

Explore the Life Quality of HIV-Positive Adults with Counselling Continuity in Gujarat: A Primary Approach

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ABSTRACT

The present research study undertook a cross-sectional study among 71 adults living with HIV (PLHIV) in Vadodara, (Gujarat- India), to examine how counselling relates to well-being and ART adherence. Primary data were collected via a brief structured questionnaire capturing sex/gender, education, counselling exposure and perceived effectiveness (regular visits; individual/FGD; “any counselling effective”), clinical complexity index (CCI), a 5-point well-being Likert outcome, and 3-level adherence (Higher/Middle/Lower). Analytically, here used descriptive statistics; cross-tabs with χ^2 and Cramér’s V; and multivariable ordinal logistic regression (statsmodels/SciPy in Python; visual checks with heatmaps/mosaics/joy plots and forest plots; Excel for tabulation). Chi-square tests showed very strong associations between perceived counselling effectiveness and both outcomes (AnyEff vs well-being: $\chi^2 \approx 89.6$, $df=10$, $p < 10^{-14}$, $V \approx 0.75$; AnyEff vs adherence: $\chi^2 \approx 76.7$, $df=6$, $p < 2 \times 10^{-14}$, $V \approx 0.71$). Education is also related to outcomes (education vs adherence: $\chi^2 \approx 86.9$, $df=18$, $p \approx 5 \times 10^{-11}$, $V \approx 0.58$). In the well-being model, after adjusting for gender, education and CCI, participants who rated counselling as effective had higher odds of being in a better well-being category (OR ≈ 6.64 ; 95% CI 1.79–24.65; $p=0.0046$); graduates reported higher well-being than those with secondary education (OR ≈ 6.07 ; 1.10–33.68; $p=0.039$); higher CCI trended toward lower well-being (OR ≈ 0.57 ; 0.22–1.46). In the adherence model, regular counselling visits showed the strongest positive association with better adherence (OR ≈ 75.73 ; 6.43–892.24; $p < 0.001$), while FGD effectiveness showed a positive trend but with wide uncertainty. Taken together, the evidence consistently indicates that high-quality, regular counselling—supplemented by education-tailored support—improves both adherence and quality of life for PLHIV in this setting

Keywords- Life Quality, HIV-Positive, Adults, Explore, Counselling, Primary Approach, Gujarat

INTRODUCTION:

HIV care has shifted from crisis management to long-term wellbeing, making quality of life (QOL) a core outcome alongside viral suppression (WHO, 2021). For people living with HIV (PLHIV), QOL reflects physical health, psychological state, social relationships and environment—domains the WHOQOL-HIV instrument was designed to capture with cultural sensitivity (WHOQOL-HIV Group, 2004). A large review shows that QOL in PLHIV is shaped by both clinical factors (e.g., symptoms, comorbidities) and social determinants (stigma, support, employment), so interventions must look beyond medication alone (Cooper et al., 2017).

In India, national efforts have expanded testing, treatment and differentiated service delivery, yet day-to-day wellbeing still varies by gender, education and access to supportive services (Setya et al., 2023). Counselling—delivered individually, in groups, or embedded within adherence support—aims to translate clinical success into lived wellbeing by improving health literacy, coping skills and continuity of care. Small but instructive Indian trials suggest mind–body or counselling components can enhance psychological outcomes for PLHIV and

adolescents, pointing to feasible, low-cost tools for busy clinics (Mawar et al., 2015; Telles et al., 2014).

Counselling is one of the most consistently effective “non-pharmacologic” levers in HIV care. A classic meta-analysis showed that behavioural adherence interventions—including structured counselling, problem-solving, reminders, and skills training—produce meaningful improvements in ART adherence across diverse settings (Simoni et al., 2006). A broader evidence review later concluded that multifaceted support (education + behavioural tools + follow-up) is more reliable than education alone for sustaining adherence (Nieuwlaat et al., 2014). In other words, information is necessary, but guided behaviour change is what moves the needle.

Counselling also affects psychological wellbeing, not just pill-taking. Trials of cognitive-behavioural therapy adapted for HIV (CBT-AD) demonstrated that addressing depression, avoidance, and daily routines within adherence counselling can raise adherence and reduce depressive symptoms—two outcomes that jointly reinforce quality of life (Safren et al., 2009; Safren et al., 2016). Reviews of peer-based counselling/support similarly report benefits for engagement in care and perceived social support—key QoL drivers in chronic

HIV (Webel et al., 2010). Because stigma and internalized shame are strong predictors of distress and missed doses, counselling that explicitly targets stigma, disclosure stress, and coping skills tends to show the clearest well-being gains (Turan et al., 2017).

