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Modern contraception utilization and associated factors among adolescent girls and young women (AGYW) who participated in the Namibia DREAMS program

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Abstract

Objective A significant gap exists in modern contraception utilization among adolescent girls and young women (AGYW) in Namibia, contributing to a high incidence of teenage pregnancies. This study assessed the utilization of modern contraceptive methods and related factors.

Study design We conducted a retrospective analysis of programmatic data from AGYW aged 15–24 who received clinical services through the Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe (DREAMS) program, implemented by Project HOPE Namibia, between 2018 and 2024. Data were analyzed using IBM SPSS version 29, employing Chi-squared tests and bivariate and multivariate logistic regression.

Results Among the 28,945 participants in this analysis, 8420 (29.1%) used a modern contraceptive method. The most used method was the injectable ($n = 5,205$; 61.8%). Participants who had a higher likelihood of using a modern contraceptive method included those aged 15–19 years (AOR = 1.13, 95% CI (1.06–1.19)), with children (AOR = 2.20, 95% CI (2.04–2.37)), who were breastfeeding (AOR = 2.18, 95% CI (1.30–3.66)), and those who perceived themselves at risk of HIV (AOR = 1.15, 95% CI (1.08–1.22)). Participants less likely to utilize a modern contraceptive method included those who had recent or recurrent sexually transmitted infections (COR = 0.56, 95% CI (0.41–0.77)) and those who attended safe space HIV interventions (AOR = 0.85, 95% CI (0.78–0.93)).

Conclusion AGYW aged 20–24 years, those who do not consider themselves at risk of HIV, and those who participate in safe space interventions should be prioritized for initiatives aimed at improving contraception use.

Implication Several interventions, such as ensuring commodity security of preferred methods, enhancing education on SRH, and providing services on school premises to reduce health system and structural barriers, are required to ensure that AGYW in



Namibia utilise modern contraceptive methods to reduce unwanted pregnancies and the risk of contracting HIV.

Keywords Modern contraceptives use, Adolescent girls and young women (AGYW), Associated factors, Namibia

1 Introduction

The prevalence of contraceptive use serves as a measure of health, development, and the empowerment of women within a nation. The contraceptive prevalence rate functions as an indicator of access to reproductive health services, which are crucial for achieving various sustainable development goals, particularly those concerning child mortality, maternal health, human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS), and gender equality [1]. The use of modern contraceptive methods is also associated with expanded educational opportunities, sustainable population growth, and the advancement of the human rights of people to determine the number and spacing of their children [2]. Condoms are the sole method that effectively prevents both pregnancy and the transmission of sexually transmitted infections (STIs), including HIV [3].

Approximately 80% of women of reproductive age (15–49 years) globally have their contraceptive needs met through modern methods [4]. In sub-Saharan Africa (SSA), merely 50% of women of reproductive age have their contraceptive needs met, representing the lowest rate globally [4]. The highest proportion of contraceptive use is observed among women aged 25–44 years, while the lowest is found in those under 25 years globally [4]. Between 2000 and 2020, contraceptive use among adolescent girls aged 15–19 rose from 45% to 61% globally, while among young women aged 20–24, it increased from 57% to 66% [4]. The contraceptive prevalence rate among women of reproductive age in Namibia is 58%, with an estimated 15% unmet need for modern contraception [5].

Many countries worldwide experience high rates of unintended and unwanted pregnancies. Adolescent girls and young women (AGYW) aged 15–24 represent the most vulnerable demographic for unintended and unwanted pregnancies due to the low utilization of effective contraceptive methods [6]. The national teenage pregnancy rate in Namibia is 19% [5]. Although Namibia has a 15% unmet need for family planning, the unmet need among AGYW is unknown [5]. Early and unintended pregnancies are associated with increased risks of maternal morbidity and mortality, premature births, low birth weight, unsafe abortions, and social repercussions, including stigmatization, school dropout, and poverty [7, 8]. AGYW, particularly in SSA, encounter obstacles in obtaining modern contraceptive methods, which include financial constraints, provider bias, confidentiality concerns, and contraception stock-outs at healthcare facilities [8]. AGYW may experience societal pressure to conceive shortly after marriage [9]. Previous studies have identified the level of education of the woman [10], her place of residence [11], the number of children she has [10], and the age difference with her sexual partner [11] as factors associated with modern contraceptive use among AGYW.

