

Pre-/Post- Assessment of a Sexual and Reproductive Health Training Program for Young People in Namibia

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Abstract

During the first COVID-19 lockdown in Namibia (March-September 2020), the Ministry of Health and Social Services reported there were an estimated 14,983 teenage pregnancies in 2020, an increase from the prior year's estimated 13,552. The regions of Kavango East and West were particularly impacted. In response to these figures, the Ombetja Yehinga Organisation (OYO), a youth-focused Namibian non-governmental organization, facilitated an after-school intervention in 2021 to discuss key sexual and reproductive health knowledge. An identical questionnaire was administered at both pre- and post-test, in order to provide baseline information for assessing the effectiveness of a school-based intervention to promote safe sexual behaviours. A total of 18 schools in the regions of Kavango East and West participated in the intervention between May-September 2021, and 638 learners aged 13-25 were included in data analysis after completing both the pre- and post-tests. Prior to the intervention, knowledge on sexual and reproductive health, including safe sexual behaviours and accessing contraceptives was limited. Results obtained at post-test indicate there were significant increases in participants' level of knowledge between pre- and post-test, suggesting that school-based interventions (such as the OYO program) may be effective in disseminating this crucial information to at-risk populations.

Keywords: teenage pregnancy, sexual and reproductive health, school-based interventions

1. Purpose and Background

Teenage pregnancy is a challenging circumstance experienced by many young people in sub-Saharan Africa. Namibia in particular reports high rates of teenage pregnancies, with figures from the Ministry of Health and Social Services indicating there were 17,003 mothers under the age of 18 in 2020; some mothers were in school while others were not. When considering the COVID-19 pandemic, this statistic increased significantly, with an estimated 14,983 teenage pregnancies occurring across Namibia in 2020, particularly during the first lockdown (March-September 2020) (Ministry of Health and Social Services, 2022). The regions of Kavango East and Kavango West were particularly impacted, reporting 1,953 and 1,246 teenage pregnancies respectively. While data from the Ministry of Health and Social Services on teenage pregnancy rates in 2019 are not available, there was a significant increase in the number of self-reported pregnancy-related school dropouts, with Kavango East seeing an increase from 193 dropouts in 2019 to 554 in 2020, and Kavango West increasing from 147 to 522 (Ministry of Basic Education, Sport and Culture, 2022). The number of teenage pregnancies in 2020 was likely also higher, as over 7,400 learners in these regions combined dropped out of school during the closures and did not return, therefore, their pregnancy status was unknown (United Nations, 2021).

In response to the high prevalence of HIV/AIDS, the Namibian government implemented during the 1990s sexual and reproductive health education programs in schools across the country. The primary curriculum at the time taught students the ABC method: Abstinence, Be faithful, and use Condoms (Green & Herling, 2006). However, this approach was largely seen as ineffective due to high rates of HIV in the population persisting in the years following the implementation of the ABC method in the school curriculum (Mufune, 2008). As a result, this approach is now rarely taught in schools, though students' sexual and reproductive health knowledge often still

reflects these outdated recommendations. Current school-based sex education was developed in the mid-2000s with a more comprehensive curriculum and as a complementary approach to fighting the spread of HIV/AIDS (Mufune, 2008), which consist of interventions and programs delivered at (or in association with) schools. These programs intend to promote youth's sexual health and relationships in a safe way and have included creating the position of life skills teachers who provide young people with information about sexual and reproductive health, pregnancy, and sexually transmitted infections (STI) (Smith, 2020). Programs particularly emphasize condom use among young people since this contraceptive is already widely known due to the ABC method and students may be encouraged to access health services such as clinics to procure condoms (Mutsindikwa et al., 2019). Despite these efforts, program facilitators were often minimally trained in sexual and reproductive health (Mufune, 2008) and schools receive insufficient parental support to increase the effectiveness of current programs due to cultural concerns sex education is taboo (Lukolo & van Dyk, 2014). This contributes to students' lack of sexual and reproductive health knowledge and facilitates the spread of misinformation. In response to such challenges, programs such as the *President's Emergency Plan for AIDS Relief* (PEPFAR)-funded initiatives ensure more aggressive interventions in schools, in particular for girls. One such program is *Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe women* (DREAMS). The DREAMS program however focuses on specific regions in Namibia and within those regions on districts with high HIV burdens. The regions of Kavango East and Kavango West were not part of DREAMS at the time of this program.

