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Psychosocial Determinants of Antiretroviral Therapy Adherence in Adolescents

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Abstract

Adolescents living with HIV must sustain lifelong antiretroviral therapy (ART) during a developmental period already defined by identity formation and a shift toward autonomy, and psychosocial factors -- rather than regimen complexity alone -- are consistently the strongest predictors of whether they succeed. This article synthesizes the literature on the psychosocial determinants of adolescent ART adherence, organized around disclosure and HIV-related stigma, mental health, family and peer relationships, and the structural and economic stressors that interact with all three. Reported adherence prevalence across studies ranges from roughly 20% to 94%, and pooled meta-analytic estimates link good adherence positively to HIV-related knowledge and self-efficacy and negatively to stigma and depression. We review the intervention literature built on these findings, from Zimbabwe's peer-delivered Zvandiri differentiated care model and SMS reminder trials in Cameroon, both associated with large gains in viral suppression, to a peer support trial in Vietnam that found no benefit against an already strong standard of care, and we examine the pediatric-to-adult care transition as a point where psychosocial support most often lapses. The evidence argues for treating psychosocial support as a core, not optional, component of adolescent HIV care, while leaving the causal direction of several key associations, the process quality of disclosure, and the interaction between structural and psychosocial interventions as open questions for future research.

Keywords: adolescents living with HIV; antiretroviral therapy adherence; HIV-related stigma; disclosure and mental health; psychosocial interventions

1. Introduction

Adolescence is, under the best of circumstances, a period of identity formation, risk-taking, and a gradual transfer of responsibility from caregiver to self. For the roughly 1.9 million adolescents and young people living with HIV worldwide, most of them in sub-Saharan Africa and most infected perinatally, that same developmental window has to accommodate a second, unforgiving task: taking antiretroviral therapy (ART) every day, for life, against a medication regimen that was not designed with a fourteen-year-old's daily routine in mind. The clinical stakes of getting this wrong are high and immediate. Missed doses allow viral replication to resume, viral replication drives resistance, and resistance narrows the future regimen options of a young person who may otherwise have five or six decades of treatment ahead of them. Multiple large syntheses of the adherence literature converge on a blunt summary statistic: reported ART adherence among youth living with HIV ranges from roughly 20% to 94% across studies, averaging in the high 60s, a spread wide enough that "adolescents living with HIV" cannot sensibly be treated as a single adherence risk category at all [1].

What explains that spread is not, for the most part, pill burden or regimen complexity in isolation — pediatric and adolescent formulations have improved substantially over the past decade — but a dense layer of psychosocial factors that sit between a prescription and a swallowed pill: whether the adolescent knows their own status, whether they fear being seen taking medication, whether they are depressed, whether an adult in the household is actively supporting the routine, and whether the clinic they attend treats them as a child, an adult, or something the health system has not quite designed a pathway for. This article synthesizes that psychosocial literature. It is not a report of new data; it is an attempt to pull together what a substantial and rapidly growing body of cross-sectional studies, cohort studies, qualitative work, and randomized trials has established about the determinants of adherence in this population, and to be honest about where the evidence remains thin.

We organize the discussion around six overlapping domains: the structure of the adolescent HIV epidemic and why its adherence problem is developmentally distinct from the adult one; disclosure, identity, and HIV-related stigma; mental health as both a cause and a consequence of nonadherence; family, caregiver, and peer relationships; the structural and economic stressors that interact with and amplify psychosocial risk; and the intervention literature that has tried, with mixed but instructive success, to act on all of the above. We close with a discussion of the transition from pediatric to adult care — arguably the single most dangerous psychosocial transition an adolescent living with HIV will face — and an honest accounting of open questions.

A second caveat concerns terminology. "Psychosocial determinants" is used throughout this article as an umbrella covering psychological states internal to the adolescent (depression, self-efficacy, coping style), interpersonal relationships that mediate how those states translate into behavior (caregiver involvement, peer support, disclosure to others), and the social meaning attached to the diagnosis itself (stigma, both enacted and internalized). We keep these three layers distinct where the evidence allows it, because interventions that work on one layer — a support group that improves peer connectedness, say — do not automatically move the others, and the literature is at its most useful precisely where it specifies which layer a given finding actually speaks to.

