Favorable Effect of Differentiated Models of Care on Retention and Viral Suppression among Adults Receiving Antiretroviral Therapy: Retrospective Cohort Study in Zambézia Province, Mozambique (2016-2021)

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Introduction

- Differentiated service delivery (DSD) models have been implemented in Mozambique to de-congest health facilities and promote retention in care and adherence to ART among persons living with HIV (PLWH).

- The first DSD model offered in Zambézia Province was community adherence support groups [CASG], introduced in 2012. Since 2018, a variety of additional DSD models have been introduced, including Three (3)-monthly medication dispensation [3MMD].

- This study evaluated the effects of two frequently used DSD models (CASG and 3MMD) on retention in care and viral suppression.

Methods

- A cohort study using routine individual-level data was implemented among adults (≥15 years of age) enrolled on ART services 2020 and eligible for the DSD models between October 2016 – December 2019, in 147 health facilities (HF) in Zambézia Province, Mozambique.

- Propensity score 1:1 matching was used to match PLWH in CASG to those in 3MMD. Matches were from the same site and sex, and with similar time of DSD eligibility.

- Conditional logistic regression measured associations of DSD models with 12-month retention (pick-up within 59 days after last scheduled visit) and viral suppression (viral load [VL] <1,000 copies/mL, measured within one-year post-DSD enrollment), adjusting by HF location (rural/urban), DSD model, and their interaction.

Results

Overall

- Data from 47303 PLWH were collected; 31755 (67%) female, 31,061 (66%) registered at rural health facilities (HF). The median age at DSD eligibility was 30 years (IQR 24-38). From this cohort, 38110 (81%) PLWH enrolled in 3MMD, 2303 (5%) in CASG; 6960 (14%) were not included in any of these models (**Table 1**).

- A matched population (CASG and 3MMD) of 3,824 PLWH were included in the retention analysis, and 1,186 in the viral suppression analysis.

Retention in care (matched 1912:1912 PLWH):

- The overall 12-month retention was 94%; 93% and 94% in the 3MMD and CASG models, respectively.

- In rural areas, the odds of being retained at 12 months was 1.5 times higher for PLWH receiving ART via CASG compared to 3MMD model (Odds Ratio [OR]=1.50 [95%CI: 1.09-2.07], p=0.013). There were no differences in retention rates between the two DSDs among PLWH in urban areas (**Figure 1**).

Viral suppression (matched 593:593 PLWH):

- Viral suppression was 87% overall: 84% for 3MMD, 91% for CASG.

- PLWH receiving ART via CASG in rural settings had a significantly higher odds of being virally suppressed (OR=1.91 [1.25-2.92], p=0.003). There were no differences in viral suppression rates between DSD models among PLWH living in urban areas (**Figure 2**).

Table 1. Demographic characteristics, cohort 2016-2021.