Healthcare workers have stated that sex education programs inadequately deal with teenage pregnancy, abortion, and rape, as well as sex between married couples, sex for economic reasons, and recreational sex (Mufune, 2008). To address these topics, students are often encouraged by teachers and healthcare workers to attend community-based programs at the youth centre. Programs are delivered by healthcare workers and go into further detail on menstruation, vulnerability to pregnancy, advantages and disadvantages of contraceptives and their correct use, and information on various STI. These programs explore sexual and reproductive health in more detail since teachers may consider love, emotion, and masturbation to be uncomfortable topics that are beyond the scope of the syllabus. Unfortunately, most community-based programs require parental consent for children to participate, which many parents refuse to provide. Alternatively, the OYO intervention presented in the current study is an after-school activity that does not require parental consent and offers a more comprehensive view of sex education. In addition, resources and teaching materials that students can access independently are usually written in English; there is a lack of materials written in local languages (Vries et al., 2014). While English is the language of instruction in Namibia, it is important that the information provided in the materials is not overcomplicated so students can understand the content appropriately. Effective and accessible sex education programs in schools are needed to avoid the spread of misinformation.

If sexual and reproductive health knowledge is not communicated directly to students, they are unlikely to ask adults their own questions and rely instead on friends' opinions and what they see in the media (Kervinen, 2014), and especially increasingly so on social media. Recent research on sub-Saharan Africa has observed that adolescents receive most of their information about contraceptives from the media or peers, allowing persistent myths regarding the effectiveness and side effects of contraception to impede access and demand (Smith, 2020). Ideally, health services should be offered in schools and adolescent empowerment programs can be established to facilitate open communication (Glinski et al., 2014). Encouraging comprehensive sexual and reproductive health resources within schools is especially important, as level of education is positively associated with higher contraceptive use among young people and partially informs the effectiveness of school-based interventions (Smith, 2020). Since providing more thorough and accurate services is often not permitted in schools due to a lack of parental support, when this occurs, sexual and reproductive health services in the community must be youth-friendly, accessible, and affordable (Mutsindikwa et al., 2019). Encouraging condom use is particularly important as it is the only contraceptive that protects individuals from both pregnancy and HIV. Additionally, interventions that involve condom distribution appear to be effective in increasing students' self-reported condom use (Sani et al., 2016). Unfortunately, a lacking supply of condoms appears to be a consistent hurdle young people face when attempting to use this method of contraception and must also be addressed. Condoms are not distributed in Namibian schools. Young people can access them for free at clinics and hospitals, but most young people are reluctant to visit those places for fear of being seen and reported.

The sex education curriculum implemented in schools tends to emphasize medical facts and potential negative consequences of sexual experiences, instead of discussing its many nuances. When teachers use this method, young people are dissuaded from learning more, and as a result, their questions and concerns surrounding contraception are rarely addressed (Yakibu & Salusu, 2019). By tailoring sex education programs to young people's needs and addressing the challenges they face in accessing sexual and reproductive health services,

misconceptions can be addressed by teachers early on (Sani et al., 2018). In response to the situation during COVID, the Ombetja Yehinga Organisation (OYO), a youth-focused Namibian non-governmental organization, administered in 2021 a survey to provide baseline information for assessing the effectiveness of a school-based intervention promoting safe sexual behaviours. The aim of this study was to assess what learners at risk of teenage pregnancy knew about key sexual and reproductive health information and whether there were improvements in knowledge at the end of the intervention. This paper presents the results of that study and draws conclusions regarding the effectiveness of the school-based OYO intervention in promoting knowledge of safe sexual behaviours.