A third caveat on scope, stated plainly up front: the great majority of the studies synthesized here come from sub-Saharan Africa, reflecting both where the epidemic is concentrated and where the bulk of the adolescent-specific adherence research has been conducted. Findings from a peri-urban clinic in Zimbabwe or a public hospital in Tanzania do not automatically generalize to an adolescent on ART in the United States or Vietnam, and where the evidence base is thinner or geographically narrower, we say so rather than paper over the gap.

2. The Adolescent HIV Treatment Landscape and Why Adherence Diverges from Adults

Adolescents living with HIV are not simply small adults or large children; they are a population with two largely distinct routes into HIV infection — perinatal acquisition, for those who have often been on treatment since infancy, and horizontal acquisition during adolescence itself, typically through sexual transmission — whose psychosocial profiles differ substantially. A perinatally infected fifteen-year-old has frequently spent years being medicated by a caregiver without full

understanding of why, moving through childhood on a regimen decided for them, and only later confronting what their diagnosis means socially; a horizontally infected fifteen-year-old is navigating a new diagnosis, a new identity, and a new medication routine simultaneously, often without having told anyone. UNAIDS' 2024 global update on adolescent girls and young women underscores how unevenly this burden falls: the great majority of new adolescent infections and of adolescents living with HIV are concentrated in eastern and southern Africa, and girls bear a disproportionate share of both new infections and, downstream, of the population now aging through adolescence on lifelong treatment.

Adherence itself is measured inconsistently across this literature — self-report, pill counts, pharmacy refill data, and viral load as a proxy outcome are all in circulation, frequently within the same review — which is part of why reported adherence prevalence varies so widely from study to study [1]. Viral suppression, the outcome that actually matters clinically, is a somewhat cleaner endpoint, but it lags adherence by weeks to months and can mask a recent, real lapse. Structural and clinic-level factors — stockouts, transport cost and distance, clinic hours that conflict with school, and, as a Tanzanian study of adolescents and young adults at a regional treatment centre found, simply and reliably being able to obtain medication when a refill is due (associated with over four times greater odds of adherence relative to inconsistent availability) — set a hard floor under whatever psychosocial support a young person receives [2]. The same study found that adolescents experiencing even moderate food insecurity were 67% less likely to adhere, and that those who had completed secondary schooling were more than twice as likely to adhere as those with no formal education, a reminder that "psychosocial" determinants rarely operate independently of material deprivation [2]. With that structural floor acknowledged, the remainder of this article focuses on the psychosocial layer above it: disclosure and stigma, mental health, relationships, and the interventions built around them.

3. Disclosure, Identity, and HIV-Related Stigma

Whether and how an adolescent comes to know, and to be known by others, as living with HIV shapes almost every other determinant discussed in this article, and the evidence that disclosure status is associated with adherence is among the more consistently replicated findings in the field. A systematic review and meta-analysis of studies across sub-Saharan Africa found that adolescents who had been told their HIV status were substantially more likely to be adherent to ART than those who had not, a pooled association robust enough across the underlying studies that the authors describe disclosure as one of the more actionable levers available to clinics, since the timing and process of disclosure is, unlike many structural determinants, something a clinic can actually control [3]. A study spanning pediatric HIV programs in Lomé, Togo, and Abidjan, Côte d'Ivoire, put concrete numbers on how that process typically unfolds: disclosure was usually initiated around a median age of 10 and completed around a median age of 15, most often delivered individually through structured counseling sessions, with parental reluctance to disclose — cited in 88.2% of cases as an obstacle — standing out as the dominant barrier to timely disclosure [4]. That five-year gap between initiation and completion is itself a clinically meaningful window: an adolescent who has been told "something" about clinic visits and pills, without yet having the full picture, occupies an ambiguous position that qualitative work in Limpopo, South Africa, describes starkly — one adolescent participant characterized living with an undisclosed or partially disclosed status as living with "a secret you cannot share with anyone," a burden the study's authors link directly to adherence lapses driven by the effort of concealment itself, including deliberately skipping doses to avoid a sibling or peer noticing pill-taking behavior [5].