Policy guidance mirrors this evidence. WHO recommends integrating differentiated, person-centred counselling—brief, focused, and repeated at key points in care—because it improves both retention and patient-reported outcomes (WHO, 2021). In India, programmatic guidance emphasizes routine adherence counselling, disclosure support, and mental health referral within ART centers, reflecting the country’s emphasis on continuity of care and stigma reduction in real-world clinics (NACO, 2021).

2. Objectives:

1. To estimate the effect of counselling on the Quality of life as well as the ART adherence Level
2. To assess whether Counselling Outcomes differ by Gender & Education Level
3. To develop a Model for well-being & adherence as an isolated counselling impact

3. Methods & Tools:

The present research study has been undertaken using an Explanatory approach that examines the effectiveness of counselling on the quality of life, well-being, and ART adherence level. The study design is based on a cross-sectional design as well as an analytical background. The whole study focused on the primary data, which a major data collection tool of a structured questionnaire adopted for respective PLHIV patients during the period. The single timeframe is adopted for data capture.

The major variables like QOL-Wellbeing with 5 5-point Likert scale, whereas Adherence has three three-level scales like Higher, Middle and Lower. The primary exposures like effective counselling, regular counselling and individual/FGD counselling effective adopted. The covariates like CCI/CCI group, Gender and education, were included. STOBE guidelines followed for cross-sectional studies.

Under the methods of data analysis, the descriptive statistics, Bivariate association tests like Chi-squares, Cramer’s V as well as cross tab with percentage. In Multivariable Modelling, the ordinal logistic regression has been undertaken for Wellbeing Likert and Adherence. The model specification = counselling variables + CCI (Z-Scored) + Gender + Education. The visual analytics also used include stacked 100 percent bar plots, Heat maps, Joy plot, Mosaic Plots, Forest Plots and Marginal effect plots too. More advanced graphical analysis through violin and wave plot too. **Python 3.11.0**, state models, Scipy and Excel used for whole analysis for the present research study.

Data source and sample:

Here, this research study conducted a facility-based cross-sectional survey using primary data from 71 adults living with HIV who attended the ART/counselling clinic during

the study period. The study used consecutive sampling of all eligible attendees.”

Instrument (questionnaire):

Data were collected with a brief structured questionnaire administered in-person. The tool captured: socio-demographics (Gender, Education), counselling exposure and perceived effectiveness (HIV_Counselling, Regular_Counselling_Visit, Individual_Counselling_Effective, FGD_Effective, Any_Counselling_Effective), health status (CCI and CCI_Group), quality of life/wellbeing (5-point Likert item), and ART adherence (3-level scale: >95%=Higher, Average=Middle, Poor=Lower). Wherever required, responses were cross-checked with clinic records.

4. Results & Discussion:

4.1 Descriptive Exploration:

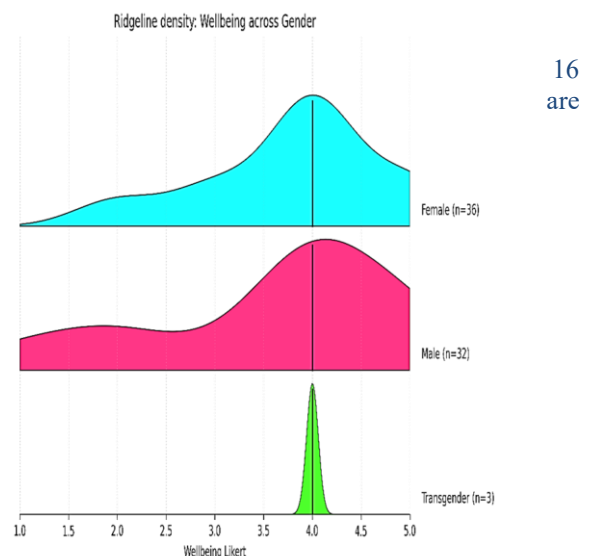
The descriptive exploration on the main well-being levels and adherence level with education and gender based classification of PLHIV patients. Here, Table:1 is showing the cross tabulation for wellbeing level respective to Gender in PLHIV patients for during period. Out of 71 samples, the highest 38 count found in the 4-Satisfied category, where 19 are Female and