1.1 Intervention: The OYO Magazine & Training on Teenage Pregnancy

The Ombetja Yehinga Organisation (OYO) is a Namibian welfare organization established in December 2002, that uses visual and performing arts to create awareness and mitigate the impact of HIV/AIDS and other social problems (e.g., domestic violence, rape, and substance abuse) among the youth of Namibia. To achieve this, OYO first published in 2002 the '*OYO, young, latest and cool*' magazine, and current issues are 73-pages and have a glossy, professional look. Each issue of the magazine addresses a different topic related to HIV/AIDS or sexual health and is divided into five chapters containing contributions from learners on the topic, texts by experts, drawings, comics, and other graphical material. Magazine assistants (known as facilitators) are local youth with prior involvement with OYO who are trained to introduce and discuss the magazine with learners. An OYO supervisor ensures quality in the delivery of the program content. Facilitators coordinate with schools to deliver the sessions – typically 5 sessions of 90 to 120 minutes each with groups of 40 learners; they organize debates, create plays, or hold discussion sessions, as appropriate. They help learners gain a thorough understanding of the topic and encourage them to express their views or concerns by making individual contributions in the form of essays, poems, stories, or drawings. They also encourage them to read the magazine further, in their own time. Learners who attend at least four of the sessions then receive a certificate for attendance.

The school-based intervention (facilitated sessions) took place between May-September 2021. OYO distributed the magazine and conducted in-person, after-school sessions in 18 schools in the Kavango East and Kavango West regions of Namibia, led by five trained facilitators. The training of facilitators included lectures, role play, and discussion about each of the five sections of the magazine as well as about the study, including how to obtain valid consent (i.e., ensure understanding about the study and respect voluntary participation and the right to dissent without penalty), protect confidentiality, and administer the questionnaires.

The intervention consisted of five 2-hour sessions corresponding to each chapter of the magazine on Teenage Pregnancy and Forced Marriage, namely: (1) female and male sexual cycle; (2) early sexual debuts, ABC and contraceptives; (3) intergenerational sex and teenage pregnancy; (4) HIV, abortion and baby dumping; and (5) preventing mother to child transmission. Each group of learners was invited to participate in five facilitated sessions consisting of lectures, group discussions, and knowledge assessments. The facilitated sessions happened either over five days from Monday to Friday or over a maximum of two weeks if other school activities had to be accommodated. Approximately two weeks after the completion of session five, the post-test was administered during a sixth session which also involved a group discussion and evaluation of the educational comic included in the OYO magazine. The intervention took place after school to avoid conflict with classes, yet it was administered in school facilities and teachers were sometimes present to assist facilitators. The magazines and the program were provided free of cost to learners and schools; and no financial compensation was given for completing the pre-post-tests. The purpose of this study was to assess what learners at risk of teenage pregnancy knew about key sexual and reproductive health information and whether there were improvements in knowledge at the end of the intervention.

2. Method

2.1 Setting & Participants

Overall, 1,292 learners in the 18 participating schools were invited to participate in the after-school program and study, of which 814 were girls. Of the total number of learners who participated in at least one session of the intervention, 638 learners from 13 of the participating schools completed both the pre-test and post-test and were included in the pre/post analyses. The number of learners who completed the pre-test but not the post-test can be attributed to absence from school during the final session and/or delays in administering the program due to school closures occurring in winter 2021 in response to high rates of COVID transmission (schools unexpectedly closed from the 25th of June to the 5th of August). Schools were selected by the Regional Ministry of Education Directorate in collaboration with OYO, taking into consideration the recent prevalence of teenage pregnancy in the regions of Kavango East and Kavango West. School teachers and administrators in each school selected learners in

grades 6-11 to be offered the program. Participant inclusion criteria included school-going youth aged 13-25 years who were considered by their teachers at higher risk of teenage pregnancy or of impregnating girls (i.e., boys assumed to be sexually active).

2.2 Measures & Procedures

Participants completed a written 17-item questionnaire immediately before and two weeks after the training. A quasi-experimental design was needed to accommodate the implementation calendar established by the funder and school guidelines set by the Namibia Ministry of Education in response to COVID-19. Before the program started, participants were asked to complete the questionnaire (pre-test) that included four demographic items, nine sexual and reproductive health statements (true/false) based on key learning objectives of the program, and four additional questions regarding program content. The latter included two open-ended questions to list up to six contraceptives they were aware of and to indicate what PMTCT stands for, and two multiple-choice questions to assess familiarity with school policies on learner pregnancy/impregnation. Two weeks after the intervention, participants completed a post-test questionnaire identical to the pre-test, with the addition of two items ranking the program sessions and sections of the magazine.