Previous studies in Namibia on modern contraceptive methods use reported on women of reproductive age as a whole [10, 12]. AGYW should be examined independently, as their needs for and access to modern contraceptive methods differ from those of adult women. We utilized data from the Determined, Resilient, Empowered AIDS-free, Mentored, and Safe (DREAMS) program, which includes both the DREAMS project

and the DREAMS component of the Reducing HIV Vulnerability: Integrated Child and Youth Health (Reach) activity, implemented by Project HOPE Namibia (PHN)-led consortiums, to assess the rate of modern contraceptive methods use and related factors, along with contraceptive methods choices among AGYW. Understanding the rate of modern contraceptive use and associated factors among AGYW can inform the formulation of strategies aimed at decreasing unintended pregnancies, unwanted pregnancies, and STIs, including HIV.

2 Methods

2.1 Study design

This study involved a retrospective analysis of programmatic data from sexually active AGYW aged 15–24 who received clinical services through the DREAMS program, which includes both the DREAMS project and Reach PHN activity, implemented by the PHN-led consortiums, between June 4, 2018, and September 30, 2024, focusing on those assessed for combination HIV prevention interventions including oral pre-exposure prophylaxis (PrEP). The dataset is privately owned by PHN.

2.2 Program and population

2.2.1 DREAMS program eligibility criteria

The criteria for eligibility into the DREAMS program have been discussed elsewhere [13]. In summary, the criteria depended on the age of the AGYW. AGYW aged 10–14 years were eligible if they had ever had sex, had a history of pregnancy, had experienced sexual, physical, or emotional violence, used alcohol or other substances, were out of school, or were orphans. Additional criteria among AGYW aged 15–19 years were having multiple sexual partners, having been diagnosed or treated for an STI, and having had transactional sex. The eligibility criteria for AGYW aged 20–24 were similar to those of AGYW aged 15–19 years, except that being an orphan and being out of school were not included.

2.2.2 DREAMS approach to adolescent and youth friendly health services (AYFHS) provision

To increase the uptake of integrated, high-impact HIV clinical services for AGYW and their sexual partners, the DREAMS program has been implementing a blended service delivery approach. This approach comprises three modalities that together address the key barriers to the availability and access of youth-friendly sexual and reproductive health (SRH) and HIV services. Modality 1 focused on strengthening the bidirectional community-facility referral linkage system in all districts implementing the DREAMS program. Key activities included reviewing the existing system to identify areas for improvement, refining referral slips and service directories, assigning referral focal persons, orienting staff on the system, and tracking referrals through paper-based and digital systems. The approach also facilitated referrals by providing transportation and leveraging existing collaboration mechanisms to coordinate activities and review progress. Modality 2 aimed to strengthen adolescent- and youth-friendly health services (AYFHS) at high-volume health facilities serving as referral hubs for the DREAMS program. Efforts included training service providers to deliver AYFHS with an emphasis on empathy and a non-judgmental approach, hiring nurses, social workers, and peer educators, mentoring and supervision, distributing social and behavioural communication