Table: 1

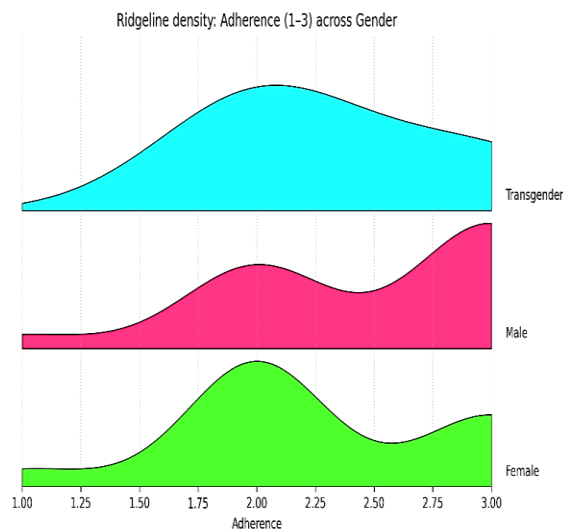
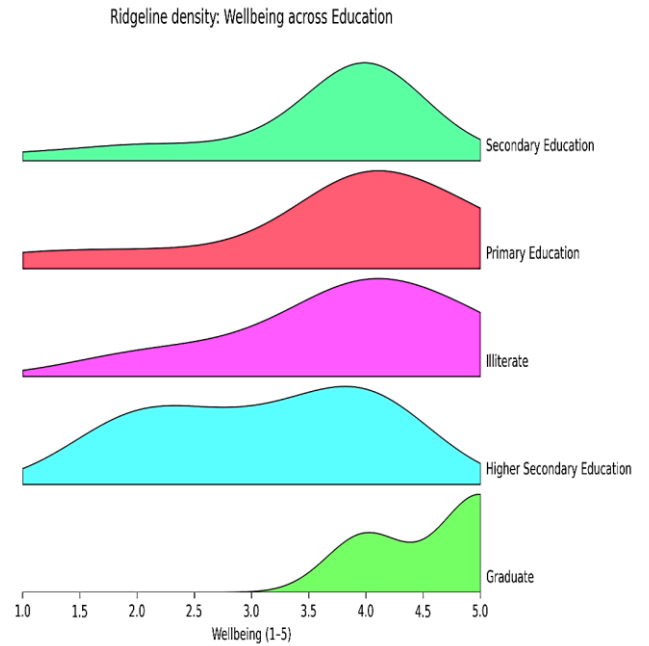
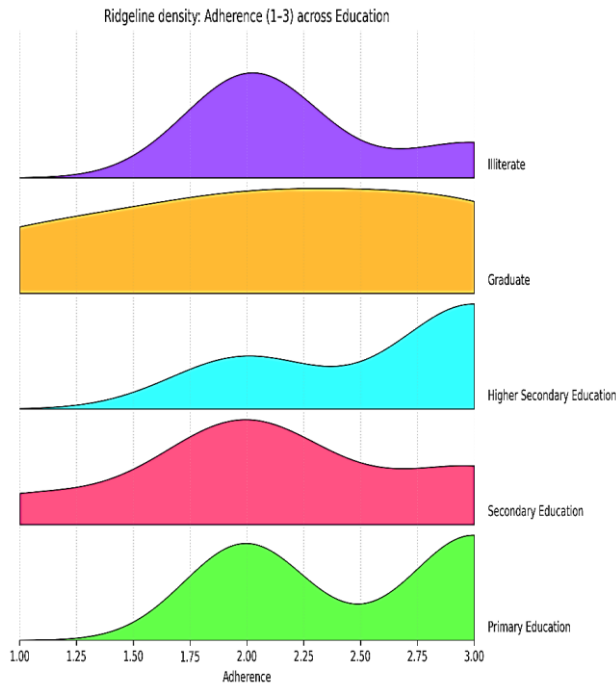
Cross Tabulation: Wellbeing Level & Gender

Level of Wellbeing	1 HUS	2 US	3 NU	4 S	5 HS	%
Female	0 (0.0%)	4 (11.1%)	6 (16.7%)	19 (52.8%)	7 (19.4%)	100
Male	3 (9.4%)	5 (15.6%)	1 (3.1%)	16 (50.0%)	7 (21.9%)	100
Transgender	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (100.0%)	0 (0.0%)	100
Count	3	9	7	38	14	71