Stigma is disclosure's shadow concern: the more visible a young person's HIV status becomes, whether through voluntary disclosure or through pills, appointments, or side effects that make it visible involuntarily, the more they are exposed to the stigma that a large evidence base confirms is still pervasive around HIV. A systematic review and meta-analysis spanning over 170,000 participants across 40 studies estimated the pooled prevalence of high HIV-related stigma at 44% (95% CI: 37–51%), with individual study estimates ranging as widely as 19% to 88%, underscoring how strongly local context shapes the stigma an adolescent actually experiences [6]. For adolescents and young adult women specifically, an early and still frequently cited study administered as part of the Adolescent Medicine Trials

Network found that internalized and enacted stigma predicted worse self-reported medication adherence, and — importantly for intervention design — that this relationship was moderated by coping style and satisfaction with health care, meaning stigma's damage to adherence was measurably smaller among young women who felt well supported by their clinical providers and who used active, rather than avoidant, coping strategies [7]. A broader systematic review of HIV-related stigma's relationship to the health and wellbeing of children and adolescents living with HIV reaches a similar conclusion from a wider angle: stigma is consistently associated not just with adherence directly but with the depression, isolation, and disclosure avoidance that themselves independently undermine adherence, making stigma something closer to an upstream cause acting through multiple downstream psychosocial pathways rather than a single independent risk factor sitting alongside the others [8].

4. Mental Health as a Determinant and a Consequence of Nonadherence

Depression and other common mental disorders occupy a genuinely bidirectional relationship with adherence in this literature: poor adherence and the resulting fear of disease progression can produce depressive symptoms, and depressive symptoms in turn erode the motivation, executive function, and daily structure that adherence requires, and most cross-sectional studies in this space cannot fully disentangle which direction is doing more of the work in a given adolescent's case. What is clear is that the prevalence of depressive symptoms among adolescents and young adults living with HIV in sub-Saharan Africa is substantial and highly variable by setting. A systematic review covering youth aged 10 to 24 found major depression prevalence ranging from 16.0% to 40.8% across studies and depressive symptom prevalence (a broader, less clinically stringent measure) ranging from 4.4% to 52.6%, and identified HIV-related stigma, bullying, sexual abuse, and poor ART adherence itself among the factors most consistently correlated with depressive symptoms in this population [9]. A more recent cross-sectional study of adolescents on ART in Tema, Ghana, found a comparatively modest 9.3% prevalence of depressive symptoms (7.0% mild, 2.3% moderate) but identified a striking risk gradient by treatment duration: adolescents who had been on ART for less than a year were roughly seven times more likely to report depressive symptoms than those on longer-term treatment, consistent with the idea that the early post-diagnosis and post-treatment-initiation period is a particularly acute window of psychological vulnerability rather than a static risk that simply accrues over time [10].

Table 1: Pooled associations between selected psychosocial factors and ART adherence, and prevalence estimates for two of the underlying exposures, as reported in recent systematic reviews and meta-analyses of adolescents/youth living with HIV. [1,9,6].

Factor	Source	Measure	Reported Estimate
HIV-related knowledge	Saenjun et al. [1]	Pooled odds ratio for good adherence	OR 2.35 (95% CI 1.82-3.03)
Adherence self-efficacy	Saenjun et al. [1]	Pooled odds ratio for good adherence	OR 2.81 (95% CI 1.58-4.99)
HIV-related stigma	Saenjun et al. [1]	Pooled odds ratio for good adherence	OR 0.61 (95% CI 0.47-0.79)
Depression	Saenjun et al. [1]	Pooled odds ratio linked to adherence outcome	OR 2.01 (95% CI 1.16-3.50)
Depressive symptoms, ages 10-24	Too et al. [9]	Prevalence range across studies, sub-Saharan Africa	4.4%-52.6% (major depression 16.0%-40.8%)
High HIV-related stigma	Dessie & Zewotir [6]	Pooled prevalence, 40 studies	44% (95% CI 37%-51%)

The pooled quantitative picture across the broader adherence-determinants literature backs up the qualitative narrative. In the most comprehensive recent systematic review and meta-analysis of factors influencing ART adherence among youth living with HIV, drawing on 45 underlying studies, depression showed a pooled odds ratio of 2.01 (95% CI: 1.16–3.50) in its association with adherence outcomes, while HIV-related stigma showed a pooled odds ratio of 0.61 (95% CI: 0.47–0.79) for good adherence — that is, stigma roughly halves the odds of good adherence in the pooled estimate. The same review found self-efficacy strongly positively associated with adherence (pooled OR 2.81, 95% CI: 1.58–4.99) and HIV-related knowledge similarly positively associated (pooled OR 2.35, 95% CI: 1.82–3.03), giving a reasonably coherent four-factor picture: adolescents adhere better when they understand their disease, believe they are capable of managing it, and are not carrying an unmanaged burden of depression or stigma [1]. Table 1 places these pooled estimates alongside the prevalence figures from the mental-health and stigma literature discussed above, to make the scale of both the exposure (how common

depression and stigma actually are) and the effect (how strongly each predicts adherence) concrete in one place.