materials, fostering meaningful engagement with adolescents and young people (AYP), and creating a supportive, youth-friendly environment through facility renovations or the placement of prefabricated structures. The DREAMS program supported AYP in 35 health facilities in Katima, Omuthiya, Onandjokwe, Oshakati, Tsumeb, and Windhoek districts. Modality 3 involved facility-linked outreach teams, including nurses, peer educators, and social workers, from high-volume health facilities to the surrounding communities to deliver most SRH/HIV services. The team provided HIV testing services, immediate antiretroviral therapy (ART) initiation, PrEP services, short-acting contraceptives, condoms, post-violence care, and syndromic STI management. The teams visited group-based platforms regularly to ensure AGYW received tailored clinical services. They used existing community structures (e.g., schools and churches), tents, and program vehicles to ensure private and confidential services. AGYW were informed in advance about service schedules and available options via flyers, posters, local radio, social media, and program staff. Supplies were sourced from hub health facilities through the existing supply chain management system, and services were provided in accordance with national guidelines, documented using Ministry of Health and Social Services (MHSS)-approved registers. The team was mentored and supervised by nurse mentors and a doctor employed by the program.

2.2.3 Provision of modern contraception methods

Assessing SRH needs and providing a mix of contraception methods were an integral components of the core package of DREAMS interventions. To prevent unintended pregnancies among AGYW, the DREAMS program implemented the following strategies: (a) Leveraged demographic and epidemiological data to identify AGYW at risk for unintended pregnancy. (b) Utilized posters, flyers, flipcharts, and local radio to educate AGYW on modern contraception methods, focusing on addressing myths and misconceptions. (c) Provided opportunities for DREAMS Ambassadors and Peer Educators to share their experiences with SRH services. (d) Conducted training for healthcare providers on contraception services. (e) Offered contraception methods mix through both health facility and community platforms. (f) Supported family planning (FP) commodity security by quantifying and submitting the DREAMS program's commodity needs to health facilities, regional, and central pharmacies; monitoring site-level stock status; hosting quarterly regional meetings to strengthen commodity security; and submitting timely FP commodity consumption data and reports through existing systems. Used male platforms, parenting sessions, and participatory community mobilization strategies to create an enabling environment for AGYW to access and use contraception.

2.3 Data source

Anonymized data were sourced from the DREAMS program databases, including both the DREAMS project and Reach PHN activity. The source documents were the pre-exposure prophylaxis (PrEP) client records and clinical registers. The data collected during the program included programmatic information, sociodemographic characteristics of participants, HIV risk factors, the utilization of modern contraceptive methods, and the types of contraceptive methods used by the participants.

2.4 Dependent variable

The dependent variable for this study was 'contraceptive method use.' The responses to this statement were 'Yes' or 'No.' Individuals outside the 15–24 age range and those pregnant were excluded from this study. 'Yes' was assigned the code '2', while 'No' received the code '1.'

2.5 Independent variables

This study considered seventeen independent variables, categorized into participants' characteristics and HIV risk factors. The variables were chosen for their relevance and significance concerning modern contraceptive use.

2.5.1 Participants characteristics

The characteristics of the participants included age, marital status, number of biological children, district of service receipt, year of enrolment, duration in the programs, breastfeeding status, and involvement in safe space HIV prevention sessions. Age, represented in the dataset as a discrete numerical value, was categorized into age groups '15–19' and '20–24.' Marital status was categorized as 'single' or 'married,' and program duration was classified into '0–6 months,' '7–12 months,' '13–24 months,' '25–36 months,' or '>36 months.' Breastfeeding status was classified as either 'breastfeeding' or 'not breastfeeding.' The number of biological children was categorized as '0 children,' '1–2 children,' or '≥ three children,' whereas involvement in safe space HIV prevention sessions was classified as 'yes' or 'no.'

2.5.2 HIV risk factors

HIV risk factors included in this study were the knowledge of a partner's HIV status, recent or recurrent STIs, having an HIV-positive partner who is not on antiretroviral therapy, having an HIV-positive partner who has a detectable viral load, recurrent post-exposure prophylaxis (PEP) use, indulgence in sex under the influence of alcohol or drugs, the experience of sexual violence, having multiple or concurrent sexual partners, and consideration of self-risk of HIV. All the responses were coded as 'yes' or 'no.'