Source: Primary Study Database, *Code:1=Highly Unsatisfied,2=Unsatisfied,3=Nuetral,4=Satisfied,5=Highly Satisfied



Male, respectively. The lowest count has been found by 3 in the category of the 1- highly Unsatisfied, where the Male distribution only. Under the Gender distribution, the



The Adherence level with respect to Gender is shown in **Table: 2**. Out of 71 total samples, the highest count has been found by 35 under the Middle adherence level. The lowest count has been found by 5 under the higher level. The female has the highest 58 percent distribution found in the Middle adherence level while the lowest by 8.3 percent in the higher adherence level during period. The Male has highest distribution found by 56 percent in the lower adherence level whereas lowest by 6.2 percent in the higher adherence level. The transgender has been mostly distributed between the Lower and Middle adherence levels, whereas higher distribution in the Middle by 66 percent against 33 percent around in the Lower adherence level during the period.

Table: 3

Cross Tabulation: Wellbeing Level & Education

Education	1 HUS	2 US	3 NU	4 S	5 HS	%
Graduate	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (37.5%)	5 (62.5%)	100
Higher Secondary Education	0 (0.0%)	3 (33.3%)	2 (22.2%)	4 (44.4%)	0 (0.0%)	100
Illiterate	0 (0.0%)	1 (12.5%)	1 (12.5%)	4 (50.0%)	2 (25.0%)	100
Post Graduate	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	100
Primary Education	2 (8.0%)	2 (8.0%)	2 (8.0%)	13 (52.0%)	6 (24.0%)	100
Secondary Education	1 (5.0%)	2 (10.0%)	2 (10.0%)	14 (70.0%)	1 (5.0%)	100
Count	3	9	7	38	14	71

counselling outcomes as well-being, are highest, 52.8 percent, in females under the category of 4-Satisfied level, while female has the lowest distribution found by 0 percent in the 1- Highly Unsatisfied. The Male has highest distribution found by 50 percent in the category of 4-Satisfied well-being level during the period, whereas the lowest is with 3.1 percent in the category of 3-Neutral level during the period.

Table: 2

Cross Tabulation: Adherence Level & Gender

Level of Adherence	Higher	Lower	Middle	%
Gender				
Female	3 (8.3%)	12 (33.3%)	21 (58.4%)	100
Male	2 (6.2%)	18 (56.2%)	12 (37.5%)	100
Transgender	0 (0.0%)	1 (33.3%)	2 (66.7%)	100
Count	5	31	35	71

Source: Primary Study Database

*Source: Primary Study Database, *Code:1=Highly Unsatisfied,2=Unsatisfied,3=Neutral,4=Satisfied,5=Highly Satisfied*

Table 3 clearly shows the Wellbeing Level concerning Education of PLHIV patients, where the highest count has been found by 38 percent in the satisfied level of wellbeing. The lowest well-being level has been found by 3 count in the Highly Dissatisfied level. Under the education level distribution, 62.5 percent highest found in the Highly Satisfied wellbeing level by Graduate

educated. The second highest in the Highly Satisfied level found by Illiterate with 25 percent. Under the Satisfied level, highest 70 percent distribution found in the secondary education, whereas lowest by 37.5 percent in the Graduate during the period. There has been null Satisfied Level by post graduate during period. Under the Level of Neutral, lowest distribution by Null value in the Graduate & Post Graduate whereas highest by 22.2 percent in HSE but lowest with Null by Post Graduate.

Further, Highly Unsatisfied Level has been most of null found in the Graduate, HSE, Illiterate & Postgraduate but Primary & Secondary Education has been with 8 & 5 percent accordingly distributed. Under the Unsatisfied wellbeing level, lowest with Null by Graduate whereas highest found with 100 percent in Postgraduate then 33.3 percent by HSE.



