RESEARCH ARTICLE

Family planning awareness and service accessibility among women living with HIV in Myanmar [version 1; peer review: 2 approved with reservations]

The linkage between maternal and reproductive health care and HIV/AIDS care need to be improved

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Abstract

Background: Accessibility and availability of family planning services is critical for improvement in maternal health. There is limited information on awareness and accessibility to family planning services among women living with HIV in Myanmar.

Methods: A mixed-methods cross-sectional descriptive study was conducted from Feb-March, 2018 at two antiretroviral therapy (ART) centers in Myanmar.

Results: This study included 184 women living with HIV. The mean (SD) age was 38 (9) years. In total, 90 women (49%) were married, 10 (5%) were single. Among the respondents, 124 (67%) have never received health education on family planning, and 64 (35%) didn’t know any source of information for family planning services. In the last six months, 55 (30%) of them have used any type of contraception. Among married women, 16 (29%) intended to have a child. One-fourth of women with HIV responded that transmission of HIV from mother to child cannot be preventable. Perceived geographical accessibility to any type of family planning services was measured, and only 7% had high accessibility. The main barriers to accessing family planning information and services among women living with HIV were also explored. Most participants responded that they had poor knowledge and received insufficient information on the family planning services. Some of them mentioned they had financial constraints to access modern contraceptive methods. Key informant interviews with public service providers revealed that there was the lack of referral system, and poor linkage between ART teams and maternal and reproductive health teams for women living with HIV to provide the quality family planning services.

Conclusions: This study highlighted the need for awareness raising among women living with HIV about family planning, and effective referral system between maternal and reproductive health unit, and HIV/AIDS care unit in Myanmar.
Keywords
People living with HIV, Family Planning, Awareness, Accessibility

This article is included in the International Conference on Family Planning gateway.

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Author roles: Lwin HH: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; Soe KT: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; San MM: Data Curation, Investigation, Project Administration, Writing – Review & Editing; Aung KS: Data Curation, Investigation, Project Administration, Writing – Review & Editing; Soe MS: Data Curation, Investigation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

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Introduction

Family planning is an important tool for improving the health and well-being of women and families. Accessibility and availability of family planning services is critical for improvement in maternal and child health. Unequal access to modern family planning services contribute to a slow decline in maternal mortality¹.

These maternal deaths can be reduced by making essential family planning services available and accessible to all women who are in need, including women living with HIV. In Myanmar, provision of quality family planning services and prevention of sexually transmitted disease (RTI/STI) including HIV are core areas under the National Five Year Strategic Plan for Reproductive Health (2014–2018)².

Reaching the poorest, hardest to reach and most vulnerable population like people living with HIV (PLHIV) became prioritized strategy in reducing unmet need for family planning and increasing contraceptive prevalence rate¹. Because of continuous quality care, support, and treatment, PLHIV live longer than before. PLHIV have the right to possess a family life, as do other people. They have the right to decide their family size and right to have information on family planning methods and range of choice. However, there is limited assessment on awareness on family planning services among women living with HIV in Myanmar.

Therefore, this operational research was carried out to understand the awareness and accessibility to family planning services among women of reproductive age living with HIV in Myanmar and the challenges to access the information and family planning services. The findings from this research would provide information to Maternal and Reproductive health program, Myanmar to provide quality care to this vulnerable group.

Methods

This study was a cross-sectional descriptive study using both quantitative and qualitative data collection methods. Data collection was done from January to February 2018.

Study setting

General setting. The Republic of the Union of Myanmar is a low-income country located in South-East Asia. It is bordered by Bangladesh, India to the west side, China, Laos and Thailand towards the north and eastern sides, and 1760 miles of the coast line by the Bay of Bengal and the Andaman Sea in the south and south-west. There are 14 states/regions and one Nay Pyi Taw Union Territory. Myanmar consists of 74 districts, 330 townships, 398 towns, 3065 wards, 13,619 village tracts and 64,134 villages. Myanmar is actively engaged in building a new, modern, peaceful, developed and democratic nation. In 2014, the total population was 51.4 million with an average population density of 80 people/km²24.

