

An Assessment of the Social, Cultural, and Economical Barriers to Option B+ Retention and Their Solutions in Malawi: A Review

Jamie Yoon^{1,2}, David S. Chung^{2,3}, Michelle Kim², Kunmin Kim⁴, Sang Heon Lee^{4,5}, Tae Youn Kim⁴, Hark Joon Lee⁴, Seog In Moon⁴, Jooheon Park⁴, Paul S. Chung^{4*}, Thomas Nyirenda^{4,6}

¹School of Medical, Boston University, Boston, USA

²Edward Via College of Osteopathic Medicine, Blacksburg, USA

³School of Medicine, University of Virginia, Charlottesville, USA

⁴Youth with Talents, Fairfax, USA

⁵Department of Art & Science, Biology, Johns Hopkins University, Baltimore, USA

⁶Clinical Research Education and Management Service, Lilongwe, Malawi

Email: *paulschung08@gmail.com

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Abstract

Malawi has one of the highest rates of HIV prevalence in the world, and accounts for 4% of the total number of people living in sub-Saharan Africa with HIV. Approximately one million people in Malawi were living with HIV in 2016, with 24,000 HIV-related deaths. The Option B+ program, first implemented in Malawi, aimed to initiate ART for all pregnant women, regardless of their CD4 cell count or disease stage. This study serves to analyze and assess the effectiveness of Option B+ retention, in relation to the facilitation of how various social and cultural barriers were handled. A literature review of 29 publications was conducted. Careful evaluation of various studies indicates that although there is a myriad of reasons explaining low levels of retention, the women who were at the highest risk for low retention were young pregnant women who were treated on the same day of HIV-diagnosis. Solutions focused around women and their partners or communities showed promising evidence of success in increasing adherence, as these strategies likely provided women reliable social and emotional support to address major barriers to retention such as a lack of support from male partners, ineffective education from healthcare workers, or stigma towards their HIV disclosure status.

Keywords

HIV, Option B+, Malawi, Retention, CHTC, PMTCT

1. Introduction

One of the most crucial challenges present in HIV prevalent countries today is the prevention of mother-to-child transmission (PMTCT). Women are disproportionately affected in Malawi, who represents 59% of HIV cases [1]. There are 100,000 cases of pediatric HIV/AIDS cases nationally, and 11,000 newborns are infected every year [1]. Per the World Health Organization's (WHO) guidelines in 2012, Option B provided a triple drug prophylaxis at 14 weeks of pregnancy, which continued for the remaining pregnancy and breastfeeding period [2].

Option B+ was a modification of the initial WHO Option B plan that was conceived in late 2011 by the Malawi Ministry of Health, which aimed to aggressively improve the overall effectiveness of PMTCT. Under Option B+, all HIV-infected pregnant and breastfeeding women became eligible for lifelong antiretroviral therapy (ART), regardless of their CD4 count [3] [4]. This was a major change from prior recommendations to provide lifelong ART to women who had a CD4 count of ≤ 350 cells/ μ l or those who were considered to be in WHO clinical stage 3 or 4 [2]. The transition to Option B+ showed association with increased ART initiation in women with less advanced HIV infection, improved medication tolerability, and lower mortality [5] (Table 1).

National data per Malawi's Ministry of Health show that approximately 11,715 out of 13,500 HIV infected women were on ART from January 2016 to

Table 1. Advantages of option B+ in Malawi.

Advantage	Explanation
Simple to implement	One tablet a day of tenofovir + 3 lamivudine + efavirenz for the woman with NVP infant prophylaxis for 6 weeks. Reinforces the nationwide message that ART is taken for life; procurement and distribution needs for the country made easier compared with having Option A or Option B.
Reduced vertical transmission from mother to child	For current pregnancy ART offers protection from time of administration and is continued in breast feeding period. For future pregnancies, ART offers protection from time of conception.
Avoids stop-start ART	Interrupted ART has risks for increased morbidity and mortality.
Improved maternal health	Post-partum women in Zimbabwe with CD4 count > 350 cells/mm ³ have an elevated risk of death six times higher than noninfected women.
Reduced sexual transmission of HIV to discordant couples	HIV-infected persons on ART have significant reduced risk of HIV transmission through sexual intercourse to non-infected partners even at high CD4 cell counts.
Reduced risk of tuberculosis	ART reduces the risk of tuberculosis in people living with HIV, even at high CD4 cell counts
Treats hepatitis B infection	Tenofovir and lamivudine are active against hepatitis B virus, and about 15% of people living with HIV in Malawi are also infected with hepatitis B.