|	TOTAL (n=47303)	DMC 3MMD (n=38110)	DMC CASG (n=2303)	No 3MMD/CASG (n=6960)
Age, years (median, IQR)	30.1 [24.2;38.2]	29.9 [24.1;37.9]	33.8 [26.7;41.8]	29.6 [23.8;38.0]
Sex (n, %)				
Female	31755 (67%)	25788 (67.7%)	1595 (69.3%)	4372 (62.8%)
Male	15618 (33%)	12322 (32.3%)	708 (30.7%)	2588 (37.2%)
Education (n, %)				
None	9651 (21.6%)	7524 (20.7%)	695 (32.5%)	1432 (23.1%)
Primary school	24330 (54.4%)	19416 (53.3%)	1265 (59.2%)	3649 (58.9%)
Secondary school	10013 (22.4%)	8795 (24.1%)	170 (8%)	1048 (16.9%)
Technical school	427 (1%)	375 (1%)	3 (0.14%)	49 (0.8%)
University	335 (0.8%)	315 (0.9%)	3 (0.14%)	17 (0.3%)
CD4 cell count at enrollment (cells/mm^3), median (IQR)	378 [220;571]	376 [219;570]	365 [211;539]	387 [228;583]
Viral suppression (n, %)				
No	4465 (16.5%)	3735 (15.5%)	95 (11.7%)	635 (29%)
Yes	22657 (83.5%)	20388 (84.5%)	716 (88.3%)	1553 (71%)
DSD start year (n, %)				
2016	3 (0.0%)	3 (0.01%)	0 (0.0%)	-
2017	503 (1.2%)	176 (0.5%)	327 (14.2%)	-
2018	2820 (7%)	1490 (3.91%)	1330 (57.8%)	-
2019	13202 (32.7%)	12581 (33%)	621 (27%)	-
2020	23885 (59.1%)	23860 (62.6%)	25 (1.1%)	-
Urban (n, %)				
