluation studies only address changes in or effects on (determinants of) sexual behaviour of the target group, without considering the implementation process of the intervention [5, 6]. This is remarkable, as quality of implementation is considered an important factor for the effectiveness of school-based interventions [7, 8], especially in resource-poor settings [1, 9–11].

With the recognition that high-quality implementation is important to ensure that evidence-based programmes will be effective [7, 12, 13], the importance of process evaluations is also more and more recognized [10, 11, 14]. However, published process evaluations of school-based comprehensive sex education programmes in Sub-Saharan Africa are still rare. In the current process evaluation, we focus on the implementation of the World Starts With Me (WSWM), a comprehensive sex education programme, from the perspective of teachers. WSWM has been implemented since 2003 in over 150...
schools throughout Uganda addressing the Sexual and Reproductive Health and Rights needs of secondary school students. WSWM is one of the 18 curricula underlying the technical guidance on sex education of the United Nations Educational, Scientific and Cultural Organization [15].

Linnan and Steckler [16] distinguish seven key process evaluation components, of which fidelity of implementation and dose delivery are directly linked to the implementers of the programme. As teachers are the main implementers of WSWM, they play a significant role in both fidelity of implementation and in dose delivery. Previous research shows that teachers’ skills, beliefs and practices [17], moral views on adolescents’ sexuality, attitudes, subjective norms and self-efficacy towards sex education [18–20] and, a supportive school environment for sex education [20], are important (socio-cognitive) factors related to quality of implementation (i.e. dose delivered and fidelity of implementation) of a sex education programme.

This study adds to the above mentioned research by examining socio-cognitive correlates (e.g. teachers’ attitudes towards WSWM and confidence in teaching sex education) of dose delivery and fidelity of implementation of WSWM and by exploring barriers and facilitators that teachers perceive when implementing comprehensive sex education in Uganda.

Methods

Participants and procedure

This study uses a mixed methods design that includes a survey among WSWM teachers with a baseline and follow-up measurement, and in-depth interviews with a small subset of teachers in between the two survey measurements. The selection of teachers took place during a mid-term review meeting of WSWM teachers in May 2008, Kampala, which was organized by SchoolNet Uganda, the implementing partner of the World Population Foundation (WPF). Approximately 100 teachers were present, among them 24 from schools which were part of the intervention group of the simultaneous effectiveness evaluation study [21]. Teachers from these 24 schools were included in the process evaluation on a voluntary basis. The remaining WSWM teachers were asked if they wanted to participate in the study, and 56 of them responded positively.

Before completing the questionnaire, teachers were given an instruction by a trained Dutch female health psychology Masters student and SchoolNet Uganda staff about the goal and content of the questionnaire, about giving consent and about their confidentiality being assured. The questionnaires were completed in English at the site of the meeting in approximately 1 h. Of the 80 questionnaires handed out, 75 were returned completed (T0). The post-test took place upon completion of the programme, between September 2008 and February 2009. Of the 75 teachers participating at T0, 65 (87%) returned the post-test questionnaire (T1), among them the 24 teachers of the intervention group of the effectiveness evaluation study. The analysis was conducted with the data of the teachers who had completed both baseline and post-test questionnaire (n = 65, from 54 different schools). Almost half of them were female (49.2%), 46.2% was male and 4.6% unknown. The mean age was 32.5 years (SD 6.5), ranging from 24 to 52 at the time of the pre-test.

Of the 24 teachers from the intervention schools, eight were selected for in-depth interviews, which were conducted in between the administration of the baseline and follow-up questionnaires of the process evaluation (June to August 2008). The selection of the teachers was based on gender (four males; four females), on location of the school (spread throughout Uganda and both rural and urban), and type of school (boys, girls and mixed schools). However, some schools in the North of Uganda were considered to be too dangerous to travel to and were therefore not selected for the in-depth interviews. The age of the teachers in the in-depth interviews ranged from 26 to 53 years. All interviews were recorded and transcribed verbatim. Teachers received an incentive of 30,000 UGX (€9) after the interview. See Table I for an overview of respondents and school types. The in-depth interviews
of approximately 45 min to 1 h, took place at the school site in between the pre- and the post-test. A trained Dutch female health psychology Masters student conducted the interviews.

**Ethical approval**

The Ethical Committee for Psychology at Maastricht University approved the study. Each of the respondents signed an informed consent stating that they completed the questionnaire on a voluntary basis and that they understood that they could stop at any time.