Each OYO facilitator administered the questionnaires collectively in a classroom setting reading aloud each item and each participant marking their answer on their own form. Facilitators had been trained in the ethical conduct of research (including voluntary participation and confidentiality) and adopted uniform procedures to ensure quality information as well as the protection of participants' rights. Facilitators kept a record of attendance and reflected on fidelity in the implementation of the program by completing a brief monitoring form at the end of each session. An OYO supervisor observed selected sessions and completed a monitoring form reflecting on learners' level of engagement and comprehension.

2.3 Analysis

The questionnaires, attendance sheets, and monitoring forms were scanned for missing information and entered into IBM SPSS Statistical Software version 27 and Excel for analysis. Pre- and post-training survey responses were compared using related samples Wilcoxon signed rank to assess whether facilitation increased learners' knowledge level with respect to each of the items. Non-parametric analyses were used for survey responses in which at least one variable was not normally distributed as determined by Shapiro-Wilk tests ($W(638) = 0.567, p < .001$). Specifically, non-parametric analyses served to compare the number of correct responses to sexual and reproductive health statements between pre- and post-intervention. An alpha level of 0.05 was used for all statistical analyses.

Permission for the study was provided by the Kavango East and Kavango West Regional Offices of the Ministry of Education, Arts and Culture and the schools' principals *in loco parentis*. All learners participating in the study provided written informed consent prior to the intervention and the administration of the questionnaires. No names were included in any data collection form or questionnaire. Instead, OYO facilitators assigned an ID number to each participant and only this ID was included in questionnaires/forms to protect confidentiality. The McGill University Faculty of Medicine and Health Sciences Institutional Review Board approved secondary analysis of this information.

3. Results

3.1 Participating Learners and Training Implementation

As can be seen in Table 1, two-thirds of the sample were female. Learners ranged from grades 6-11, with the largest number of participants being in grades 9-11 (75.6%). Learners were between the ages of 13-25 years, while the mean age ($M = 17.43, SD = 2.23$) reflects that the largest groups of learners were aged 16-18 years (52.5%). Learners invited to participate in the after-school program were selected by school administrators among young people considered at risk for teenage pregnancy; of the participating learners, 15.7% reported they had been pregnant or had impregnated someone.

Table 1. Characteristics of participants in OYO evaluation [at start of intervention] (n = 638)

		Count	%
Gender	Female	397	62.2
	Male	214	33.5
	Other	7	1.1
Age (Mean = 17.43; SD = 2.23)	13	6	.9
	14	44	6.9
	15	77	12.1
	16	109	17.1
	17	117	18.3
	18	109	17.1
	19	60	9.4
	20	47	7.4
	21	34	5.3
	22	19	3
	23	9	1.4
	24	4	.6
25	1	.2	
Education	Grade 6	3	.5
	Grade 7	22	3.4
	Grade 8	101	15.8
	Grade 9	141	22.1
	Grade 10	221	34.6
	Grade 11	150	23.5
Ever pregnant/impregnated a girl [at start of intervention]		100	15.7

3.2 Effects on Knowledge Post-Training

Table 2 describes young people’s knowledge of sexual reproductive health and relevant school policies at pre- and post-intervention. Globally, the proportion of correct responses increased in every item by 5%-45%. A related samples Wilcoxon signed ranks test indicated there were significant differences in knowledge between pre- and post-test documented among participants’ answers to a range of health statements. The following statements saw a significant difference in the number of correct responses between pre- and post-test: *Girls always start to menstruate when they are 13 years old* ($Z = 5.642, p < .001$); *All girls have a menstruation cycle of 28 days* ($Z = 5.212, p < .001$); *Menstruation blood is dirty blood* ($Z = 12.412, p = .000$); *After puberty boys can have wet dreams* ($Z = 4.868, p < .001$); *Having sex even though you are not ready will make your boyfriend/girlfriend love you more* ($Z = 2.135, p = .033$); *If you are 14 or older you can access contraceptives on your own without your parents* ($Z = 9.091, p = .000$); *Abortion is illegal in Namibia except under specific circumstances such as rape* ($Z = 6.456, p < .001$); *If you are pregnant, you must know your HIV status to protect your child and access PMTCT* ($Z = 4.216, p < .001$). The only statement that saw no significant difference in the number of correct responses was: *You cannot get pregnant if you have sex standing up* ($Z = .41, p = .682$). Participants’ awareness of the Prevention of Mother to Child Transmission program (assessed by indicating what the acronym PMTCT referred to) also increased between pre- and post-test ($Z = 15.853, p = .000$). In addition, there was a significant difference in the number of correct responses to the questions about school policies (Table 2): *She can stay at school for the first 8 months. She must leave school the last month, give birth and can return to school two months later if someone can look after the child while she is at school* ($Z = 4.525, p < .001$); *He can continue school uninterrupted but is encouraged to get counselling and learn how to be a father* ($Z = 5.438, p < .001$).