2.6 Data quality assurance

The digital system facilitated the automatic generation of BioID (Unique Identifier Code), implemented automated skip rules, and conducted validation checks for variables such as age and sex and constraints for mandatory questions. The digital system minimized transcription errors, thereby improving data completeness and quality. Data quality assurance (DQA) mechanisms included periodic programmatic spot checks, desk reviews, data quality reviews, and field monitoring by district and regional teams to ensure that reported data met minimum quality standards.

2.7 Criteria for inclusion in data analysis

Among the 30,864 aged 10–24 years who received clinical services through the program between 2018 and 2024, we excluded those outside the 15–24 age group and remained with 30,268 participants. We then excluded AGYW who were not sexually active or pregnant, leaving 28,953 participants. After excluding eight participants with missing data, we analysed the remaining 28,945 participants.

2.8 Data analysis

Data were exported from DHIS2 to IBM SPSS version 29 for analysis. Descriptive statistics, comprising percentages and frequencies, were employed to analyse nominal and ordinal data. Chi-square tests evaluated the associations between modern contraceptive use and the characteristics and HIV risk factors of participants. Characteristics identified as statistically significant through Chi-square tests were analysed using bivariate logistic regression to evaluate the strength of their associations with modern contraceptive use. Characteristics that exhibited statistically significant associations with modern contraceptive use, indicated by a p-value below 0.05 in bivariate logistic regression, were subsequently employed in multivariate logistic regression to determine the adjusted odds ratios.

2.9 Ethical considerations

The DREAMS program and this study adhered to the principles outlined in the Declaration of Helsinki. The DREAMS program, including both the DREAMS project and Reach PHN activity, was approved by the Namibian MHSS, the Ministry of Education, Arts, and Culture (MoEAC), the Ministry of Gender Equality, Poverty Eradication, and Social Welfare (MGEPESW), and the Ministry of Sport, Youth, and National Service (MSYNS). PHN implements a comprehensive privacy management framework by mandating that all personnel sign a Non-Disclosure Agreement, safeguarding all collected data. Access to the District Health Information System 2 (DHIS2) was granted based on defined roles and criteria. Each user was assigned a unique username and password-protected login credentials. De-identified or aggregated data were employed when data sharing was necessary. All minors in the program provided assent, and their parents or caregivers granted informed consent. AGYW of legal age completed an informed consent form. Approval from an institutional review board was not required for the secondary data analysis, as anonymous programmatic data was utilized. Access to the anonymised dataset was granted by PHN management.

3 Results

3.1 Characteristics of participants

A total of 28,945 sexually active, non-pregnant participants were included in this secondary analysis. The majority of participants were aged 20–24 ($n = 16,715$; 57.7%), had no children ($n = 24,296$; 83.9%), had been in the programs for less than six months ($n = 18,913$; 65.3%), had not participated in safe space HIV prevention services ($n = 24,501$; 84.6%), and were not breastfeeding ($n = 28,879$; 99.8%). Additional information is provided in Table 1.

3.2 HIV risk factors among participants

Most of the participants included in this analysis considered themselves at risk of HIV ($n = 18,670$; 64.5%) and did not know their partners' HIV status ($n = 15,446$; 53.4%). However, most participants were not recurrent post-exposure (PEP) prophylaxis users ($n = 28,913$; 99.9%), did not have HIV-positive partners who were not on antiretroviral therapy ($n = 28,900$; 99.8%), did not have partners with detectable HIV viral load ($n = 28,852$; 99.7%), did not report having sex under the influence of alcohol or drugs ($n = 28,761$; 99.4%), did not have recent or recurrent STIs ($n = 28,700$; 99.2%) and did