HIV/AIDS situation in Myanmar. Myanmar is one of the 35 UNAIDS fast track priority countries that account for 90% of new HIV infections globally. The country has a concentrated HIV epidemic among urban areas and key populations. There has been good progress towards reducing the burden of disease evidence by a decline in prevalence among the general adult population from 0.9% in 2000 to 0.6% in 2016. A significant decline also has been seen in HIV-related mortality³.

The National AIDS Programme (NAP), under Department of Public Health, Ministry of Health and Sports, is taking the leading role to fight against HIV/AIDS in the country. NAP antiretroviral therapy (ART) services are currently delivered through 127 ART centres, and 174 decentralized sites which may be at the township level, sub-township level and station health units or rural health centre, as indicated by burden of disease³.

Maternal and Reproductive Health Division (MRH). With the goal “To attain a better quality of life and ensure universal accessibility of reproductive health and rights by contributing quality reproductive health care services for women, men, adolescents and youth”, the MRH is leading for maternal and reproductive health care services in the country in collaboration with international and national partners. Maternal deaths in Myanmar has been declined from 453/100,000 live births in 1990 to 178/100,000 live births according to UN Inter-agency Estimates 2015⁴. Contraceptive prevalence rate (modern methods) and unmet need for contraception were 51% and 16%, respectively as revealed by the Myanmar Demographic Health Survey, 2015–2016⁵. In line with the Myanmar National Health Plan (2017–2021), and National Strategic Plan for Reproductive Health (2014–2018), Myanmar MRH is providing quality care services for women in Myanmar to achieve Myanmar UN Sustainable Development Goal targets by 2030.

Study population

For quantitative portion, this study included reproductive age women (15–49 years) living with HIV. They were on ART from two selected ART centers at two districts with the high burden of HIV in Myanmar. For qualitative portion, this study included reproductive age women (15–49 years) living with HIV, and service providers.

Sampling and sample size

For the quantitative portion of the study, included were HIV positive women of reproductive age who were receiving care from the selected ART centers. A sample size was calculated using OpenEpi. A cross-sectional single proportion method was used setting proportion of service accessibility as 79%⁶, precision as 0.06%, and alpha at 0.05%. Thus, the minimal required sample size was 177. From the lists of ART registers from selected ART sites, HIV positive women of reproductive age were pre-identified, and randomly selected before the day their visits to ART centers. At the day of data collection, those identified HIV positive women were recruited for this study after obtaining their consent. A total of 184 women with HIV were included in this study.

For qualitative portion, 19 women living with HIV were purposively selected to include in this study based on their ability to cooperate and discuss. Their ability of cooperation and discussion was assessed during a face-to-face interview, and also discussion of service providers who knew about their clients very...
well. Two key informant interviews with two service providers were also done. The interview guide is available as Extended data\textsuperscript{a}. One service provider was from maternal and reproductive health teams whose role was to provide overall supervision and monitoring of the MRH services to the communities in the district. Another service provider was a team leader from ART team at the district who managed the care for HIV positive people.

Data collection methods and tools

For the quantitative portion, face-to-face interviews were done using semi-structured questionnaires by six trained data collectors from Department of Medical Research. Semi-structured questionnaires were developed and pretested based on the tools used in previous study in Myanmar\textsuperscript{b}. The questionnaires are available as Extended data\textsuperscript{c}. Perceived geographical accessibility to family planning services among women living with HIV was measured in this study. High geographical accessibility was defined as those who lived within a 30-minute travel and within a one-mile distance from the nearest health facility which provides family planning services, and those who were aware that the service existed\textsuperscript{d}.