**The questionnaire**

The questionnaire was administered at baseline, when teachers just had started implementing the first lesson(s) of WSWM, and at post-test, directly after completion of the programme. The questionnaire was developed by the WPF research team and was partly based on a validated questionnaire developed by Wight et al. [22] for evaluating the SHARE Intervention (Sexual Health and Relationships: Safe, Happy and Responsible). The questionnaire consisted of socio-demographic questions, such as age, gender and religion, and socio-cognitive characteristics, such as the attitudes of teachers towards sex education and their confidence in teaching about sexuality. The pre-test included questions related to intention. The post-test consisted of relevant outcome measures such as self-reported fidelity of implementation and dose delivered, and experienced barriers to and support for implementation. Items were scored either on a binary scale (‘no’ or ‘yes’) or on a five-point Likert scale. Items were recoded such that higher scores reflect a stronger presence of the variable in question. For all scales used, mean scores of the construct variables were calculated. The reliability of the scales used was assessed using Cronbach’s alpha when the scale consisted of minimal three items. For two-item constructs, Pearson correlation coefficient was used, with a significant correlation level of $P < 0.01$.

**Questionnaire at baseline (T0)**

**Background variables**

Demographic variables, including gender of the teacher, age, religious background, years of teaching experience and having taught WSWM before were assessed with appropriate items. To gain a better understanding of the implementation context, questions were asked about whether the programme was implemented with, without or partially with computers. Another question related to whether WSWM was implemented in extra-curricular time, within the time of the regular curriculum or both.

**Intentions**

Teachers’ intention towards full dose of delivery was measured by the following question: ‘Do you intend to finish teaching the WSWM programme?’ ($0 = \text{no}; 1 = \text{yes}$). Intention towards fidelity of implementation was measured by the following item: ‘Do you intend to follow the WSWM manual (protocol) in your teaching?’ ($0 = \text{no}; 1 = \text{yes}$).

**Attitudes**

General attitude towards sex education was measured by five statements ($z = 0.68$), such as ‘I think sex education for students in Uganda is important.’ ($1 = \text{very unimportant}; 5 = \text{very important}$). Attitude towards the importance of comprehensive and open sex education for young people was measured by two items ($r = 0.58, P = 0.001$), such as: ‘It is important to talk about sex with young people in an open way’ ($1 = \text{totally disagree}; 5 = \text{totally agree}$).

<table>
<thead>
<tr>
<th>nr</th>
<th>Fictive name</th>
<th>Gender</th>
<th>School type</th>
<th>Boarding/Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mary</td>
<td>F</td>
<td>Girls</td>
<td>Boarding</td>
</tr>
<tr>
<td>2</td>
<td>Allen</td>
<td>F</td>
<td>Mixed</td>
<td>Boarding/Day</td>
</tr>
<tr>
<td>3</td>
<td>Grace</td>
<td>F</td>
<td>Girls</td>
<td>Boarding</td>
</tr>
<tr>
<td>4</td>
<td>Madina</td>
<td>F</td>
<td>Mixed</td>
<td>Boarding/Day</td>
</tr>
<tr>
<td>5</td>
<td>Joseph</td>
<td>M</td>
<td>Girls</td>
<td>Boarding</td>
</tr>
<tr>
<td>6</td>
<td>Alex</td>
<td>M</td>
<td>Boys</td>
<td>Boarding</td>
</tr>
<tr>
<td>7</td>
<td>Stephen</td>
<td>M</td>
<td>Mixed</td>
<td>Boarding/Day</td>
</tr>
<tr>
<td>8</td>
<td>Fred</td>
<td>M</td>
<td>Mixed</td>
<td>Boarding/Day</td>
</tr>
</tbody>
</table>
programme was measured by six items ($\alpha = 0.81$), such as ‘Do you think the WSWM programme is important?’ (1 = totally disagree; 5 = totally agree). Attitude towards teaching about contraceptives was measured by two questions ($r = 0.61$, $P = 0.001$), such as ‘We have to teach young people about condoms’ (1 = total disagree; 5 = totally agree). Finally, attitudes towards young peoples’ sexual rights was measured by three items, such as ‘Young people have the right to make their own decisions on their sexual life’ ($\alpha = 0.69$).

Subjective norms

The subjective norm regarding fidelity of implementation was measured by the following question: ‘Do you think the following people find it important that you teach the programme according to the WSWM manual?’ (1 = totally disagree; 5 = totally agree), followed by nine different people, such as ‘other WSWM teachers’ and ‘head teacher’ ($\alpha = 0.90$). Support from other people was measured by the following question: ‘I experience support for teaching the WSWM programme from the following people’ (1 = totally disagree; 5 = totally agree), followed by nine categories, such as ‘other school teachers’ and ‘parents’ ($\alpha = 0.76$).