Self-efficacy deserves particular attention because, unlike depression or stigma, it is a psychological resource rather than a burden, and one the intervention literature has treated as more directly modifiable. A study of adolescents and young adults in southwestern Uganda examining correlates of HIV treatment adherence self-efficacy found that self-management skills and social skills were both significantly and positively associated with adherence self-efficacy, suggesting that skills-based interventions — teaching an adolescent concretely how to manage a regimen and how to navigate the social situations pill-taking creates — may be a more tractable target than trying to directly reduce stigma exposure, which is largely outside any individual clinic's control [11]. A companion study among adolescents and young adults in Western Kenya similarly examined psychosocial correlates of adherence self-efficacy and viral suppression, reinforcing that the self-efficacy construct tracks meaningfully with the clinical outcome that ultimately matters, not merely with self-reported adherence behavior [12].

5. Family, Caregiver, and Peer Relationships

If mental health represents the psychological determinants operating inside an adolescent, family and peer relationships represent the interpersonal determinants operating around them, and the evidence here is if anything more consistent than for any single psychological factor. A systematic review of family influences on ART adherence among youth with HIV in the United States, synthesizing 36 studies, identified caregiver involvement in medication administration as one of the more robust positive predictors of adherence across the reviewed literature, while also flagging complex regimens, HIV-related stigma within the household, and general psychosocial stressors as the recurring barriers — and noted, as an honest gap, that the reviewed studies rarely tested for family-level moderators or mediators explaining why some family involvement helps and some does not [13]. A mediation analysis conducted among perinatally infected adolescents in Uganda extends this picture by testing mechanism rather than just association, and the broader Ugandan intervention literature it sits alongside — including cluster-randomized work layering family-based, group-based therapeutic components onto standard HIV care — treats family functioning less as a fixed background trait and more as something a program can actively strengthen [14].

The composition of the household matters as much as its mere presence in the adherence literature, and it is worth being specific about why. Many adolescents living with HIV, particularly those infected perinatally in high-prevalence settings, have lost one or both biological parents to HIV-related illness and are being raised by grandparents, aunts, uncles, or older siblings — caregivers who may themselves be managing chronic illness, economic precarity, or the burden of caring for multiple orphaned children, and whose capacity for the kind of sustained, patient medication supervision that adherence requires is correspondingly stretched. This is part of why the U.S.-focused systematic review's finding that caregiver involvement in medication administration robustly predicts better adherence needs a caveat when read against the sub-Saharan African literature: the caregivers doing that involvement are frequently not parents, and the psychosocial and economic burden the involvement places on them is a determinant of adherence in its own right, one that has received comparatively little direct empirical attention relative to the adolescent's own psychology [13].

Peer relationships operate somewhat differently from family relationships, less as a source of direct supervision over pill-taking and more as a buffer against isolation and stigma, and the trial evidence on peer-based adherence interventions is genuinely mixed in a way that is worth taking seriously rather than smoothing over. A cluster-randomized trial in Zimbabwe trained lay peer counsellors in structured problem-solving therapy and compared outcomes to standard peer counseling among 842 adolescents with comorbid HIV and common mental disorders; the trial found no evidence of an effect on virological suppression, but did find substantial improvements in mental health symptoms among adolescents who received the enhanced, problem-solving-based peer counseling [15]. A separate Zimbabwean trial of a peer support intervention targeting adolescents and young adults who were already failing ART found that the intervention's positive effect on adherence was real but transient, fading over the follow-up period in a way the authors explicitly flag as a caution against assuming a single-dose peer intervention produces durable

behavior change [16]. Most strikingly, a large randomized controlled trial of peer group support among children and adolescents with HIV in Vietnam, conducted in a setting with an already well-resourced pediatric HIV care system and correspondingly high baseline viral suppression, found virological failure of 3.4% in the intervention arm versus 3.6% in the control arm — a difference the authors correctly describe as showing no statistically significant benefit, precisely because there was so little room left for a peer intervention to improve on an already strong standard of care [17]. Read together, these three trials suggest that peer support's value is real but conditional: most evident where baseline mental health burden or adherence failure is high, and least detectable where standard care is already delivering strong outcomes.