For qualitative portion, one focus group discussions (FGD) with women living with HIV from each ART center was done with 9 to 10 participants in each FGD using FGD guideline. Each FGD included both married and unmarried women with different ages to get information from different dimensions. This study included total two FGDs. Both FGDs were moderated by the principle investigator (H.H.L.) who had enough experiences for qualitative data collection, and note takings were done by trained note takers from Department of Medical Research. The FGD was conducted at a place of convenience to the participants. Both FGDs were conducted in rooms located near ART teams in the same compound, but away from the influence of health staff. Audio-recording was done with the permission from the participants. Each FGD took approximately one hour. Key informant interviews with service providers were done by K.T.S. using KII guideline. Each KII took approximately 45 min. No repeated discussion was needed for FGDs/KIIs. Information was regarded as saturated from the completed FGDs and KIIs.

Data analysis

For the quantitative portion, data from face to face interviews was entered using EpidataVer3.2 software and analyzed using SPSS v20. Descriptive analysis was done, and frequency and proportion of variables of interests were presented in text and tables.

For the qualitative portion, transcripts from FGDs and KIIs were made in Myanmar language the same day based on the verbatim notes of the interview and audio recordings. All the transcripts obtained were combined and the principal investigator (H.H.L.) read the transcript to become familiar with the data. Manual descriptive thematic analysis was used by the principal investigator to analyze the transcripts. It was reviewed by a second investigator (K.T.S.) to reduce bias and subjectivity in interpretation. The decision of coding rules and theme generation was done in consensus among investigators. Any difference between the two was resolved by discussion. The study findings were reported according to consolidated guidelines for reporting qualitative research (COREQ)\textsuperscript{e}.

Ethical issues

Approval to conduct this study was obtained from Department of Public Health, Ministry of Health and Sports, Myanmar [105/Oct/2017/DOPH/MOHS]. Participants were informed about the study through participant information sheet. Those who gave the written informed consent were recruited in this study. Participants had the right to withdrawal from this study at any time. Data confidentiality and anonymity of study participants were maintained strictly throughout the study.

Results

Demographic information

This study included 184 women living with HIV. The mean (SD) of them was 38(9) years, 121 (66%) were from rural areas, and 118 (62%) had primary and secondary education. Of them, 135 (73%) were working for a living at the time of survey. The average income of them was 150000MMKs (150USD) per month. In total, 90 women (49%) were married, 10 (5%) were single (Table 1). The results of the quantitative aspect of the study are available as Underlying data\textsuperscript{f}.

![Table 1. Background Characteristics of respondents (n=184).](attachment:image)

\*Mean (SD) =38 (9); min= 15; max=49.
Family planning education
Among the respondents, 124 (67%) have never received health education on family planning, and 64 (35%) didn’t know any source of information for family planning services. Among married women, 16 (29%) intended to have child. One-fourth of women with HIV responded that transmission of HIV from mother to child cannot be preventable; “preventing by taking ART” was the most mentioned answer. However, a majority (97%) of them had heard of any type of modern contraceptive methods. Oral contraceptive pills and injection methods were the most mentioned method by the respondents (Table 2 and Figure 1).

In the last six months, 55 (30%) of respondents have used any type of contraception, and more percentage of women used contraceptive methods from private services (Table 3).

Access to family planning services
Perceived geographical accessibility to family planning services among women living with HIV was measured in this study. High geographical accessibility was defined as those who lived within 30 minutes travel and within a one-mile distance from the nearest health facility that provides family planning services, and those who were aware that the service existed. This study showed only 7% of respondents had high perceived geographical accessibility to family services (Table 4).

Results of qualitative assessment
The main challenges to accessing family planning information and services among women living with HIV were also explored from qualitative data collection methods. Most of participants responded that they had poor knowledge and received not enough information on the family planning services. Some of them mentioned they had financial constraints to access modern contraceptive methods. Key informant interviews with public service providers revealed that there was the lack of referral system, and poor linkage between Maternal and Reproductive Health Teams, and ART centers for women living with HIV to provide the quality family planning services (Table 5).