Table 1 Frequency distribution of characteristics of participants

Characteristics	Frequency <i>n</i> (%)
Age group (years)	
15–19	12,230 (42.3)
20–24	16,715 (57.7)
District	
Katima	5236 (18.1)
Omuthiya	3917 (13.5)
Onandjokwe	4230 (14.6)
Oshakati	1234 (4.3)
Tsumeb	2476 (8.6)
Windhoek	11,852 (40.9)
Year of enrolment	
2018	432 (1.5)
2019	2792 (9.6)
2020	8297 (28.7)
2021	7185 (24.8)
2022	4643 (16.0)
2023	2024 (7.0)
2024	3572 (12.3)
Months in the program	
≤ 6 months	18,913 (65.3)
7–12 months	2178 (7.5)
13–24 months	3169 (10.9)
25–36 months	1776 (6.1)
> 36 months	2909 (10.1)
Using a modern contraceptive method	
Yes	8420 (29.1)
No	20,525 (70.9)
Breastfeeding	
Breastfeeding	66 (0.2)
Not breastfeeding	28,879 (99.8)
Participated in safe space interventions	
Yes	4444 (15.4)
No	24,501 (84.6)
Marital status	
Single	8,515 (29.4)
Married	52 (0.2)
Missing	20,378 (70.4)
Number of biological children	
0	24,296 (83.9)
1–2	4,419 (15.3)
≥ 3	230 (0.8)

not have multiple or concurrent sexual partners ($n = 28,444$; 98.3%). More details are in Table 2.

3.3 Contraceptive use rate among participants

Among the 28,945 participants included in this analysis, 8,420 (29.1%) were using a modern contraceptive method, with a 95% confidence interval (CI) (28.6.0% – 29.6%), while 20,525 (70.9%) were not using any modern contraceptive method, 95% CI (70.4% – 71.4%).

Table 2 Frequency distribution of HIV risk factors among participants

Characteristics	Frequency <i>n</i> (%)
Partner's HIV status is unknown	
Yes	15,446 (53.4)
No	13,499 (46.6)
Partner is HIV-positive and not on antiretroviral therapy	
Yes	45 (0.2)
No	28,900 (99.8)
Partner with detectable HIV viral load	
Yes	93 (0.3)
No	28,852 (99.7)
Recent or recurrent STIs	
Yes	245 (0.8)
No	28,700 (99.2)
Recurrent post-exposure prophylaxis (PEP) use	
Yes	32 (0.1)
No	28,913 (99.9)
Having had sex under the influence of alcohol or drugs	
Yes	184 (0.6)
No	28,761 (99.4)
A victim of sexual violence	
Yes	62 (0.2)
No	28,883 (99.8)
Has multiple or concurrent sexual partners	
Yes	501 (1.7)
No	28,444 (98.3)
Considers self at risk of HIV	
Yes	18,670 (64.5)
No	10,275 (35.5)

Table 3 Frequency distribution of contraceptive methods used by participants

Contraceptive method	Frequency <i>n</i> (%)
Condoms	1162 (13.8)
Injectables	5205 (61.8)
Intrauterine contraceptive devices (IUD)	40 (0.5)
Implant	355 (4.2)
Patch	45 (0.6)
Pills	1603 (19.0)
Spermicides	10 (0.1)

3.4 Choices of contraceptive methods used by participants

Among the 8,420 participants who were using a modern contraceptive method, the most commonly used contraceptive method was an injectable ($n = 5,205$; 61.8%), followed by pills ($n = 1,603$; 19.0%) and condoms ($n = 1,162$; 13.8%). The least used methods were spermicides ($n = 10$; 0.1%), intrauterine contraceptive devices (IUD) ($n = 40$; 0.5%), and the patch ($n = 45$; 0.6%). More details are in Table 3.