6. Structural and Economic Stressors that Compound Psychosocial Risk

It would be a mistake to read the psychosocial literature synthesized above as though stigma, depression, and family dynamics operated in a vacuum separate from material circumstances; in practice, the strongest predictors in several of the studies already discussed are frankly structural. Food insecurity is the clearest example: the Tanzanian study already cited found that adolescents experiencing even moderate food insecurity had 67% lower odds of adherence than food-secure peers, a magnitude larger than several of the purely psychological correlates discussed elsewhere in this synthesis, and a plausible mechanism is direct — antiretroviral regimens are frequently prescribed with food, and nausea or discomfort from taking medication on an empty stomach is a concrete, physical disincentive that has nothing to do with stigma or mood [2]. Economic strengthening interventions have been tested directly against this pathway, and the results are instructive about how psychosocial and economic determinants interact rather than simply stack. The Suubi+Adherence cluster-randomized study in Uganda tested an economic-strengthening intervention (matched youth savings accounts alongside financial literacy training) against ART adherence outcomes, and a moderated mediation analysis of that trial found that while the economic intervention had a genuine direct positive effect on adherence, depression significantly weakened that effect — adolescents with higher depressive symptoms captured measurably less adherence benefit from the same economic intervention than their less-depressed peers, leading the study's authors to argue explicitly that poverty-focused interventions alone are unlikely to be sufficient without a parallel mental health component [18]. This finding is one of the more mechanistically informative results in the entire literature synthesized here, because it demonstrates rather than merely asserts that psychosocial and structural determinants are not separate silos requiring separate interventions, but interacting systems in which addressing one without the other leaves real benefit on the table.

7. Psychosocial Interventions to Improve Adherence

The intervention literature broadly clusters into three families: differentiated, community-based service delivery models that reorganize how care itself is delivered; digital and mobile-health tools that layer reminders or support onto existing care; and structured psychosocial or group-therapeutic programs that directly target mental health, disclosure, or peer connectedness. The most influential example of the first family is Zimbabwe's Zvandiri program, which trains HIV-positive young people as community adolescent treatment supporters who provide home visits, peer support groups, and text-based check-ins as an adjunct to standard clinical care. A cluster-randomized controlled trial of the Zvandiri differentiated service delivery model found that at 96 weeks, 25% of adolescents in the intervention group had virological failure or had died, compared with 36% in the control group — an adjusted prevalence ratio of 0.58, representing a substantial and statistically robust reduction in the combined bad-outcome measure attributable to a program built almost entirely around psychosocial and peer-delivered support rather than any change to the medical regimen itself [19]. The magnitude of that effect, delivered through a workforce of trained peers rather than additional clinical staff, is a large part of why Zvandiri has become a reference model cited well beyond Zimbabwe.

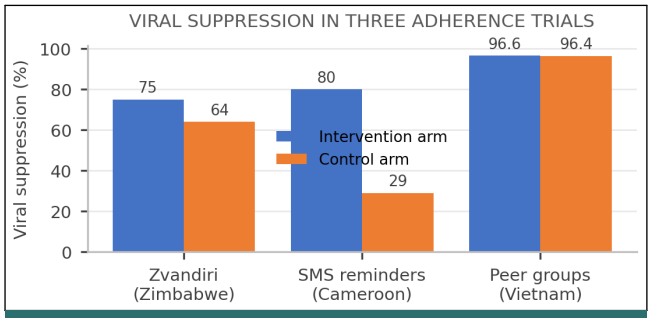

Figure 1: Viral suppression (or virological-failure-free) percentages reported by intervention and control arms in three randomized trials of psychosocial/structural adherence support for adolescents living with HIV -- Zvandiri's community adolescent treatment supporters in Zimbabwe [19], SMS reminders in Cameroon [20], and peer group support in Vietnam [17]. Effect size tracks inversely with how strong the standard-of-care comparator already was.