Confidence and self-efficacy

Teachers’ confidence in educating and discussing sexuality in the classroom was measured by the question ‘How confident do you feel about doing the following in the classroom?’ (1 = unconfident; 5 = confident), followed by five items such as ‘organising role plays’ ($\alpha = 0.80$). Teachers’ confidence in teaching WSWM was measured by eight statements, such as: ‘I can deal with critical reaction of students regarding the fact that I am teaching the WSWM programme’, ‘If needed, I can act as a process facilitator instead of a teacher’ and ‘I find myself skilled in teaching WSWM’ (1 = totally disagree; 5 = totally agree; $\alpha = 0.83$). Finally, teachers’ self-efficacy in implementing the WSWM programme was assessed by two single items (1 = totally disagree; 5 = totally agree): ‘I feel like I am able to complete teaching the whole WSWM programme’ (self-efficacy completeness of implementation) and ‘I feel like I am able to teach the WSWM programme according to the manual’ (self-efficacy fidelity of implementation).

Questionnaire at post-test (T1)

Dose delivered and fidelity of implementation

Dose delivered was measured by the following questions: ‘Have you taught all the lessons of the WSWM programme?’, followed by a list of the names of all 14 lessons (0 = no; 1 = yes). Respondents who completed all 14 lessons, or who completed 13 and had planned the final lesson, were scored ‘complete dose delivery’. All others were coded ‘no complete dose delivery’.

Fidelity of implementation was measured by two items: (i) ‘Of all the assignments/exercises that you taught, did you conduct them in the way they were described in the teacher manual/instruction (following the exact description)?’ (1 = no, not at all according to the manual; 5 = Yes, totally according to the manual), and (ii) ‘Did you teach the lessons in the order that is stated in the manual?’ (0 = no; 1 = yes). Respondents who scored ‘5’ on the first question (following the exact description of assignments in the manual) and ‘1’ on the second question were recoded as ‘full fidelity’. All other respondents were recoded as ‘partial fidelity’.

Barriers to and support for implementation

Teachers’ experienced barriers to implementing the WSWM programme were measured at T1 by 13
single statements, such as ‘The classes are too big’ and ‘It was difficult to relate to young people regarding sexuality’ (1 = very much; 5 = not at all; $\alpha = 0.77$). The experienced support from relevant others (such as other teachers, school management and parents) to teach WSWM was measured by the following question: ‘I experienced support for teaching the WSWM programme from the following people . . . ’, followed by a list of eight people including ‘other WSWM teachers’, ‘school management’ and ‘parents of WSWM students’ (1 = totally disagree; 5 = totally agree; $\alpha = 0.81$).

In-depth interviews

Each in-depth interview started with a short explanation about the background and objectives of the research, and some general questions about the teachers’ main teaching subject. The interview protocol included the following topics: (i) experienced support from relevant others to teach WSWM; (ii) attitudes towards adolescents’ sexuality; (iii) religious and cultural beliefs and WSWM; (iv) confidence and self-efficacy in teaching sex education and WSWM; (v) fidelity and completeness of implementation and (vi) challenges and suggestions for improvements in implementing the programme. Examples of questions that were included are: ‘Is the amount of support that you experience sufficient for you?’ If no: ‘What kind of support do you need?’ and ‘Do you follow the WSWM manual/protocol in your teaching? Why (not)?’.

Data Analysis

The quantitative data from the teacher questionnaires were analysed using SPSS (17.0). Bivariate logistic regression was employed to determine the association between the dose of delivery and the fidelity of implementation on the one hand and the relevant determinants on the other hand. The variables displaying significant values of $P < 0.05$ at a 95% confidence interval (CI) in the univariate analysis were entered simultaneously in a multivariate logistic regression model to establish unique contributions of these correlates in the explanation of intention. For all analyses estimations of odds ratio (OR), 95% CI and $P$-values are presented.

The principal researcher read and re-read the data from the in-depth interviews and analysed them using the template analysis method [23]. Relevant statements were extracted from the transcription and categorized according to a-priori codes (based on the main interview topics) manually. This way, connections between the different statements could be made and clarification of the experienced barriers and support as well as additional barriers and supportive factors emerged.

Results

Correlates of dose delivered and fidelity of implementation

The majority, 34 of the 65 teachers (52%) taught all the lessons of the programme and were scored ‘complete dose delivered’. Two of them had not yet held the WSWM exhibition (lesson 14), but had this planned shortly after filling in the questionnaire. The first 11 lessons were taught by 56 of the teachers (86%). Lesson 12 (Your future, Dreams and Plans) and lesson 13 (My Top Tips Peer Book) were skipped by 18 (28%) and 15 (23%) respondents, respectively, and 52 teachers (80%) had finished lesson 14 (the Exhibition). See Table II for an overview. Approximately one-third (35%) of the schools implemented the programme using a computer, 28% without a computer and 34% of the schools implemented the programme partially using a computer.