Table 2. Awareness on family planning services (n=184).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Respondents, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Education on FP</td>
<td></td>
</tr>
<tr>
<td>Received</td>
<td>61 (33)</td>
</tr>
<tr>
<td>Never received</td>
<td>123 (67)</td>
</tr>
<tr>
<td>Any family planning services</td>
<td></td>
</tr>
<tr>
<td>Knew</td>
<td>121 (66)</td>
</tr>
<tr>
<td>Did not know</td>
<td>63 (34)</td>
</tr>
<tr>
<td>Mother to Child HIV transmission</td>
<td></td>
</tr>
<tr>
<td>Preventable</td>
<td>140 (76)</td>
</tr>
<tr>
<td>Not preventable</td>
<td>44 (24)</td>
</tr>
<tr>
<td>Any types of modern contraception</td>
<td></td>
</tr>
<tr>
<td>Heard</td>
<td>178 (97)</td>
</tr>
<tr>
<td>Never heard</td>
<td>6 (3)</td>
</tr>
</tbody>
</table>

![Figure 1. Awareness on different types of modern contraception (n=184). EC, emergency contraceptive; IUCD, intrauterine contraceptive device; OC, oral contraceptive.](chart.png)
Table 3. Types of services used for family planning in the last six months (n=55).

<table>
<thead>
<tr>
<th>Health facilities</th>
<th>Respondents, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td></td>
</tr>
<tr>
<td>GPs</td>
<td>12 (22)</td>
</tr>
<tr>
<td>NGO clinics</td>
<td>19 (35)</td>
</tr>
<tr>
<td>Public</td>
<td></td>
</tr>
<tr>
<td>Public hospitals</td>
<td>9 (16)</td>
</tr>
<tr>
<td>Public health facilities</td>
<td>15 (27)</td>
</tr>
</tbody>
</table>

Table 4. Perceived geographical Accessibility to family planning services (n=184).

<table>
<thead>
<tr>
<th>Perceived geographical accessibility to family planning services</th>
<th>Respondents n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents who did not know reproductive health facility in 30 min travel</td>
<td>44 (22)</td>
</tr>
<tr>
<td>Respondents who knew reproductive health facility in 30 min travel</td>
<td>140 (78)</td>
</tr>
<tr>
<td>Total</td>
<td>184 (100)</td>
</tr>
<tr>
<td>High (within one-mile distance)</td>
<td>10 (7)</td>
</tr>
<tr>
<td>Low (more than one-mile distance)</td>
<td>130 (93)</td>
</tr>
<tr>
<td>Total</td>
<td>140 (100)</td>
</tr>
</tbody>
</table>

Table 5. Qualitative findings for challenges to access family planning information and services.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Findings</th>
<th>Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on family planning services</td>
<td>Most of participants responded that they had poor knowledge and received not enough information on the family planning services</td>
<td>&quot;.. Here... only few people knows about contraception methods especially from the remote areas... Some...never heard about it (contraceptive methods)... So... Unwanted pregnancies occurred...&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;.. Even in urban, girls especially university students had little knowledge on contraceptive methods... Induced abortion are high among them &quot;</td>
</tr>
<tr>
<td>Financial</td>
<td>Some of them mentioned they had financial constraints to access modern contraceptive methods.</td>
<td>&quot;.. You know.. When the date is due for depo injection.. As I don’t have enough money for it.. I could get it days after the dates.. &quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘‘... I need to buy depo injection every 3 month.. It is a burden for me most of the time.. “</td>
</tr>
<tr>
<td>Health System</td>
<td>Key informant interviews with public service providers revealed that there was the lack of referral system, and poor linkage between Maternal and Reproductive Health Teams, and ART centers for women living with HIV to provide the quality family planning services.</td>
<td>&quot;I found it as we have weak referral services for PLHIVs who want or need contraception or other RH (reproductive health) services. Thus coordination between two programs NAP (National AIDS Programme) and SRH (Sexual and Reproductive Health) is crucially necessary to ensure the access of family planning services”</td>
</tr>
</tbody>
</table>

Discussion

This operational research was the first ever study to explore the awareness, the accessibility and major challenges to family planning services among women with HIV. This study highlighted that there was low awareness and low accessibility among women living with HIV on family planning services provided by both public and private sectors in Myanmar, and addressed some key challenges.