Digital interventions occupy the second family, and the evidence for them is more mixed and more setting-dependent than the differentiated-care literature. A randomized controlled trial in Cameroon comparing SMS reminders, peer home visits, and standard care among 138 adolescents found that both active interventions dramatically outperformed control: 85% good adherence in the SMS arm and 84% in the peer home visit arm, versus only 27% in the control arm, with viral load suppression at 80%, 70%, and 29% respectively — one of the largest effect sizes reported anywhere in this literature, and notable for showing that a comparatively low-cost SMS intervention performed at least as well as the more resource-intensive home-visit arm [20]. That result sits in some tension with a broader systematic review of randomized controlled trials of digital adherence tools for adolescents and young adults, which found that only two of eight reviewed trials from 2020–2024 demonstrated statistically significant adherence improvements, and that studies using objective viral-load-based outcome measures were more likely to find significant effects than those relying on self-report — a methodological observation that should make readers somewhat cautious about generalizing from any single strongly positive trial, including the Cameroon result just described [21]. An earlier systematic review and meta-analysis of SMS reminder interventions specifically reached a similarly measured conclusion, finding a positive but more modest pooled effect on adherence than individual standout trials might suggest [22].

The third family, structured psychosocial and group-therapeutic programs, is illustrated by the pilot cluster-randomized trial of a group-based therapeutic intervention (combining cognitive behavioral elements with multiple-family group sessions) among adolescents in Uganda, which demonstrated feasibility and encouraging engagement in a small sample, consistent with the broader Suubi program family's emphasis on combining economic, family, and mental-health components rather than treating any one lever in isolation [14]. Table 2 below places several of these psychosocial and structural adherence interventions side by side, and Figure 1 visualizes viral suppression outcomes from three of the randomized trials discussed above, chosen specifically because each reports a directly comparable intervention-versus-control suppression percentage: together they illustrate both the largest and the smallest effect sizes documented in this body of work, and the pattern is instructive precisely because it is inconsistent — differentiated community-based care and low-cost reminder systems have both produced large, credible effects in some settings, while peer support layered onto an already well-functioning care system produced essentially none.

8. Transition from Pediatric to Adult Care

No single psychosocial transition in the adolescent HIV care trajectory is more consistently flagged as dangerous than the transfer from pediatric or adolescent-focused clinical services to adult HIV care, typically occurring somewhere between ages 18 and 24 depending on health system policy. A systematic review of transition interventions for adolescents transferring from pediatric to adult HIV care found substantial heterogeneity in how transition is structured across health systems — ranging from an abrupt, single-visit handover to gradual, multi-year joint clinics — and concluded that structured, gradual transition programs with explicit readiness assessment consistently outperformed abrupt handover in terms of retention in care, even though the review found the underlying evidence base for any specific transition model to still be relatively thin and rarely evaluated with a randomized design [23]. The psychosocial logic of why transition is so hazardous overlaps heavily with the determinants already discussed in this article: an adolescent moving to adult care loses the pediatric clinic's more overt family involvement, its typically less formal and more youth-oriented culture, and often the same clinicians who have overseen disclosure and early stigma-coping; the adult clinic, from the adolescent's perspective, resembles a larger, less personal system with older

patients and less patience for adolescent-typical inconsistency. Programs like Zvandiri, which extend peer support that follows the young person across this transition rather than being tied to a single clinic setting, are partly a direct response to this specific failure mode, and the strength of the Zvandiri trial result may owe something to the fact that its model of support is structurally continuous across a transition that most health systems otherwise treat as a hard clinical boundary [19].

9. Open Challenges

Several gaps recur across the literature synthesized here and are worth naming plainly. First, causal direction remains genuinely unresolved for several of the strongest associations reported. Depression correlates with nonadherence in essentially every study that measures both, but the cross-sectional design of most of the underlying studies — including the largest meta-analyses [1,9] — cannot establish whether depression drives nonadherence, nonadherence (and the resulting anxiety about disease progression) drives depression, or some third factor, such as unresolved disclosure or household instability, drives both simultaneously. The moderated mediation design of the Suubi+Adherence depression analysis is a rare exception that begins to untangle mechanism rather than mere association, and more studies with that kind of design, rather than additional cross-sectional prevalence estimates, would do more to advance the field at this point [18].