March 2016, and Option B+ resulted in a subsequent marked increase in the number of women starting ART [6] [7]. Although the Malawian government's clinical and outcome oriented approach to scaling up ART was generally successful [8], more recent studies have indicated that there are still issues with continued retention rates involving various social and cultural barriers.

Despite the fact that new PMTCT guidelines per Option B+ show evidence of a steady increase in antiretroviral coverage among pregnant women [7], there are still major problems concerning retention that must be addressed if Option B+ is to reach its full potential in truly making universal ART a reality for all women.

2. Methods

We conducted an in-depth review of peer-reviewed publications and reports. Articles pertaining to Option B+ and its results, problems, and possible solutions were included. Literature search was conducted via PubMed and Google Scholar. Key search terms comprised of: option B+ and HIV; option B+ and Malawi; mother-to-child-transmission and option B+; socio-cultural factors and option B+. A total of 25 studies were identified. 4 country specific reports were reviewed as well (Figure 1).

2.1. Inclusion Criteria

Articles with studies pertaining to women in Malawi, published between 2011 and 2017, and with perspicuous research methods were included. Study partners consisted of: HIV-positive mothers, HIV positive pregnant women, male partners of HIV-positive women or women of unknown status, mothers of unknown HIV status, and HCW's providing instructions and counseling. Only literature published in English were included.

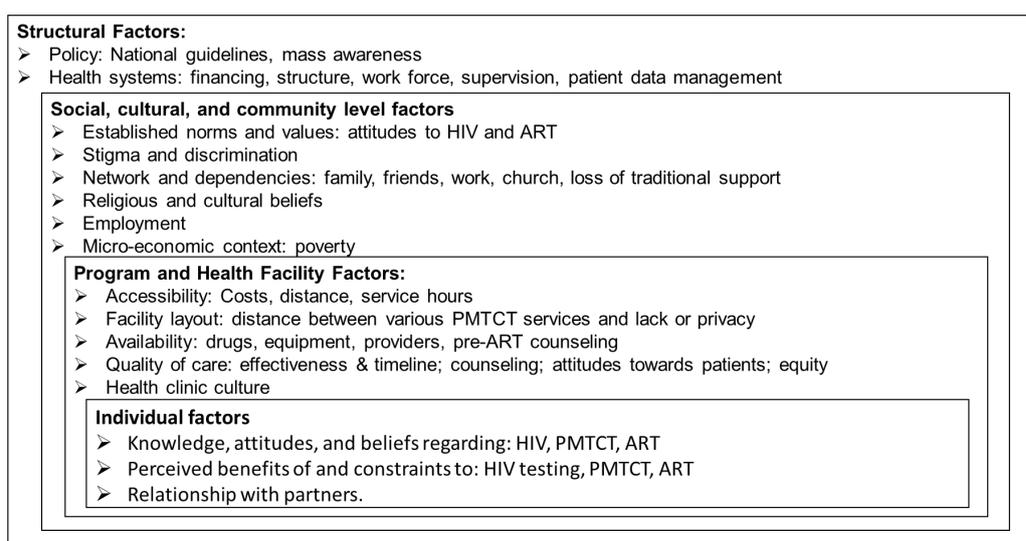


Figure 1. Socio-ecological framework to understand barriers and facilitators of uptake and retention with Option B+ [9].

2.2. Exclusion Criteria

Articles were excluded if they were solely conducted outside of Malawi, contained topics irrelevant to the study or published outside of the period of study. This paper reviewed existing literature and did not require ethical approval.