This study had strengths to address. First, this study represents women living with HIV who were under the care of NAP services. The perceptions from both service providers and women living with HIV were explored. However, we would like to acknowledge some limitations of this study. This study could not represent the whole population of women living with HIV in Myanmar, and those who were out of NAP care were not included in this study.

This study had three key findings. Firstly, regardless of marital status, two-thirds of women living with HIV had never received any health talks, health education related to family planning services in their life time. Moreover, one-third of them did not know any type of public and private family planning services. Similar to previous local study, it indicates the comprehensive reproductive health care towards HIV-positive women was needed.

Secondly, this study showed low accessibility to family planning services among women living with HIV (7%). This unsatisfactory
accessibility to family planning services was similar with the findings from a previous study conducted among adolescents in the general population in Myanmar.

Thirdly, major challenges to access the information and family planning services were limited information, financial constraints, and poor linkage between MRH and NAP in Myanmar. As Myanmar is one of the countries in the southeast Asia regions hit hardest by HIV epidemic, and the majority of HIV-infected people are of reproductive age, this study highlighted the needs to provide better quality care for family planning services. Though these vulnerable populations receive quality care, support, and treatment services from the National AIDS Program, the referral and linkage system to support their choice for family planning services are still questionable. To achieve the targeted contraceptive rate, and reduce the maternal mortalities in Myanmar, every woman with HIV should have access to the right information and services.

Conclusion
This study recommends implementing the effective referral system for those women with HIV who attend ART centers and who are in need of family planning services. Proper counseling of women with HIV regarding available family planning services, proper recording and reporting for women with HIV who need family planning advice, regular meetings between authorities from National AIDS Program, and Maternal and Reproductive Health Division would help to improve the provision of these services.

Data availability

This project contains the following underlying data:

- FP PLHIV MM_CSV.csv (spreadsheet containing all results to structured questionnaires)
- DDS FP PLHIV.docx (data dictionary for the above spreadsheet)

To protect the confidentiality of the participants, transcripts of focus group discussions are not available. However, these transcripts can be made available to reviewers in the local language upon request. Enquiries for access should be addressed to Dr Hnin Hnin Lwin at hninhninlwin@gmail.com.

Transcripts of key informant interviews cannot be shared because of confidentiality concerns, since individuals can be readily identified from the contents of these interviews.

Extended data

This project contains the following extended data:

- 02 Questionnaire Eng_FP_PLHIV MM.docx (English translation of questionnaire for women living with HIV/AIDS)
- 04 FGD guidelines Eng_FP_PLHIV MM.docx (English translation of focus group guidelines)
- 06 KII with provider guideline Eng_FP PLHIV MM.docx (English translation of key informant interview guide)

Data are available under the terms of the Creative Commons Zero “No rights reserved” data waiver (CC0 1.0 Public domain dedication).

Grant information
Funding for this study was granted by Ministry of Health and Sports, Myanmar [5(ka)(thu)sa/2017(13912)kalaya]. Publication of this study was funded by the Bill and Melinda Gates Foundation (OPP1181398).

The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Acknowledgements
Authors would like to express our sincere thanks to Dr Hla Mya Thway Einda, Director, Maternal and Reproductive Health Division, Department of Public Health, Ministry of Health and Sports, Myanmar, Dr Htun Nyunt Oo, Deputy Director/Program Manager, and Dr San Hone, Deputy Director, National AIDS Programme, Department of Public Health, Ministry of Health and Sports, Myanmar for their kind support throughout the study.

References

Open Peer Review

Current Peer Review Status: ?

Version 1

Reviewer Report 09 July 2019

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Kyu Kyu Than
Burnet Institute, Melbourne, Victoria, Australia

The article describes the family planning awareness and service accessibility among women living with HIV. It is an important contribution to the scarce literature of HIV positive women in Myanmar. I would like to congratulate the authors for their hard work.