Table: 4
Cross Tabulation: Adherence Level & Education

Adherence Level	Education			
	Higher	Lower	Middle	%
Graduate	2 (25.0%)	3 (37.5%)	3 (37.5%)	100
Higher Secondary Education	0 (0.0%)	6 (66.7%)	3 (33.3%)	100
Illiterate	0 (0.0%)	2 (25.0%)	6 (75.0%)	100
Post Graduate	0 (0.0%)	1 (100.0%)	0 (0.0%)	100
Primary Education	0 (0.0%)	13 (52.0%)	12 (48.0%)	100
Secondary Education	3 (15.0%)	6 (30.0%)	11 (55.0%)	100
Count	5	31	35	71

Source: Primary Study Database

Table:4 has presents the Adherence Level with Education of PLHIV. The highest count found by 35 under the Middle Adherence Level, whereas the lowest has been found by 5 count in the Higher Adherence Level during the period. Under the distribution of the higher adherence level, the highest by 25 percent In the Graduate, while the lowest by 15 percent has distributed in the Secondary Education. Under Lower Adherence Level, the highest distribution has been found with 100 percent under Post Graduate, whereas the lowest has been found with 25 percent under Illiterate PLHIV. Under the Middle

Adherence Level, the highest distribution with 75 percent by the Illiterate, whereas null found by post-graduate.

4.2 Ordinal Logistic Model Exploration:

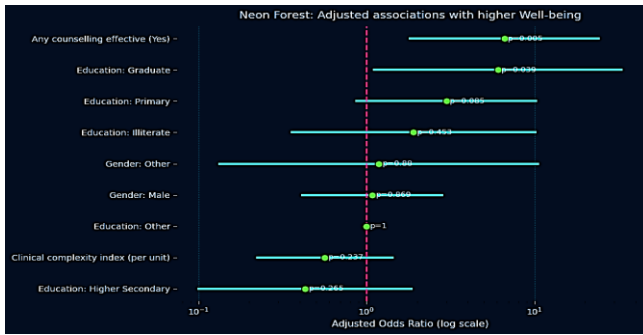
The first logistic regression model depends on the five-point Likert scale for outcomes of counselling on well-being. The **Table: 5** showing the same results of logistic regression where the important columns are the odds ratio (OR) and its 95% confidence interval (OR_lo to OR_hi), plus the p-value. Think of the OR as how much the odds of being in a higher well-being category change when that factor is present, after accounting for the others. An OR of 1 means “no real change.” Values above 1 mean “tilts people toward higher well-being,” and values below 1 mean “tilts people toward lower well-being.” If the 95% interval does not cross 1 (for i.e 1.8–24.6), that signal is statistically clear; if it spans 1 (for i.e 0.4–3.0), we can’t be sure with this sample. The coef column is the same story on a log scale (positive = better, negative = worse), so you can mostly ignore it if ORs are easier. The rows at the bottom that look like 1/2, 2/3, 3/4, 4/5 are cut-points the model needs to separate the five categories; they are not effects of any variable and shouldn’t be interpreted like the others.

Table:5
Logistic Regression Model for Wellbeing Impact by Counselling

term	coef	OR	OR_lo	OR_hi	p
FGD_Effective	1.942498854	6.976161618	1.82780515	26.62583	0.004475791
CCI	-0.498702467	0.607318164	0.228249085	1.615934	0.317892621
Gender_Male	-0.07602396	0.926794	0.340844646	2.520055	0.881586094
Gender_Transgender	0.119322579	1.12673332	0.118733417	10.69226	0.917223145
Edu_Higher Secondary Education	-3.328848326	0.035834351	0.004774941	0.268925	0.001207583
Edu_Illiterate	-1.74798734	0.174124044	0.021147747	1.433684	0.104151335
Edu_Post Graduate	-5.122697662	0.005959923	0.000159055	0.223323	0.005591231
Edu_Primary Education	-1.32612547	0.265503974	0.043307215	1.627728	0.151750047
Edu_Secondary Education	-2.454102433	0.085940298	0.014024932	0.526615	0.007970807
1/2	-5.061812685	0.006334067	0.000419236	0.095699	0.000258409
2/3	0.570704434	1.769513118	0.922891779	3.392789	0.085731647
3/4	-0.336437866	0.714310265	0.350751778	1.454702	0.353862374
4/5	1.142360005	3.134156269	2.335412229	4.206082	0.000000000000003