3. Results and Discussion

3.1. Examining Retention Rate Patterns

Various barriers to retention exist in social, cultural, economical contexts, but a study done by Kim *et al.* 2016 demonstrated via in-depth interviews that one of the main reasons women in Lilongwe, Malawi stopped ART was due to the lack of partner support and side effects [9]. Those who chose to remain on ART expressed a desire to prevent transmission and to improve their health [9]. A study per Tenthani *et al.* 2015 indicates that of the women who started ART under Option B+, up to 24% failed to adhere up to six months afterwards [10]. Most of the losses occurred during the first 3 months of treatment; Option B+ patients who began therapy during pregnancy were five times more likely than women who started ART in WHO stage 3/4 or with a CD4 cell count ≤ 350 cells/ μl to never return after their initial clinic visit and breastfeeding women were also twice as likely to miss their follow up visit [10]. Authors speculate that possible reasons for non-compliance could be due to a lack of preparation, which may be supported by the comparative findings of improved retention rates in women who did not start ART on the day of diagnosis [10].

The aforementioned findings pertaining to pregnant women with same day HIV diagnosis and reduced retention on ART, particularly in young pregnant women with less advanced WHO Clinical Staging, were reinforced by a retrospective cohort study per Chan *et al.* 2016 as well as a study per Landes *et al.* 2016 [11] [12]. Compared to women who were newly diagnosed with HIV but received their first dose of ART at an ANC clinic and were then referred to the ART clinic, newly identified HIV-positive women who were referred from the ANC clinic to an ART clinic in the same facility for follow up of ART were five times more likely to have higher retention rates [13] (Table 2).

Of note, the study conducted by Tenthani *et al.* did not account for self-transfers between facilities. Wilkinson *et al.* 2015 conducted a systematic review of various studies describing the outcomes of LTFU (lost to follow up) patients, noting that there was extensive variability in defining LTFU, with periods ranging from 1 week to 6 months [14]. Approximately 1 in 5 patients who were initially reported as LTFU had self-transferred to another facility for continued ART, which suggests that overall retention in ART in SSA may be underestimated [14].

According to a qualitative study done by McLean *et al.* 2017, healthcare workers were aware of the fact that abrupt initiation on ART would lead to decreased retention and adherence, but they felt bound by policy to begin treatment on the same day as diagnosis [15]. As a result, women felt there was an

Table 2. Health facility performance results per delivery model [13].

		Model A (n = 73) ^a	Model B (n = 36) ^a	Model C (n = 18)	Model D (n = 9)	P
Facility type	District hospitals	2	1	-	1	
	Community hospitals	5	-	3	-	
	Health centres	64	35	14	3	
	Private clinics	2	-	1	5	
ANC indicators (based on quarter dates July 2012-Jun 2013)	Average number of women newly registered for ANC per quarter, median (IQR)	252 (141 - 401)	316 (205 - 445)	224 (128 - 301)		0.07
	Average number of women known HIV-positive (previously tested positive), median (IQR)	5 (3 - 9)	4 (3 - 13)	4 (3 - 9)		0.79
	% of known HIV-positive women already on ART (started before ANC) (95% CI)	84 (79 - 89)	81 (75 - 87)	85 (76 - 94)		0.71
	% of HIV-positive women (not already on ART) started ART during ANC (95% CI) ^b	82 (76 - 87)	81 (74 - 89)	80 (68 - 91)		0.96
	% women not tested for HIV during ANC (95% CI)	18 (15 - 22)	32 (26 - 39)	30 (20 - 40)		0.001
Survival and retention 6 month outcomes	Number of women in cohort, median (IQR)	52 (33 - 72)	55 (35 - 115)	45 (23 - 67)	26 (15 - 37)	0.13
	Registered Jul-Dec 2012	% of women transferred out (95% CI)	8 (5 - 11)	5 (3 - 6)	6 (1 - 13)	10 (2 - 19)
Of those not transferred out	% retained on ART (95% CI)	80 (77 - 83)	77 (73 - 82)	87 (83 - 92)	94 (88 - 99)	0.002
	% not retained (95% CI)					
	Defaulted	18 (15 - 22)	22 (17 - 25)	12 (8 - 16)	6 (1 - 11)	0.006
	Stopped	1 (0 - 2)	0.01 (0 - 0.1)	1 (0 - 1)	-	0.55
	Died	1 (0 - 2)	0.01 (0 - 1)	1 (0 - 1)	0.3 (0.1 - 1)	0.70
Client to staff ratio	Number of women newly registered per Clinical Staff Member per month, median (IQR)	23 (10 - 33)	34 (24 - 43)	11 (5 - 26)	-	0.001
	Number of women newly registered for ANC per HTC Counsellor per month, median (IQR)	19 (10 - 23)	36 (19 - 47)	15 (10 - 27)	-	0.02
	Number of women in six month cohort per Clinical Staff Member, median (IQR)	12 (6 - 20)	21 (11 - 29)	9 (3 - 13)	6 (3 - 13)	0.02