In general the methodology and findings are sound. However, the discussion session is weak. It should reflect more to international literature and compare the results. My comments in detail are as follows:

- Abstract – Results, line 3: “have never received” should be “had never received”. Line 5: “any type of contraception” should be rephrased.
- Introduction, paragraph 3: “became prioritized strategy” should be changed to “became a prioritized strategy”.
- Methodology: Please give a reason on why only two sites were specifically chosen and why only 2 FGDs and 2 Klls were done.
- Results: In the demographic information on line one “The mean (SD)” should be “The mean age (SD)”. 
- In Table 1: You used “primary and middle schooling” but in the paragraph you used “secondary level of education”. Please be consistent.
- Family planning education, line 3: “intended to have child.” should be “intended to have a child.”.
- Access to family planning services: Is it a combined scoring of distance and travelling time? Not very clear. For accessibility, I would rather use the low accessibility to highlight the findings.
- In the qualitative assessment, I personally would like to hear more of the findings as there are no knowledge questions about contraception in the quantitative findings. Also please check quotes.
and avoid over-capitalization.

- **Discussions:** Please use more similar studies from other settings to compare and analyze the findings and discuss. The first sentence may be true for Myanmar but there are many studies done around the world.

**Is the work clearly and accurately presented and does it cite the current literature?**
Partly

**Is the study design appropriate and is the work technically sound?**
Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**
Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**
Yes

**Are all the source data underlying the results available to ensure full reproducibility?**
Partly

**Are the conclusions drawn adequately supported by the results?**
Partly

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** "sexual and reproductive health" "maternal, newborn, child and adolescent health"

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 08 July 2019
https://doi.org/10.21956/gatesopenres.14112.r27508

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$\text{Rose McGready}$

$^1$ Shoklo Malaria Research Unit, Mahidol-Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Mae Sot, Thailand

$^2$ Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford, UK
The manuscript uses a mixed methods approach to understand awareness and accessibility to family planning in women living with HIV in two ART centers, in (un-named districts) in Myanmar.

The results present important findings. The introduction and methods are clear. The discussion and overall impact of the manuscript could be improved by relating the results and potential solutions to other work in the area.

1. The discussion needs to compare the authors' findings to other similar publications. As written the first sentence overstates the results but I think the authors might have intended to add in Myanmar at the end of the sentence. Consider rephrasing as there are a significant number of publications, predominantly from Africa on the same questions. Other work should be referenced and used to compare and contrast to findings observed here.

2. Other published work can also be used to help solve the multiple barriers identified. While the current discussion calls for linkage and referrals, most recent literature recommends integrated care i.e. make family planning available at the ART centers, which reduces costs for women.

3. Discussion: The results suggest transportation is a major barrier so creating linkage still leaves women out of pockets. Asking women to go to another center for family planning will create further barriers.

4. Integrated services are important and save time and limited costs to the patient. Can family planning be made available at ART centers? It is not complicated, e.g. Sarnquist et al. (2014).

5. The description of Myanmar is good, but it is a big country with a large number of ART centers. It would be helpful for the reader to know if this study was conducted in urban centers? E.g. Yangon. Is there a reason the state or township cannot be provided?

6. The surprising finding of table 1 is the high proportion of widows.

7. Minor - the English does need reviewing. A few examples are provided here:

   Abstract:

   - The numbers need clarifying: n=184 and in total, 90 women (49%) were married, 10 (5%) were single...but 90+10 = 100...so it reads as if the numbers don't add up. Rephrase it.

   - Replace “have” with “had” in “Among the respondents, 124 (67%) have...”. And in this sentence: “In the last six months, 55 (30%) of them have used any...”.

   - Consider rephrasing this “In the last six months, 55 (30%) of them have used any type of contraception.” to “In the last six months 55 (30%) of women used contraception.”

   Results:

   - Alternative first sentence of results: “This study included 184 women living with HIV with a mean (SD) age of 38 (9) years. Most women were from rural areas 121 (66%), had primary or secondary education 118 (62%), and were employed 135 (73%) at the time of survey.”

   - Insert “a” in the sentence “…intended to have a child.”
References

Is the work clearly and accurately presented and does it cite the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Partly

Are the conclusions drawn adequately supported by the results?
Partly

*Competing Interests*: No competing interests were disclosed.

*Reviewer Expertise*: Mother and Child Health research and clinical care predominantly in Myanmar women.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.