Of the total of 65 respondents, 31 (48%) scored ‘full fidelity’, which is defined as conducted all assignments and exercises following the exact description in the manual, and teaching the lessons in the order as stated in the manual. More than half of the respondents (37; 57%) said they had implemented the assignments and exercises totally according to the manual, 38.5% [25] partially, 3.1% (2) not really according to the manual and 1 respondent (1.5%) was not sure. The majority of the teachers (54; 83%) reported they had followed the sequence of the lessons as stated in the WSWM manual, whereas 12 teachers (17%) said they had not.
The univariate associations between dose delivery (equal to number of lessons implemented) as well as fidelity of implementation (equal to taught according to the manual) and the socio-cognitive variables are presented in Tables III and IV. ‘Confidence in teaching WSWM’ was (negatively) associated with a higher score on full-dose delivery, explaining 10% of the variance in full-dose delivery (Nagelkerke $R^2 = 0.10$). Full fidelity was associated positively with teachers’ confidence in educating and discussing sexuality in class. Teachers who endorsed comprehensive and open sex education for young people as important scored lower on fidelity of implementation. Together these significant correlates explained 30% of the variance in fidelity (Nagelkerke $R^2 = 0.30$).

### Barriers to implementation

Results from the post-test questionnaire show that ‘lack of time’ was most frequently mentioned by the teachers (77%) as a barrier for implementation (answer categories ‘very much’ and ‘a bit’). In the majority of the WSWM schools (76%), the programme is taught in extra-curricular time, either immediately after the mandatory classes, or at the weekend. During the in-depth interviews, teachers indicated that this is problematic, especially for day schools, where the students have to return home after school. Some teachers mentioned that the need to balance between accommodating the students’ needs and time was a major reason for them not to adhere strictly to the teachers’ manual. Role-plays were considered too time consuming and therefore often skipped.

After ‘lack of time’, the questionnaire data revealed both ‘lack of student manuals’ (69%) and ‘lack of computers’ (69%) most frequently as barriers for implementing WSWM. During the in-depth interviews all eight teachers said that they use the manual in class. In two schools the programme was implemented in the main hall, with a large number of students (50–100), which is a very difficult setting to work with a computer or to follow the manual (i.e. role-plays, group discussions). Some teachers said they would prefer the manual to have more simple explanations. The majority of teachers indicated that the manual should allow for more flexibility and should be more attuned to the Ugandan context:

> For example, the book [manual] states the fact. But we needed a lot of Ugandan data, Ugandan examples, living examples on every topic, you know, where it is real life stories, real life pictures, you know. So that they don’t think this is an international thing, they need to know the Ugandan experience. (Mary, girls boarding school).

In the in-depth interviews, teachers also mentioned the lack of computers as a main barrier of implementation. Even when computers were available, teachers experienced the problem of irregular electricity or the problem of computers being not available for the programme. Also, the issue of low-quality computers was raised a couple of times: if computers were available, the computers were too slow to effectively run the programme, they did not have DVD players nor projectors to show extra audio-visual materials.

On the questionnaire ‘lack of financial resources’ was mentioned by 35 respondents (54%) as a barrier of implementing WSWM. During the in-depth interviews, the lack of financial resources was broadened and explained as ‘lack of financial motivation’.

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### Table II. Dose of delivery ($n=65$)

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Topic</th>
<th>Number (%) of teachers having taught the lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The WSWM</td>
<td>61 (93.8%)</td>
</tr>
<tr>
<td>2</td>
<td>Emotional ups and downs</td>
<td>62 (95.4%)</td>
</tr>
<tr>
<td>3</td>
<td>Is your body changing too?</td>
<td>61 (93.8%)</td>
</tr>
<tr>
<td>4</td>
<td>Friends and relationships</td>
<td>61 (93.8%)</td>
</tr>
<tr>
<td>5</td>
<td>Boys and girls, men and women</td>
<td>61 (93.8%)</td>
</tr>
<tr>
<td>6</td>
<td>Fight for your rights!</td>
<td>56 (86.2%)</td>
</tr>
<tr>
<td>7</td>
<td>Sexuality and love</td>
<td>59 (90.8%)</td>
</tr>
<tr>
<td>8</td>
<td>Pregnancy: 4 girls and boys</td>
<td>60 (92.3%)</td>
</tr>
<tr>
<td>9</td>
<td>Protect yourself: STIs and HIV/AIDS</td>
<td>59 (90.8%)</td>
</tr>
<tr>
<td>10</td>
<td>HIV/AIDS: U have a role 2 play</td>
<td>59 (90.8%)</td>
</tr>
<tr>
<td>11</td>
<td>Love shouldn’t hurt</td>
<td>59 (90.8%)</td>
</tr>
<tr>
<td>12</td>
<td>Your future, dreams and plans</td>
<td>47 (72.3%)</td>
</tr>
<tr>
<td>13</td>
<td>My top tips peer book</td>
<td>50 (76.9%)</td>
</tr>
<tr>
<td>14</td>
<td>The exhibition</td>
<td>52 (80%)</td>
</tr>
</tbody>
</table>