Note: Model A: Facilities where women are initiated and followed on ART until delivery; Model B: Facilities where women receive only first dose of ART at ANC, and are referred to the ART clinic for follow-up; Model C: Facilities where women are referred from ANC to the ART clinic for initiation and follow up of ART; Model D: Facilities serving as ART referral sites (not providing ANC). ^aFacilities (Model A: 2, Model B: 2) excluded as the organization had recently changed from referring women to the ART clinic; to initiating them on ART at the ANC clinic, following MOH recommendations; ^bstarted ART during antenatal period; before or after 27 weeks gestation combined; ^cMedical Doctors, Clinical officers, Nurses, Midwives, Medical Assistants.

unfair dichotomy of power where they lacked the ability to express their opinions to the healthcare [15].

Although one of the main motivating factors for women to start ART was to protect their unborn child [15] [16], a study by Haas *et al.* 2017 suggests that approximately 57.9% of children were lost to follow up, and only half of the estimated children with HIV were actually diagnosed due to poor retention rates [17].

Tweya *et al.* 2014 conducted a retrospective cohort study in which women were started on ART the same day of HIV diagnosis, given psychological support via group counseling, and were traced for follow up appointments [18]. Subjects who stopped ART were further investigated via a questionnaire. Patients were considered LTFU if they missed an appointment for 3 or more weeks, and those who consented beforehand were traced via phone calls or home visits [18]. Findings from the survey suggested that those who stopped ART did so due to their extensive distance from the clinic, having limited transportation, HIV disclosure status, limited education concerning why they were receiving treatment, and others [18] [19] [20]. Pertaining to Option B+ education, a study by Yeatman *et al.* 2017 showed that only 30.7% of women and 21.1% of male partners understood how ART was distributed, and most respondents were unaware that healthy pregnant women were included in Option B+ [21].

Pregnant or young women were more likely to be LTFU, likely due to their unstable lifestyles or feeling overwhelmed from the burden of having to juggle both pregnancy and HIV [18]. However, a study by Cataldo *et al.* 2018 suggests that many patients felt uncomfortable from the repeated visits of community health workers, who often had to utilize their own personal resources to trace patients, which may have further contributed to a lack of follow up visits from women who stopped ART [22].

Another qualitative study utilizing in-depth interviews and focus group discussions explored the perspectives and experiences of pregnant and postpartum HIV-positive women in the Option B+ program [23]. The women were mainly concerned with having to commit to ART for the rest of their lives, regardless of their health [23].

3.2. Assessment of Solutions for Social Barriers

As lack of support from male partners was a considerable barrier in ART retention [19] [20] [24], couples HIV testing and counseling (CHTC) was implemented into Option B+ in Malawi and studied via an unblinded randomized trial per Rosenberg *et al.* 2015 [25]. CHTC aimed to address HIV disclosure with partners, which was one of the barriers contributing to LTFU according to the studies done by Tweya *et al.* 2014 and Kim *et al.* 2016 [9] [18].

Results from the study indicated that couples were more likely to follow up if male partners were traced after being invited to participate in the study (Figure 2) and that it was more likely that couples would participate in safe sex after receiving CHTC [25]. Another subsequent study demonstrated that having male partners present for CHTC led to relationship benefits and improved retention for women [16] [26].