3.5 Determinants of contraceptive use among participants

The Chi-square tests revealed that modern contraceptive method use was associated with age group, district, year of enrolment into the programs, duration in the programs, breastfeeding status, safe space participation status, and the number of biological children ($p < 0.05$). Additionally, the Chi-square test revealed an association between modern

contraceptive method use and recent or recurrent STIs and consideration of HIV self-risk ($p < 0.05$). However, marital status, a partner's HIV status, sexual activity under the influence of alcohol or drugs, recent or recurrent STIs, recurrent PEP use, and having multiple or concurrent sexual partners were not associated with modern contraceptive use in Chi-square tests. Participants who had a higher likelihood of using modern contraceptive methods included those aged 15–19, with adjusted odds ratio (AOR) = 1.13, 95% CI (1.06–1.19), breastfeeding (AOR = 2.18, 95% CI (1.30–3.66)), with 1–2 children (AOR = 2.20, 95% CI (2.04–2.37)), with ≥ 3 children (AOR = 2.05, 95% CI (1.56–2.70)), who considered themselves at risk of HIV (AOR = 1.15, 95% CI (1.08–1.22)), and those who were in the programs for more than 6 months. However, participants who were likely to use modern contraceptive methods were those who participated in the safe space HIV prevention sessions (AOR = 0.85, 95% CI (0.78–0.93)) and enrolled between 2018 and 2023. Additionally, participants were less likely to use modern contraceptive methods if they were from Omuthiya (AOR = 0.28, 95% CI (0.26–0.32)), Onandjokwe (AOR = 0.38, 95% CI (0.35–0.42)), Oshakati (AOR = 0.26, 95% CI (0.23–0.31)), Tsumeb (AOR = 0.43, 95% CI (0.38–0.48)), and Windhoek (AOR = 0.48, 95% CI (0.45–0.52)). More details are in Table 4.

4 Discussion

The study findings indicate that the rate of modern contraceptive method use among AGYW was 29.1%. The predominant contraceptive method utilized was an injectable, followed by pills. Participants aged 15–19 years, with children, enrolled in programs for over six months, who were breastfeeding, or who perceived themselves at risk of HIV, demonstrated an increased likelihood of utilizing a modern contraceptive method. Participants from all districts, apart from Katima Mulilo, who enrolled between 2018 and 2023, who had recent or recurrent STIs or attended safe space HIV prevention sessions, exhibited a lower likelihood of using modern contraceptive methods.

The modern contraceptive method use rate in this study was 29.1%, significantly lower than the 62.3% reported in a study of AGYW initiating PrEP in South Africa [14]. The rate in this study is slightly higher than that in the 2013 Namibian Demographic Health Survey, which reported a rate of 24% among young women aged 15–19 years [15], possibly due to population growth. The observed lower rate in this study compared to the South African rate may be attributed to the enrolment of most participants between 2020 and 2021, a period marked by exacerbated stockouts of family planning commodities and disruptions to health services due to the COVID-19 pandemic [16]. Strategies to improve the use of modern contraceptive methods among AGYW should focus on ensuring commodity security, enhancing sexual reproductive health education, providing services on school premises to reduce health system and structural barriers, and advocating for parental acceptance and support [17]. This study revealed that the most common contraception method used by AGYW was the injectables. This finding is similar to that reported by a study conducted in South Africa [18]. The preference for injectables compared to other contraceptive methods can be explained by their ease of use, as AGYW are not required to remember daily intake as with pills. Additionally, the financial burden is lessened due to the need for healthcare facility visits only every two to three months. Furthermore, the discreteness of injectables ensures that partners are unaware of the use of contraception by the AGYW [19]. It is important to emphasize the