No	31061 (65.6%)	24349 (63.9%)	1510 (65.6%)	5202 (74.7%)
Yes	16312 (34.4%)	13761 (36.1%)	793 (34.4%)	1758 (25.3%)
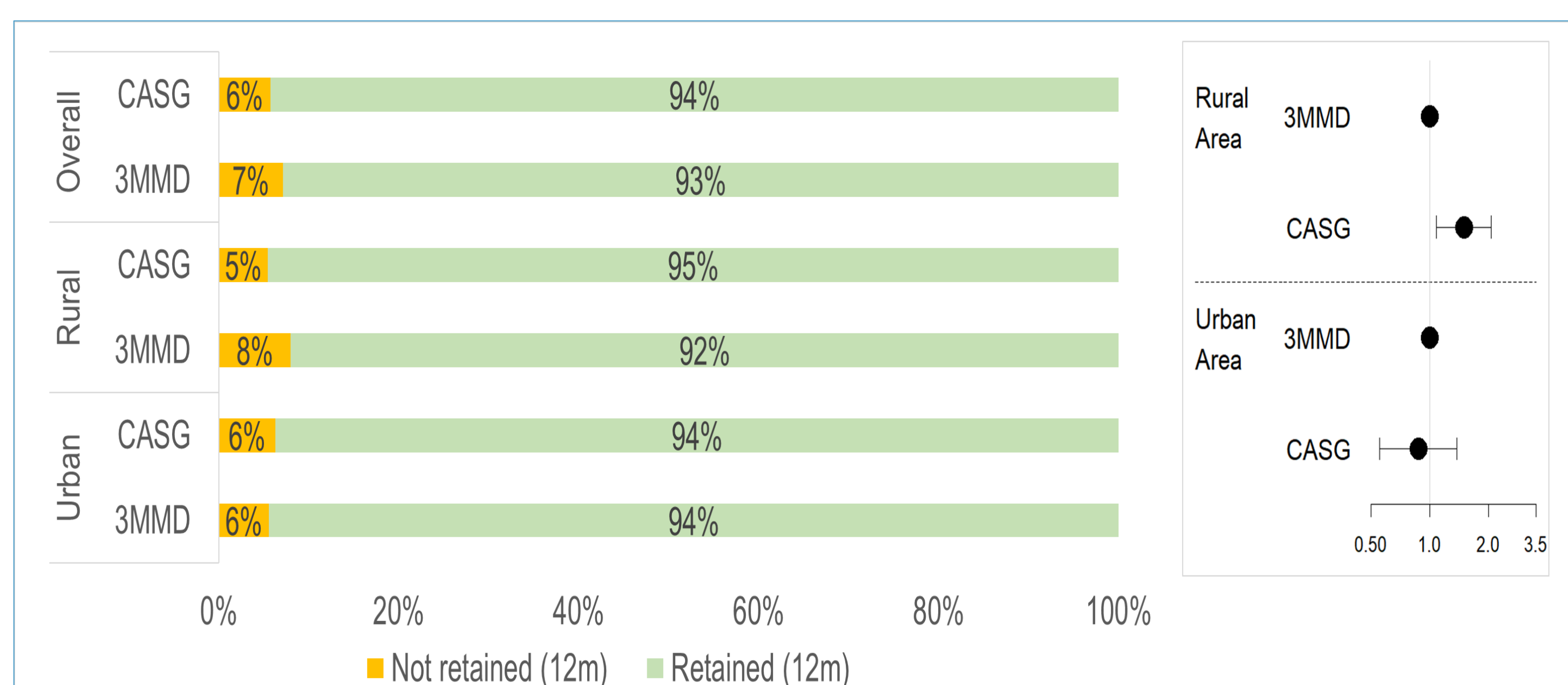
Figure 1. Retention in care rates (12-months) among individuals receiving care for each DSD model compared to those not receiving care in a DSD (but eligible to do so), per area (left); forest plot with respective adjusted OR (right).
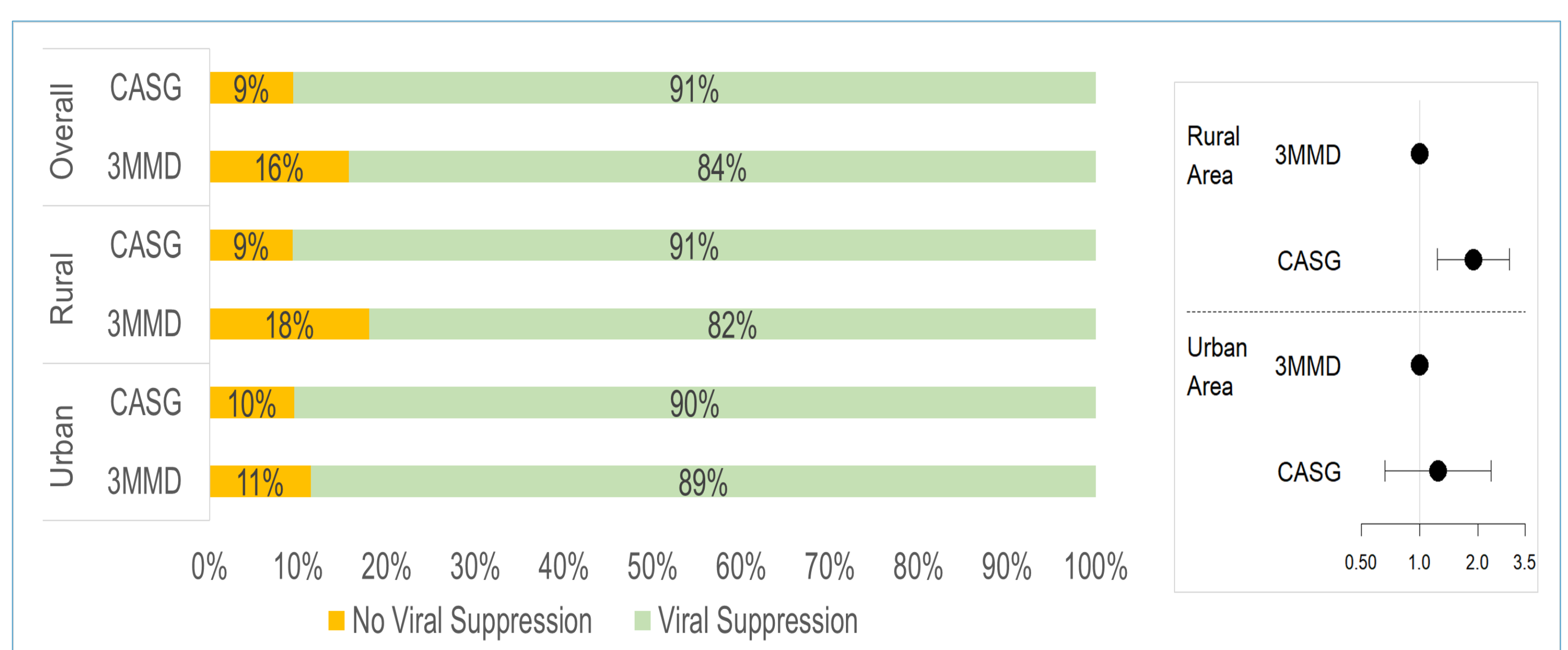

Figure 2. Viral Suppression among individuals receiving care for each DSD model compared to those not receiving care in a DSD model (but eligible to do so), per area (left); associated forest plot with the adjusted OR (right).

Conclusions

- In this cohort, most PLWH were receiving their ART via a pharmacy-based DSD model, namely, 3-monthly medication dispensation (3MMD).
- Retention in care and viral suppression rates were high for both DSD models, but advantages were seen for the CASG model among PLWH residing in rural locales.
- Targeted/adaptive models, taking into consideration the locale where DSD models are being offered may further improve continuum of care outcomes among PLWH.