As previous studies have shown the possible beneficial effects of including male partners, Besada *et al.* 2016 implemented strategies in 4 African countries, one of which was Malawi, in order to improve male involvement with PMTCT [27]. Strategies included engaging community leaders and healthcare workers,

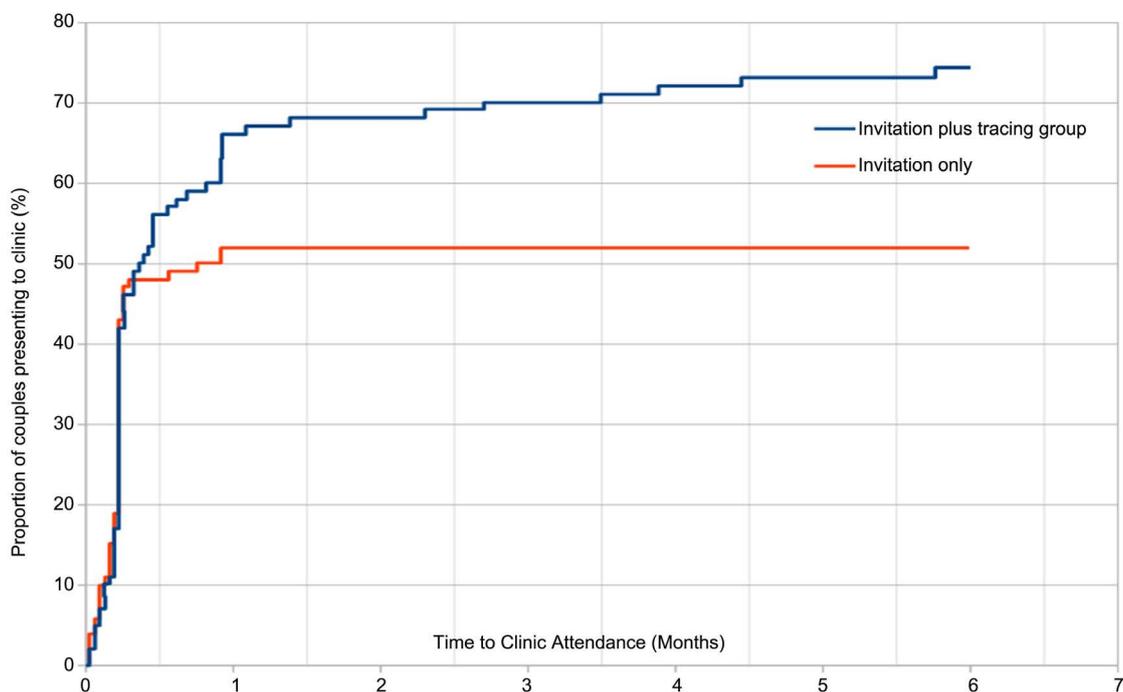


Figure 2. Kaplan-Meier curve for couples presenting to the clinic vs. Time to clinic attendance [25].

creating male peer and family support groups, decreased waiting times at facilities, and improving facility access times by changing clinic operation hours [27]. Men of various communities were educated on sexual health and HIV/AIDS and reported feeling an increased sense of responsibility after becoming involved [27].

Another intervention called the Safeguard the Family project (STF) served to both reduce MTCT and to increase access to HIV services such as maternal ART, HTC, HIV testing, and infant prophylaxis [28]. HCW in Lilongwe were trained to provide this care, CHTC was promoted, support groups were established, laboratory systems were modified to provide early infant DNA testing; the quality of STF performance was analyzed via a cross-sectional study using quarterly data from 2011-2013 [28]. STF intervention demonstrated a positive effect and was deemed an overall success, as it directly addressed some of the main barriers to ART adherence [28].

A cluster randomized controlled trial called the “PMTCT Uptake and Retention (PURE) study” aimed to evaluate the effects of peer support and care seeking on retention in Malawi, with peer support consisted of patient education, support groups, and patient tracing [29]. Phiri *et al.* 2017 concluded that facility and community based peer support interventions provided overall benefits for maternal retention when compared with the controlled standard of care [29].

4. Conclusion

In conclusion, the results indicate that expanding access for both women and men seems to be an effective strategy, in addition to addressing social concerns

via incorporating male partners and community members. However the literature reviewed also suggests that while the solutions mentioned show promise, it is imperative that an objective standard for defining LTFU and method for properly identifying women who transferred to different facilities are necessary if we wish to assess these results accurately.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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