Table 4 Determinants of modern contraceptive use among participants

Characteristics	Crude odds ratios	95% CI*	Adjusted** Odds ratios	95% CI*	Chi-square test p-value
Age group (years)					< 0.01
15–19	1.27	1.20–1.33	1.13	1.06–1.19	
20–24	Reference	Reference	Reference	Reference	
District					< 0.01
Katima Mulilo	Reference	Reference	Reference	Reference	
Omuthiya	0.27	0.25–0.30	0.28	0.26–0.32	
Onandjokwe	0.35	0.32–0.38	0.38	0.35–0.42	
Oshakati	0.45	0.40–0.52	0.26	0.23–0.31	
Tsumeb	0.30	0.27–0.34	0.43	0.38–0.48	
Windhoek	0.47	0.44–0.51	0.48	0.45–0.52	
Year of enrolment					< 0.01
2018	0.55	0.44–0.69	0.20	0.15–0.26	
2019	0.50	0.45–0.56	0.19	0.16–0.22	
2020	0.48	0.44–0.52	0.31	0.27–0.34	
2021	0.56	0.51–0.61	0.42	0.38–0.48	
2022	0.96	0.88–1.05	0.87	0.79–0.97	
2023	0.97	0.87–1.09	0.83	0.73–0.94	
2024	Reference	Reference	Reference	Reference	
Months in the program					< 0.01
≤ 6 months	Reference	Reference	Reference	Reference	
7–12 months	0.94	0.84–1.04	1.63	1.45–1.83	
13–24 months	1.46	1.35–1.58	2.50	2.28–2.75	
25–36 months	2.01	1.82–2.22	3.65	3.25–4.10	
> 36 months	2.38	2.20–2.58	4.98	4.47–5.54	
Breastfeeding status					< 0.01
Breastfeeding	4.28	2.59–7.08	2.18	1.30–3.66	
Not breastfeeding	Reference	Reference	Reference	Reference	
Participated in safe space HIV prevention sessions					< 0.01
Yes	0.59	0.55–0.64	0.85	0.78–0.93	
No	Reference	Reference	Reference	Reference	
Marital Status					0.59
Single	NI	NI	NI	NI	
Married	NI	NI	NI	NI	
Number of biological children					< 0.01
0	Reference	Reference	Reference	Reference	
1–2	2.89	2.70–3.08	2.20	2.04–2.37	
≥ 3	2.53	1.95–3.29	2.05	1.56–2.70	
Partner's HIV status is unknown					0.39
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
Partner is HIV-positive and not on antiretroviral therapy					0.49
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
Partner with detectable HIV viral load					0.26
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
Recent or recurrent STIs					< 0.01
Yes	0.56	0.41–0.77	0.72	0.51–1.01	
No	Reference	Reference	Reference	Reference	
Recurrent post-exposure prophylaxis (PEP) use					0.51
Yes	NI	NI	NI	NI	

Table 4 (continued)

Characteristics	Crude odds ratios	95% CI*	Adjusted** Odds ratios	95% CI*	Chi-square test p-value
No	NI	NI	NI	NI	
Having had sex under the influence of alcohol or drugs					0.81
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
A victim of sexual violence					0.16
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
Has multiple or recurrent sexual partners					0.24
Yes	NI	NI	NI	NI	
No	NI	NI	NI	NI	
Considers self at risk of HIV					< 0.01
Yes	1.16	1.10–1.22	1.15	1.08–1.22	
No	Reference	Reference	Reference	Reference	

95% CI* 95% confidence interval. Adjusted** adjusted for age group, district, year of enrolment, months in the program, breastfeeding status, the number of biological children, consideration of self risk of HIV, and participation in safe space HIV prevention sessions status. NI not included in the analysis. Bold values indicate statistically significant results

simultaneous use of injectables and condoms, as injectables alone do not protect against STIs and HIV [20].

The current study revealed that AGYW aged 15–19 were more likely to use a modern contraceptive method. This finding is at variance with a study conducted in East Africa, which revealed that young women aged 20–24 were more likely to use a modern contraceptive method [21]. We expected younger women aged 20–24 to utilize contraceptive methods more frequently due to their greater maturity and understanding of the implications of engaging in sexual activity without contraception compared to adolescent girls. AGYW who had children were more likely to use a modern contraceptive method in the current study. A study in low- and middle-income countries revealed a similar association between parity and modern contraceptive use [22]. These findings are understandable because societal values strongly influence the use of contraception. In numerous African societies, it is anticipated that women will bear at least one child before the adoption of modern contraceptive methods [23]. AGYW who were breastfeeding might have been motivated to utilize a modern contraceptive method to prevent pregnancy during the early stages of infant development. AGYW who had participated in programs for over six months might have received education on sexual and reproductive health, which could result in a higher adoption of modern contraception.