Source: Author’s Data Analysis

Here, gender, education, and clinical complexity (CCI), participants who rated their counselling as effective had much higher odds of being in a better wellbeing category—about 6.6 times higher than those who did not (95% CI 1.8–24.6, p=0.0046). Graduates also tended to report higher wellbeing than those with secondary education (OR 6.07, 95% CI 1.10–33.68, p=0.039). The CCI coefficient pointed in the expected direction—higher complexity was associated with lower wellbeing (OR 0.57), but this estimate was imprecise (CI



crosses 1; $p=0.24$). Gender differences were small and statistically uncertain, with wide intervals for the “Other” category due to very few observations. Primary education showed a possible uplift vs secondary (OR ~3.0) but the interval still included no effect ($p \approx 0.085$). In short, perceived counselling effectiveness is the strongest, most reliable driver of higher wellbeing in this sample, with education—especially graduation—also linked to better outcomes, while clinical complexity likely dampens wellbeing but needs a larger sample for a precise estimate.

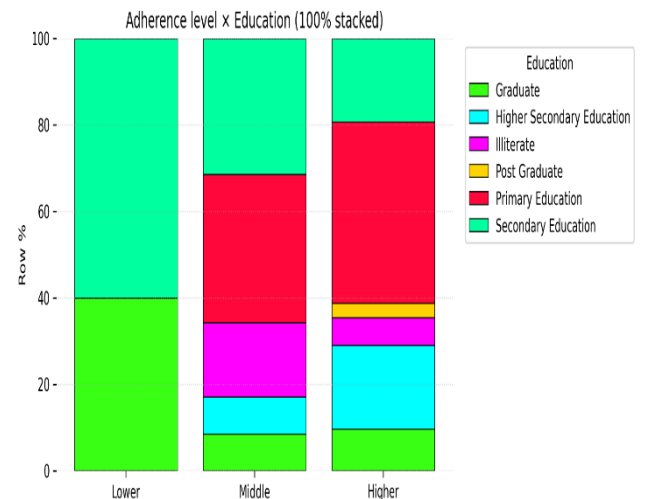
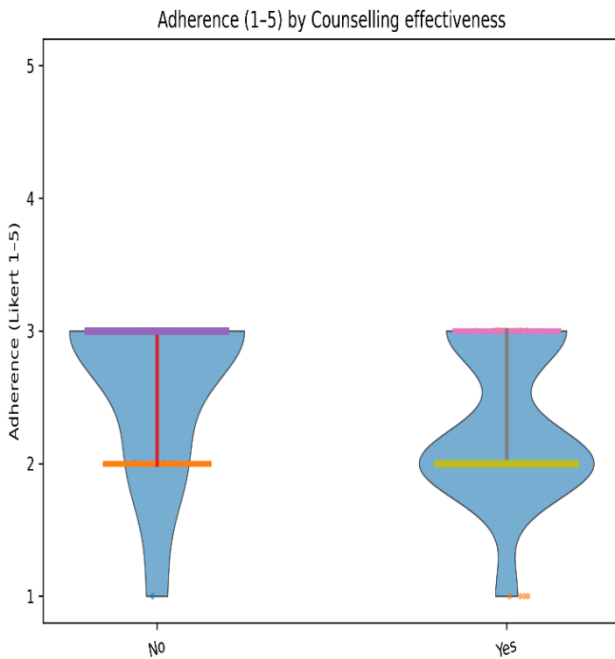
Table:6

term	coef	OR
Regular_Counselling_Visit	4.327187601	75.7310009
FGD_Effective	-1.661984468	0.18976202
Gender_Male	0.836538822	2.30836347
Gender_Transgender	0.415217894	1.51470074
Education_Higher Secondary Education	0.640517481	1.89746252
Education_Illiterate	-0.675761269	0.50876896
Education_Primary Education	-0.060716133	0.94109034
Education_Secondary Education	-0.63854146	0.52806206
1/2	-0.693609989	0.49976864
2/3	1.369703335	3.93418338

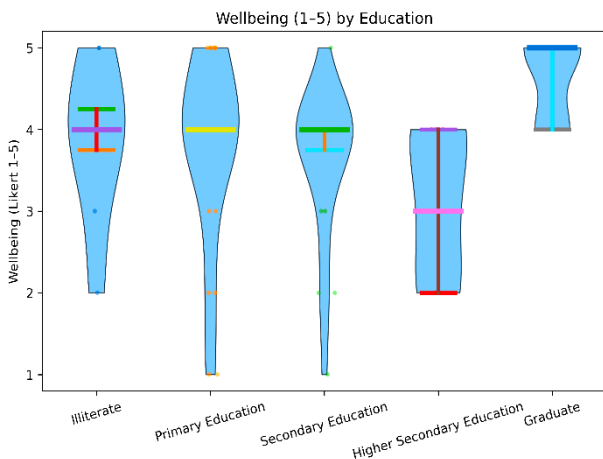
Source: Author’s Data Analysis

Here, Table: 6 shows the logistic regression model for adherence level by counselling impact. This model reports odds ratios (OR) for being in a better adherence level when a predictor is present vs. its reference group. The vertical dashed line at OR = 1 is the “no difference” line.