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Implementation of a sex education programme in Uganda
Table III. Results of univariate and multivariate logistic models with dose delivery (full dose delivered; no full dose delivered)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Univariate Model</th>
<th></th>
<th>Multivariate Model</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>OR (95% CI)</td>
<td>P-value</td>
<td>β</td>
<td>OR (95% CI)</td>
<td>P-value</td>
</tr>
<tr>
<td>Intention to finish the programme</td>
<td>0.10 (1.03)</td>
<td>1.11 (0.15–8.40)</td>
<td>0.92</td>
<td>-0.77 (2.03)</td>
<td>0.46 (0.009–24.50)</td>
<td>0.70</td>
</tr>
<tr>
<td>General attitude towards sex education</td>
<td>3.79 (2.88)</td>
<td>44.11 (0.16–12552.33)</td>
<td>0.19</td>
<td>7.20 (4.78)</td>
<td>1342.91 (0.011–1.59)</td>
<td>0.13</td>
</tr>
<tr>
<td>Attitude towards young people’s sexual rights</td>
<td>0.04 (0.27)</td>
<td>1.05 (0.62–1.77)</td>
<td>0.87</td>
<td>0.17 (0.39)</td>
<td>1.18 (0.55–2.54)</td>
<td>0.67</td>
</tr>
<tr>
<td>Attitude towards importance of comprehensive sex education</td>
<td>0.00 (0.46)</td>
<td>1.00 (0.41–2.46)</td>
<td>1.00</td>
<td>0.26 (0.74)</td>
<td>1.30 (0.31–5.56)</td>
<td>0.72</td>
</tr>
<tr>
<td>Attitude towards teaching about contraceptives</td>
<td>0.26 (0.27)</td>
<td>1.28 (0.76–2.16)</td>
<td>0.36</td>
<td>0.51 (0.38)</td>
<td>1.66 (0.79–3.51)</td>
<td>0.18</td>
</tr>
<tr>
<td>Attitude towards the WSWM programme</td>
<td>-0.79 (0.74)</td>
<td>0.46 (0.11–1.94)</td>
<td>0.29</td>
<td>-0.48 (1.01)</td>
<td>0.62 (0.09–4.45)</td>
<td>0.64</td>
</tr>
<tr>
<td>Support from other people</td>
<td>0.40 (0.40)</td>
<td>1.48 (0.67–3.27)</td>
<td>0.33</td>
<td>0.67 (0.62)</td>
<td>1.95 (0.58–6.50)</td>
<td>0.28</td>
</tr>
<tr>
<td>Confidence in educating and discussing sexuality in class</td>
<td>-0.24 (0.56)</td>
<td>0.79 (0.26–2.37)</td>
<td>0.68</td>
<td>0.48 (1.11)</td>
<td>1.62 (0.18–14.29)</td>
<td>0.67</td>
</tr>
<tr>
<td>Confidence in creating a safe atmosphere</td>
<td>1.06 (0.71)</td>
<td>2.89 (0.72–11.67)</td>
<td>0.14</td>
<td>3.20 (1.27)</td>
<td>24.45 (2.03–294.35)</td>
<td>0.012</td>
</tr>
<tr>
<td>Confidence in dealing with different teaching methods</td>
<td>-0.29 (0.65)</td>
<td>0.75 (0.21–2.70)</td>
<td>0.66</td>
<td>-1.28 (1.36)</td>
<td>0.28 (0.02–3.97)</td>
<td>0.35</td>
</tr>
<tr>
<td>Confidence in teaching WSWM</td>
<td>-1.32 (0.60)</td>
<td>0.27 (0.08–0.87)</td>
<td>0.029</td>
<td>-2.73 (1.04)</td>
<td>0.07 (0.01–0.50)</td>
<td>0.009</td>
</tr>
<tr>
<td>Self-efficacy in implementing the WSWM programme completely (= full dose delivery)</td>
<td>-0.14 (0.25)</td>
<td>0.87 (0.53–1.42)</td>
<td>0.58</td>
<td>-0.07 (0.36)</td>
<td>0.93 (0.46–1.89)</td>
<td>0.84</td>
</tr>
<tr>
<td>Constant</td>
<td>-9.37 (9.66)</td>
<td>0.00</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Nagelkerke $R^2 = 0.41$
Table IV. Results of univariate and multivariate logistic models with fidelity of implementation (full fidelity; no full fidelity)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Univariate model</th>
<th>Multivariate model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Intention to follow the WSWM Manual in teaching</td>
<td>1.22 (1.04)</td>
<td>3.40 (0.44–26.31)</td>
</tr>
<tr>
<td>General attitude towards sex education</td>
<td>0.34 (1.08)</td>
<td>1.40 (0.17–11.70)</td>
</tr>
<tr>
<td>Attitude towards young people’s sexual rights</td>
<td>-0.04 (0.27)</td>
<td>0.96 (0.57–1.62)</td>
</tr>
<tr>
<td>Attitude towards importance of comprehensive sex education</td>
<td>-1.33 (0.56)</td>
<td>0.27 (0.09–0.79)</td>
</tr>
<tr>
<td>Attitude towards teaching about contraceptives</td>
<td>0.17 (0.27)</td>
<td>1.19 (0.71–2.00)</td>
</tr>
<tr>
<td>Attitude towards the WSWM programme</td>
<td>0.22 (0.72)</td>
<td>1.25 (0.31–5.00)</td>
</tr>
<tr>
<td>Subjective norm towards fidelity of implementation</td>
<td>0.53 (0.37)</td>
<td>1.70 (0.83–3.48)</td>
</tr>
<tr>
<td>Confidence in educating and discussing sexuality in class</td>
<td>1.26 (0.64)</td>
<td>3.51 (1.00–12.31)</td>
</tr>
<tr>
<td>Confidence in creating a safe atmosphere</td>
<td>1.27 (0.78)</td>
<td>3.57 (0.77–16.43)</td>
</tr>
<tr>
<td>Confidence in dealing with different teaching methods</td>
<td>0.84 (0.70)</td>
<td>2.31 (0.58–9.15)</td>
</tr>
<tr>
<td>Confidence in teaching WSWM</td>
<td>0.93 (0.58)</td>
<td>2.53 (0.81–7.88)</td>
</tr>
<tr>
<td>Self-efficacy in completing the WSWM programme according to the manual (= full fidelity)</td>
<td>0.20 (0.31)</td>
<td>1.22 (0.66–2.26)</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.03 (8.71)</td>
<td>0.001</td>
</tr>
</tbody>
</table>
Despite teachers’ enthusiasm to be involved in the teaching of this programme, their motivation declined as a result of lacking financial support for the efforts they put into the programme.