Table 2. Descriptive statistics of correct answers for pre- and post-test knowledge (n = 638)

Content [Areas]	Count	%	SD	Z
Age of menstruation [correct]				
Pre-test	204	32	.47	
Post-test	289	45	.5	5.64**
Duration of menstruation [correct]				
Pre-test	228	36	.48	
Post-test	306	48	.5	5.21**
What is menstruation [correct]				
Pre-test	287	45	.5	
Post-test	498	78	.41	12.41***
Boys during puberty [correct]				
Pre-test	493	77	.42	
Post-test	554	87	.34	4.87**
Sex standing up [correct]				
Pre-test	439	69	.46	
Post-test	445	70	.46	0.41
Ready for sex [correct]				
Pre-test	474	74	.44	
Post-test	502	79	.41	2.14*
Accessing contraceptives [correct]				
Pre-test	285	45	.5	
Post-test	427	67	.47	9.09***
Abortion in Namibia [correct]				
Pre-test	417	65	.48	
Post-test	511	80	.4	6.46**
Accessing PMTCT [correct]				
Pre-test	554	87	.34	
Post-test	594	93	.25	4.22**
PMTCT [correct]				
Pre-test	257	40	.49	
Post-test	552	87	.34	15.85***
School policy for girls [correct]				
Pre-test	364	57	.5	
Post-test	426	67	.47	4.53**
School policy for boys [correct]				
Pre-test	464	73	.45	
Post-test	531	83	.37	5.44**

Notes. *p < .05, **p < .001, ***p = .000.

Similarly, after the intervention participants named a higher number of different contraceptives than at pre-test; and there were significant increases in the number of times each individual contraceptive was listed. Whereas

almost one-quarter of young people were not able to list any contraceptive before the intervention, only 3% failed to indicate any after participating in the program; in fact, 88% listed at least five contraceptives in the post-test (Table 3).

Table 3. Frequencies of contraceptives listed pre- and post-test (n = 638)

Content	Pre-test (%)	Post-test (%)	Z
No. of contraceptives listed			
0	23	3	
1-2	9	1	
3-4	17	8	
5-6	38	62	
7-8	14	26	
Contraceptives listed¹			
Male condom	67	93	11.08***
Female condom	44	75	12.49***
Birth control pill	62	84	9.75***
Emergency contraceptive	23	37	6.47**
IUD	24	45	8.63***
Injections	59	79	8.83***
Implants	24	36	5.46**
Tube tie	14	22	3.96**
Withdrawal	32	60	11.48***
Rhythm method	20	32	5.71**
Other	12	8	-2.06*

Notes. ¹ Results do not add up to 100% as several responses were possible.

*p < .05, **p < .001, ***p = .000.

4. Discussion

The results from this study indicate that prior to the intervention, many learners appeared to be unaware or misinformed about sexual and reproductive health knowledge and how to access contraceptives, and programs like OYO's educational magazine and training can disseminate this crucial information. Among the sexual and reproductive health statements, learners appeared to be the least knowledgeable about girls' experience with menstruation. For example, the statements on age at start of menstruation, duration of the cycle, and whether menstruation blood is 'dirty' had the lowest number of correct responses during the pre-test. These findings are in line with previous research from sub-Saharan Africa that has observed that knowledge of HIV is much higher across adolescents than knowledge of menstruation and other sexually transmitted infections (STI) (Finlay et al., 2020). Due to the higher impact of HIV on morbidity and its more prominent visibility in households and the community, adolescents tend to retain the most information in their life sciences curriculum about HIV (Finlay et al., 2020). Early sex education programs implemented in countries across sub-Saharan Africa were developed to prevent the rapid transmission of HIV and tended to focus disproportionately on HIV compared to other topics (Green & Herling, 2006). Current programs address pregnancy, HIV, and how young women are especially vulnerable to these experiences, with risk factors including poverty, gender inequality, sexual violence, and/or a lack of education (Project Hope Namibia, 2019). Nevertheless, many adolescents lack a comprehensive knowledge of sexual and reproductive health across its various dimensions, which the OYO program attempts to address.