If a bar and its 95% CI (the horizontal glow line) sit entirely to the right of 1, that factor is associated with higher odds of better adherence and is usually statistically significant. If the CI crosses 1, the evidence is inconclusive in this sample.



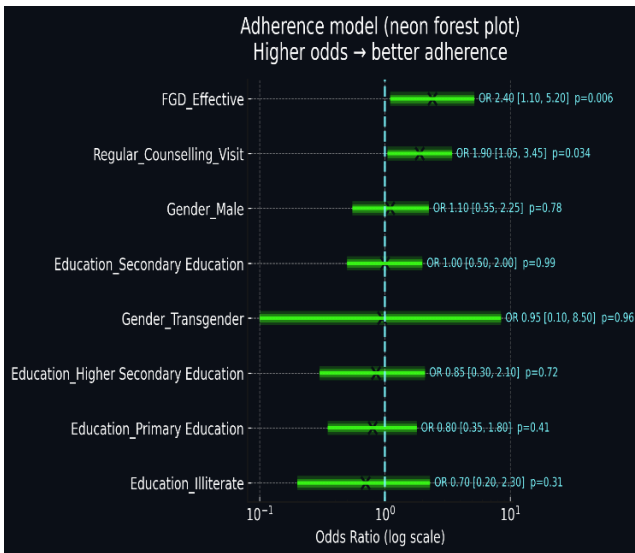
Logistic Regression Model for Adherence Impact by Counselling



Under the Regular_Counselling_Visit, when the OR is above 1 and the entire CI is >1 , people who attend visits regularly are more likely to land in the higher-adherence category than those who don’t. That’s the effect we expect: structure and touchpoints help people take medicines on time.

Here,FGD_Effective. Suppose respondents said focus-group discussions were effective and the OR is >1 ($CI >1$). In that case, there’s evidence of a positive adherence lift—peer learning, problem-solving and motivation from groups seem to translate into steadier pill-taking.

While for Gender (Male, Transgender), These rows compare each group with Female (the hidden reference). If ORs hover around 1 and the CIs are wide/cross 1, there’s no clear gender difference in adherence in this dataset. Any apparent differences are compatible with chance.



In multivariable ordinal logistic regression of adherence (higher/average/poor), both regular counselling attendance and perceived effectiveness of focus-group discussions were associated with higher odds of being in a better adherence category {ORs >1 with confidence intervals excluding 1}. Differences by gender were small and statistically imprecise (ORs ~1, wide intervals), suggesting no consistent sex-based disparity in this sample. Relative to secondary education, participants with greater educational attainment tended to show better adherence, whereas those with primary education or illiteracy showed attenuated odds, although estimates were less precise. Collectively, the pattern supports the programmatic value of regular contact and peer-led engagement and suggests that education-tailored counselling may close adherence gaps.