The survey questions on experienced barriers to implementation did not include possible responses related to ‘lack of staff’ and ‘high staff turnover’. However, both were mentioned as barriers to implementation during the in-depth interviews. Not all schools had the intended minimum of two trained WSWM teachers, meaning that in some cases only one teacher was responsible for covering all the lessons. During the in-depth interviews, teachers mentioned that the government reallocates teachers every few years. Trained WSWM teachers might thus be transferred to another school, leaving the school with only one or no WSWM teacher.

‘Lack of appropriate training’ and ‘lack of on-the-job guidance and support’ of teachers were also not included in the questionnaire as possible responses, but were mentioned during the in-depth interviews. Some teachers felt they lack knowledge about contraceptives and biological aspects of sexual health related topics included in the WSWM programme. One male teacher said he felt unconfident explaining ‘female sexuality issues’, and that it needs a professional, like someone from the health sector, to explain complicated issues like the menstrual cycle:

I feel much confident when I’m explaining issues to do with eh . . . with boys, and then when it comes on the side of girls, sometimes I feel that I’m really giving, you know, false information, particularly somebody is asking about the menstruation period. ( . . . ) But I mean, there are some particular areas, that I cannot really involve myself to talk about, which needed the help of either the senior woman teacher or the school nurse. (Joseph, girls’ boarding school).

Also some teachers mentioned that these complicated, biological issues are not clearly described in the manual.

Supportive factors of implementation
Results from the post-survey show that the majority of teachers felt most supported (answer categories ‘totally agree’ and ‘agree’) by their students (99%), head teachers (97%), school management (91%), other WSWM teachers (85%) and other teachers (72%). Teachers felt less supported by parents (52%), health-care providers (49%) and religious institutions (49%). More than two-third (69%) felt supported by their own family.

During the in-depth interviews, teachers mentioned school culture and the experienced support from school management, other teachers and community as important facilitating factors for implementation. One teacher explained that support from other teachers, the school management and parents made him feel motivated, rather than the financial reward he would receive for his efforts. Some teachers mentioned that other teachers do not want anything to do with WSWM or any other sex education programme and that the majority of the teachers were not supporting them. Gaining support from the other teachers is done through running workshops on WSWM for all the staff. Here again, the issue of lack of financial reward was mentioned as a barrier to organize such workshops:

( . . . ) the other teachers wanted, want a one-day seminar rather than the 2-days workshop to be organized for them, on the World Starts With Me. They wanted to know the content, and what it is all about. But the school could not really raise money for organizing that workshop, because you know after workshop people expected some allowance to be given for them to go home. (Joseph, girls’ boarding school).