Due to limited sex education programs and inaccessible community services, adolescents receive most of their information about contraceptives from social media or their peers (Glinski et al., 2014). Unfortunately, the

information spread amongst young people is often inaccurate and may lead many to believe persistent misconceptions about sexual and reproductive health. After the administration of the OYO intervention, results from the post-test indicate there was an increase in the number of correct responses for all the statements. In particular, the Wilcoxon signed ranks test indicates the largest increases were observed for '*Menstruation blood is dirty blood*' (from 45% correct to 78%) and '*If you are 14 or older you can access contraceptives on your own without your parents*' (from 45% correct to 67%). The latter increase is particularly important, as promoting contraceptive use protects young people from both pregnancy and, in the case of condoms, HIV (Sani et al., 2016). Prior to the intervention, fewer than half the participants were aware that from 14 years old, youth in Namibia can access contraceptives without parental permission, as per the Child Care and Protection Act of 2015. This finding offers important implications for the high rates of teenage pregnancy occurring in Namibia; youth may not use contraception during certain sexual encounters, or they may be unaware that they can procure contraception. Previous research in low- and middle-income countries, including in sub-Saharan Africa, has similarly found that adolescents may have good knowledge of contraception but poor knowledge of the likelihood of pregnancy from sexual intercourse (Glinski et al., 2014). From feedback from the magazine facilitators, this can be attributed from misconceptions around the female sexual cycle. Many learners thought girls were more likely to fall pregnant if they had sex while menstruating for instance and were less likely to fall pregnant after menstruating. During discussions, some boys indeed reported this is the reason why they would use condoms if their partner was menstruating but forego them if their partner was not menstruating.

In line with these findings, many participants in the current OYO intervention reported during the pre-test familiarity with multiple methods of contraception (the most cited being male condoms, birth control pills, and injections), yet around a third of participants did not name any contraceptives or only named one or two. After administering the intervention, there were fewer participants reporting 4 or fewer contraceptives, while there were increases in those who reported 5 or more. This suggests that while misinformation about sexual and reproductive health knowledge among youth in Northern Namibia persists, educational interventions such as the OYO magazine and after-school program appear to be effective in increasing students' knowledge.

The OYO program is an intervention that addresses some of Namibia's core policies regarding teenage pregnancy, HIV/AIDS, and contraceptive use. As the OYO intervention is an accessible after-school program (i.e., takes place within their own school immediately after school hours), learners acquire important sexual and reproductive health knowledge in a familiar environment. Sexual education programs in Namibia began in response to high rates of HIV/AIDS in youth and the *National Policy on HIV/AIDS for the Education Sector* was enacted in 2003, which required ongoing instruction with learners about sexual health and life skills education (Ministry of Basic Education, Sport and Culture & Ministry of Higher Education, 2003). Sexual education programs have since evolved to offer a comprehensive education not solely focused on HIV/AIDS prevention. These shifts are largely attributed to Namibia's high levels of learner pregnancy and subsequent school dropout. In 2010, the *Education Sector Policy for the Prevention and Management of Learner Pregnancy* was enacted, with the goal of increasing knowledge about sexual responsibility and sexual health to help prevent teenage pregnancies (Ministry of Basic Education, Sport and Culture & Ministry of Higher Education, 2010). A step in the right direction, nonetheless the 2010 policy does not guarantee the full scope of sexual education required to adequately protect youth. For example, parents largely avoid discussing information on sexuality with their children, while many youths believe their parents should be educated on sexuality-related issues to be able to address their child's concerns (Lukolo & van Dyk, 2014). Other than their parents, young people can consult their life skills teacher, whose role is to educate students about sexual and reproductive health topics. Concern has been raised, though, that life skills teachers follow a specific sexual education curriculum and communicate this information to students without modification. As learners must attend these restrictive classes during their studies, a more comprehensive and interactive program such as the OYO intervention would complement the information already available to learners in a more gratifying way. In addition, life skills teachers are often between 40 to 50 years old, while OYO facilitators are youth between the ages of 20 to 25, making them more relatable and easier for learners to talk with. The OYO program would also be an accessible option for learners to participate in, as community-based programs that go into further detail than the school curriculum on sexual and reproductive health often require parental consent (Vries et al., 2014), rather than being an activity occurring in their school immediately after the completion of classes. Future studies could explore the different components of the intervention and the extent to which they contribute to positive outcomes in participants.