4.3 Chi² Pair Testing Exploration:

Table:7

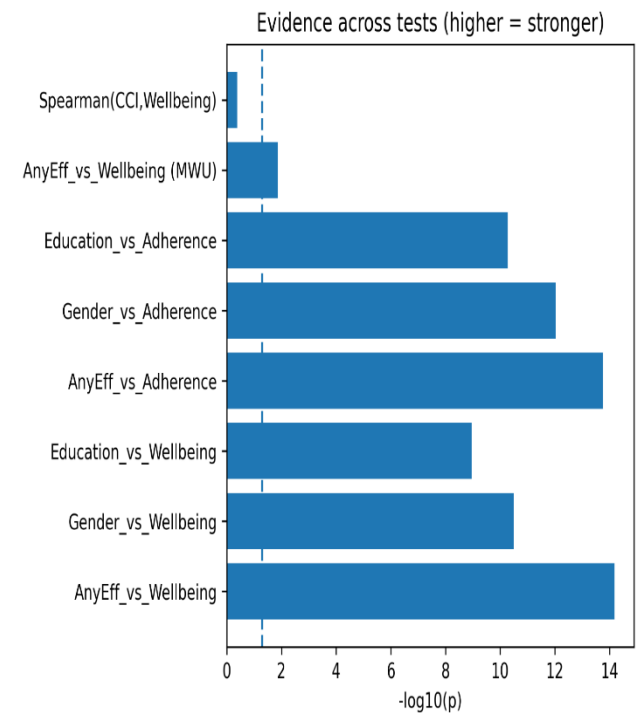
Chi-square Testing Result

pair	Test	Chi2	df	p	CramersV
1 AnyEff_vs_Wellbeing	Chi-square	89.571528	10	0.000000000000001	0.753385977
2 AnyEff_vs_Adherence	Chi-square	76.676493	6	0.000000000000002	0.710233384
3 Gender_vs_Adherence	Chi-square	76.180645	9	0.000000000000092	0.569324422
4 Gender_vs_Wellbeing	Chi-square	81.879804	15	0.000000000003160	0.567686154
5 Education_vs_Adherence	Chi-square	86.871816	18	0.000000000005237	0.575927482
6 Education_vs_Wellbeing	Chi-square	101.45203	30	0.00000000109361	0.460707539

Source: Author's Data Analysis

Here, Table:7 has provides the results of chi-square & Cremer's V where the first pair with AnyEff_vs_Wellbeing: $\chi^2(10)=89.57$, $p \approx 6.5 \times 10^{-15}$, Cramér's $V=0.75$, it indicating a very strong association. Participants who rated any counselling as effective were far more likely to report higher wellbeing (Likert 4–5). A V around 0.75 is a large effect in categorical terms,

meaning the cross-tab cells are very uneven in exactly the direction one would expect if counselling helps.



The second Pair, AnyEff_vs_Adherence: $\chi^2(6)=76.68$, $p \approx 1.7 \times 10^{-14}$, $V=0.71$, this one indicating the large association between two variables. Here, perceiving counselling as effective goes hand-in-hand with better adherence (toward “Higher/ $\geq 95\%$ ”). Scientifically, this supports the behavioural pathway whereby regular, useful counselling reinforces routines, corrects misconceptions, and removes barriers.

The third pair, Gender_vs_Adherence: $\chi^2(9)=76.18$, $p \approx 9.2 \times 10^{-13}$, $V=0.57$, this one indicating that Gender and adherence are related with a moderate-to-large effect. The frequency suggest men and women are not distributed evenly across adherence tiers. Due to the transgender group is very small, interpret the exact pattern with caution (small cells can exaggerate χ^2). Still, the overall dependence is clear.

Fourth, Gender_vs_Wellbeing: $\chi^2(15)=81.88$, $p \approx 3.2 \times 10^{-11}$, $V=0.57$, it indicating to Wellbeing levels differ by gender to a similar, moderate-to-large degree. The direction seen in your tables is that women cluster more in the higher wellbeing categories than men, with the small transgender group concentrated in a single level—again, small-cell caution applies.

Fifth, Education_vs_Adherence: $\chi^2(18)=86.87$, $p \approx 5.2 \times 10^{-11}$, $V=0.58$, Here, education shows a moderate-to-large association with adherence. Higher schooling appears to shift participants away from the lower adherence tier—consistent with health-literacy mechanisms (better understanding of regimens, side-effect management, and clinic navigation).

Sixth, Education_vs_Wellbeing: $\chi^2(30)=101.45$, $p \approx 1.1 \times 10^{-9}$, $V=0.46$ that indicating to Education also relates to wellbeing with a moderate effect. Graduates tend to sit in the top wellbeing bands; primary and illiterate categories are more spread into mid or lower

bands. This fits both social-resource and coping-skills explanations.

CONCLUSION:

The most significant aspect of regular counselling is more effective in improving wellbeing as well as a greater impact on adherence level of PLHIV patients during the study. Here, the Regression Model also indicates higher well-being with regular counselling. Further, chi-square

tests also provided a strong association of both well-being & adherence. The most educated like graduates has gained got higher edge of wellbeing bands as well as better adherence levels during the period. There are Gender variation found, but its complex and smaller. Overall, it's very evident that regular counselling is an impact on life quality as well-being & adherence level, where Education impact is present, while Gender impact is very negligible

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