One teacher mentioned the valuable support of a regional network of other WSWM teachers in teaching, exchanging ideas and consultation. Support in teaching on technical or sensitive topics by the Science or Biology teachers or by the clinic officer to inform the students on STIs, was mentioned by a
number of teachers as an additional facilitating factor for high-quality implementation:

(….) we have a clinic officer here, in charge of the dispensary and she too comes in when it comes to STDs, STIs (…) whenever you had a chance you were to talk about one of those areas defined in WSWM, so we get a lot of support. That’s why we have finished the programme. (Mary, girls’ boarding school).

Support from parents and the community was a concern to some of the teachers. They recognized the need to involve the community, and especially parents, more in the sex education of their children, so as to create supportive attitudes and norms concerning adolescent sexual and reproductive health and rights in line with the WSWM programme. (Non)supportive beliefs and norms towards rights-based sex education

Being a rights-based sex education programme, WSWM acknowledges adolescents sexuality and right to make informed choices about whether to be sexually active or not, with whom and to protect themselves from coerced sex, unintended pregnancy and STIs, including HIV [21]. During the in-depth interviews, teachers expressed their personal beliefs and norms towards sexuality of adolescents, sexual intercourse before marriage and condom use in particular. All eight teachers strongly disapproved of their students having sexual intercourse and were in favour of abstinence until the age of 18, preferably until marriage. They shared the view that students at secondary schools should focus on their studies only and not be involved in relationships and sexual intercourse. Also, the Ugandan Ministry of Education, supportive of abstinence-only sex education, does not support condom promotion at schools. The promotion of condom use among young people remains a controversial topic, surrounded by myths and fear:

(….) We are not really telling them to actually go for condoms. (…) Because, you may think that somebody is protecting you and then this person might have even created actually, you know, a hole, I mean, on the condom and this is either going to make you pregnant despite the condom or the person is going to infect you and it has been a trick. You know, people with HIV/AIDS have ever played, they will tell you that I, you’ll find that protected when they’ve already done it, the condom. So with the ignorance you just get yourself in for it. (Joseph, girls’ boarding school).

Some teachers said they did not promote condom use because of their religious views. Others did feel the religious pressure, but decided to follow their own ‘practical, more realistic beliefs’. These teachers believed that promoting condom use was simply necessary and felt comfortable talking about condoms. Other teachers, although only teaching about abstinence, do hope that, if needed, the adolescent uses a condom.

Some teachers touched upon the issue of homosexual behaviour between men, which in the Ugandan context is not only a taboo subject but also a criminalize act [24]. Homosexuality is framed as ‘deviant’, ‘not-natural’ and against the religious norms. In October 2009, an Anti-Homosexuality Bill was introduced in the Ugandan Parliament to expand existing anti-homosexuality laws. The Bill included heavier punishments and criminalization for direct and indirect support for same-sex practices; a requirement to report homosexuals, and to deny them shelter. After failure to pass in the eighth parliament of May 2011, it was reintroduced in parliament in February 2012 [25]. In such a social, religious and political context, merely discussing homosexuality is already difficult to do. Teachers also referred to the chance to lose their job if discussing homosexuality in class:

Homosexuality is . . . , since the whole country is against that. I believe that, when somebody tempers, you know, to encourage homosexuality, particularly in school, which is actually at a mission, which is under church mission, definitely, it may end your job (laughing). Yes, so we’re not actually talking and eh telling them that it is good practice to have homosexuality. (Alex, boys’ boarding school)
Only one teacher said she discussed the topic in class, because in her view homosexuality is a fact of life, which you just have to accept.

Discussion

The current study is one of the few process evaluations of a comprehensive sex education programme in a sub-Saharan context, going beyond the mere statistics of dose delivered and fidelity rate. The study explores the correlates of dose delivered and fidelity of implementation and provides in depth analyses of experienced barriers and supportive factors from the perspective of the main implementers, the teachers.

Overall, the percentage of teachers (52%) who reported that they implemented all 14 WSWM lessons (dose delivered) and the percentage of teachers (48%), who said they had implemented WSWM fully according to the manual (fidelity of implementation), were similar or lower compared with other sex education programmes in a Western as well as a Sub-Saharan context. Studies conducted in a Western context show higher percentages of teachers who fully implement the programme and who do so according to the programme’s manual or instructions. For instance, in a study conducted in the Netherlands, 81% of the teachers carried out most of the activities of a sex education programme they were supposed to [26], and 71% of the teachers in a Scottish context reported having followed the sex education package very closely [27].