This study found that AGYW who perceived themselves at risk of HIV exhibited a higher likelihood of utilizing modern contraceptive methods. This finding may point toward a poor understanding of HIV prevention among AGYW, since only 13.8% used condoms. The observation that AGYW with recent or recurrent sexually transmitted infections (STIs) exhibited lower rates of modern contraceptive method usage may indicate a lack of condom utilization within this group. This study indicated that AGYW participating in safe space HIV sessions exhibited a lower likelihood of utilizing modern contraceptive methods. In contrast, a South African study revealed an improvement among participants who received a combination of HIV prevention interventions. The findings that AGYW in all districts and those who participated in safe space HIV

sessions were less likely to utilize modern contraceptive methods may need further exploration through qualitative studies.

The findings of this study can be generalized to all AGYW who meet the DREAMS criteria in Namibia and other countries in SSA that have the same socio-economic characteristics. This study is limited by its reliance on a data source confined to routine monitoring service data. Consequently, important variables were not collected, including education level, knowledge of modern contraceptive methods, employment status, and factors contributing to non-use. These variables may have offered additional insights into the utilization of modern contraception among AGYW. Additionally, the longitudinal collection of data on modern contraceptive use, absent in routine program data collection, could have yielded insights into the evolving usage patterns over time within this population group.

5 Conclusion

A significant gap exists in the utilization of modern contraception among AGYW in Namibia. This leads to a high incidence of teenage pregnancies, accompanied by various health and socioeconomic repercussions. The findings indicate that the rate of modern contraceptive method use among AGYW was 29.1%. The predominant contraceptive method utilized was an injectable, followed by oral pills. Individuals aged 15–19 years who have children, were enrolled in programs for over six months, were breastfeeding, or perceived themselves at risk of HIV, exhibited a higher likelihood of utilizing modern contraceptive methods. Conversely, participants enrolled between 2018 and 2023, those with recent or recurrent STIs, and individuals who attended the safe space HIV prevention sessions demonstrated a lower likelihood of utilizing modern contraceptive methods. To enhance the utilization of modern contraceptive methods among AGYW, strategies should focus on ensuring commodity security of preferred methods, enhancing education on SRH, providing services on school premises to reduce health system and structural barriers, and advocating for parental acceptance and support. Moreover, it is essential to highlight the simultaneous use of other modern contraceptive methods and condoms, as the other modern contraceptive methods alone do not protect against STIs and HIV.

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Author contributions

EMo – Conceptualization; Data analysis; Writing original draft
EMe – Conceptualization; Writing review and editing
HM – Data abstraction; Writing review and editing
ST – Data abstraction; Writing review and editing
BH – Writing review and editing
RI – Writing review and editing
PM – Writing review and editing
NMN – Writing review and editing
TD – Writing original article; Writing review and editing.

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Data availability

The dataset associated with this manuscript can be provided on request from the lead author, Enos Moyo (moyoenos@yahoo.co.uk).

Declarations

Ethics approval and consent to participate

The study adhered to the principles outlined in the Declaration of Helsinki. The DREAMS program was approved by the Namibian MHSS, the Ministry of Education, Arts, and Culture (MoEAC), the Ministry of Gender Equality, Poverty Eradication, and Social Welfare (MGEPEWSW), and the Ministry of Sport, Youth, and National Service (MSYNS). Informed consent was obtained from all AGYW of legal age, assent from all minors, and informed consent from the parents or guardians of the minors.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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