The implementation of a comprehensive after-school sexual education program for students would ultimately be a way to address the shortcomings youth have experienced in their standard school curriculum led by life skills teachers. By offering learners the opportunity to participate in sexual and reproductive health education in multiple

settings, they can benefit from a greater understanding of safe sexual practices. Despite the enactment of the learner pregnancy policy in 2010, rates of teenage pregnancies have remained high and were at an ultimate high during the COVID-19 pandemic (United Nations, 2021). This suggests that current sexual education in schools can be improved, such as ensuring policies are used not only to reduce the incidence of teenage pregnancy, but also to assist youth in completing their education (Maemeko et al., 2018). In addition, positive effects on youth health outcomes occur when curricula are comprehensive in scope and delivered as intended (United Nations, 2018), which is not always the case (Mufune, 2008). Future implementation studies of the OYO intervention would contribute to identifying essential elements or procedures that must be present for the successful transmission of information to young people and other intended (and unintended) positive outcomes.

4.1 Limitations

There are limitations to using solely self-report measures as well as non-experimental pre-post-test designs due to regression to the mean and test effects (Marsden & Togerson, 2012). As a result, the present study does not infer cause-and-effect between the OYO intervention and participants' sexual and reproductive health knowledge. The relatively short time frame between pre- and post-test measures immediate retention of information; the first five sessions occurred on school days over a maximum of two weeks, followed by the administration of the post-test during a sixth session two weeks after the completion of session 5. Further study is necessary to assess whether the retention of information persists over time. In addition, due to the short time frame between pre- and post-test, future studies may use retrospective pre-tests to control for response shift bias; what participants believe their level of knowledge on sexual and reproductive health was prior to the intervention and after its completion.

Following directives of the Ministry of Education, Arts and Culture, the intervention and evaluation were implemented in English (the official language of instruction in Namibia). It is possible that some learners had a limited reading level and/or command of English. This is an important consideration for future interventions and studies as learners may find the materials provided difficult to understand if the English written was overcomplicated and not complemented with resources in local language (Vries et al., 2014). In the present study, this was addressed by administering the questionnaire orally to the group and participants individually recorded their responses, which allowed facilitators to use local languages to respond to learners' questions if requested. In addition, it is important to note that learners selected by their teachers for participation in the OYO intervention were considered at risk of teenage pregnancy, however, there were no objective criteria outlined by the facilitation team for selecting these at-risk youth. While some learners had previously been pregnant or had impregnated someone, the comprehensive selection criteria (i.e., pertaining to youth who had not been pregnant or impregnated someone) is unknown, which could have contributed to the results obtained about learners' pre- and post-test sexual and reproductive health knowledge.

5. Conclusions

Results from this study suggest that the OYO program successfully increased learners' knowledge of key sexual and reproductive health issues, a target reached for a group of youth at risk of teenage pregnancy. Further study is needed to determine whether the improvements seen in learners' sexual and reproductive health knowledge persist over time (e.g., 6 months or 1-year post-intervention) and whether these findings are associated with participants' traits (e.g., gender, age) and/or other factors in young people's lives. Furthering these findings would allow for a better understanding of the effectiveness of the intervention administered in the present study and their ability to influence young people's experience practicing safe sexual behaviours after completing the intervention. While access to contraceptives including condoms may still be a problem for learners, tools that are youth-friendly and using multiple approaches (texts, drawings, photos, comics) such as the OYO magazine can improve knowledge and facilitate greater access to those services. To improve on this objective, further studies are indeed needed, yet it is almost certain that some of the knowledge gained in the current study is sustainable: Once young people know they can access contraceptives from the age of 14, it is unlikely they will forget about this pivotal information.

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years by addressing stumping blocks such as child marriage’.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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