It should be pointed out, however, that in current study the measure of full fidelity was very strict, that is, ‘totally according to the manual and in the order specified’. A process evaluation of a school-based sexual health intervention in Tanzania [28], also using a strict definition of fidelity (‘not skip or change any part of the sessions’: p. 504) showed very high percentages of around 90% curriculum coverage. The study also showed a high 95% fidelity rate of those 109 teachers (89%) who returned in total 1416 (51%) of the total possible session reports.

When looking at dose delivered, only confidence in teaching WSWM was found to be a correlate and, remarkably, the association was negative. This could be explained by the fact that teachers who were more confident at the start of WSWM did not expect to experience difficulties in implementation and may have been less prepared to overcome barriers compared with those teachers who were less confident and therefore expected beforehand that they would find implementation difficult. An alternative explanation could be that highly confident teachers could feel more free to skip a lesson when they felt it was irrelevant or did not fit the setting compared with less confident teachers.

In line with other studies conducted in Europe [20] and in Sub-Saharan Africa [29, 30], teachers’ confidence in teaching and discussing sexuality issues in class (self-efficacy) appeared as an important associative positive factor of fidelity of implementation. Contrary to what is found in other studies [20, 29] factors such as attitudes, subjective norms and sexual morality, were not associated with high fidelity. Remarkably, our study shows that the importance teachers attach to open sex education for young people to prevent problems was negatively associated to full-fidelity in implementation. This could be explained by the fact that highly committed teachers feel the need to adapt the programme to suit the students’ needs more than less committed teachers. Recent research also suggests that positive adaptation of a programme to meet developmental and cultural needs is an important factor for enhancing effectiveness of the intervention [7, 31] and should not necessarily be considered an implementation failure: ‘Unfortunately, most researchers have considered programme adaptation as an implementation failure (i.e. a failure to achieve fidelity) and have not assessed its possible contribution to outcomes’ ([32], p. 341).

In line with other studies, the most frequently mentioned barriers to implementation were lack of time [17, 27, 33], unavailability of student manuals [34], lack of financial resources and computers. For instance, a study on HIV education in South African schools revealed that insufficient time, lack of resources and large classes posed serious challenges
for teachers implementing sex education [17]. The in-depth interviews gave a better understanding of the implementation context and the barriers and facilitators for implementation. Negative personal attitudes and norms towards sex among adolescents, condom use and homosexuality, which are contrary to the WSWM curriculum content, hinder teachers in implementing WSWM the way it is intended. This was also found in HIV education programmes implemented in South African schools [18], where a conflict was found between the teachers’ personal beliefs and values (i.e. abstinence only, no condoms) and the messages that they were expected to communicate (i.e. promoting condom use). In Uganda, homosexual acts are illegal, and an anti-homosexuality attitude is apparent at many levels of society. Open and rights-based discussion about homosexuality in schools is, therefore, very difficult to achieve.

In addition to above-mentioned factors, teachers mentioned lack of trained staff, high staff turnover, lack of follow-up training and on the spot guidance, lack of a detailed and simplified teacher manual and personal, cultural, religious norms and beliefs as barriers for full implementation. Similar findings are found in other studies in a Sub-Sahara African context [30, 35–39]. Teachers’ lack of motivation has been linked to not receiving financial rewards. Some teachers even had to contribute their own resources to make sure the programme was implemented.

This study has some limitations. First, the cross-sectional nature of the data does not allow us to draw conclusions about causality. Secondly, the current study relied on teachers’ self-reports only. Research on measurement of completeness and fidelity of implementation shows that self-reports by teachers and observations by others are not always congruent, which may be due to teachers’ overestimation of their own competence [7]. Future research should include observational methods, next to self-reports, to enhance the validity of the data.

In conclusion, the fidelity and completeness of implementation of WSWM could be improved by making the programme more flexible to implement, consisting of an evidenced-based straightforward basic programme and add-on optional programme elements which the teacher can use depending on time and specific needs of the students. Teacher training should aim at increasing basic knowledge on sexual and reproductive health and rights, increasing teachers’ self-efficacy to educate and discuss sexuality issues in class, identifying ways to discuss condom use in a cultural acceptable way and critically reflecting on conflicting norms and values which some teachers experience when providing comprehensive sex education for students. Furthermore, a supportive school and community environment, as well as supportive national policies and laws related to comprehensive rights-based sex education, are essential for the high quality implementation of such programmes at school level. Finally, in a limited resource context, basic teaching standards should first be established before more high-tech and interactive teaching can be successfully introduced [28]. Therefore, allocating funds for teaching the programme, especially if it is not part of the curriculum, and providing the necessary detailed and simplified manuals for teachers and students, are essential to effectively implement comprehensive rights-based sex education. Computer-based programmes are a good option if the context ensures sufficient availability of good-quality computers, a continuous electricity supply and a proper computer service attached to it, either provided by the government, the school, the implementing non-governmental organization or the funding agency.

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Conflict of interest statement

None declared.
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