Second, the intervention evidence is geographically lopsided and the null results deserve as much attention as the positive ones. The strongest positive trial results — Zvandiri, the Cameroon SMS/peer-visit trial — come from settings with comparatively low baseline standard-of-care performance, where there was substantial room for a psychosocial intervention to show benefit; the one large trial conducted in a setting with an already strong standard of care, the Vietnamese peer group support trial, found no detectable effect, precisely because viral suppression was already close to ceiling in both arms [17]. This pattern strongly suggests that psychosocial interventions are not uniformly effective add-ons to any HIV care system, but compensatory mechanisms whose measured benefit will shrink as the underlying care system improves — a genuinely useful finding for policy, but one that also means trial results from any single country should not be assumed to generalize to a health system with different baseline performance.

Third, disclosure research has mapped the association between disclosure status and adherence fairly thoroughly, but has engaged far less with the process quality of disclosure — whether it is done gradually with counseling support versus abruptly, and by whom — as opposed to disclosure's simple binary presence or absence [3,4]. Given how large the gap is between median age of disclosure initiation and completion reported in West African pediatric programs, and given qualitative accounts of the psychological burden of partial disclosure specifically, treating disclosure as binary likely understates a meaningful source of variance in adherence outcomes [4,5].

Fourth, and most structurally: almost none of the intervention trials synthesized here were designed or powered to test interactions between structural determinants (food insecurity, transport, clinic stockouts) and psychosocial ones (stigma, depression, family support), even though the Suubi+Adherence moderated-mediation result suggests these interactions may be where much of the actionable signal lives [18]. Future intervention research that deliberately crosses an economic or structural intervention arm with a mental-health or family-support arm, in a factorial rather than a purely additive design, would do more to clarify which combinations of support actually move adherence than another single-arm trial of either component in isolation.

10. Conclusion

The literature reviewed here supports a reasonably specific set of claims about what shapes ART adherence among adolescents living with HIV. Disclosure status, HIV-related stigma, depression, self-efficacy, and family and peer support are each independently and repeatedly associated with adherence across dozens of studies spanning multiple countries [3,6,1,13]. These factors do not operate independently of material circumstance: food insecurity and economic stress interact with, and in at least one rigorously analyzed trial measurably weaken, the benefit an adolescent draws from a purely economic or purely psychosocial intervention delivered alone [2,18]. The strongest intervention evidence to date — differentiated, peer-delivered community care models exemplified by Zvandiri, and low-cost digital

reminder systems in the Cameroon trial — demonstrates that psychosocial support delivered outside the traditional clinical encounter can produce large, clinically meaningful improvements in viral suppression, but that same evidence also shows those effects are not universal and appear to be largest precisely where standard care is weakest [19,20,17]. The transition from pediatric to adult care remains the point in the care trajectory where these psychosocial supports are most likely to lapse and where the consequences of their lapsing are most visible in the retention and virological outcome literature [23]. Taken together, the evidence argues against treating psychosocial support as an optional adjunct to adolescent HIV care and toward treating it as a core, resource-appropriate component of the care model itself — one that, on the current evidence, pays off most where it is needed most.

11. References

1. Saenjun, P., Vongsirimas, N., Klainin-Yobas, P. (2025) Factors influencing antiretroviral therapy adherence among youth living with HIV: a systematic review and meta-analysis. BMC Public Health, 25: 4213. DOI: 10.1186/s12889-025-25357-6

2. Kamote, S., Tesha, N.A., Sunguya, B.F. (2025) Factors associated with adherence to antiretroviral therapy among HIV-positive adolescents and young adult patients attending HIV care and treatment clinic at Bombo Hospital in Tanga region-Tanzania. PLOS ONE, 20(1): e0316188. DOI: 10.1371/journal.pone.0316188

3. Mengesha, M.M., Teshome, A., Ajema, D., Tura, A.K., Kristensson Hallström, I., Jerene, D. (2023) The association between HIV diagnosis disclosure and adherence to anti-retroviral therapy among adolescents living with HIV in Sub-Saharan Africa: A systematic review and meta-analysis. PLOS ONE, 18(5): e0285571. DOI: 10.1371/journal.pone.0285571

4. Bakai, T.A., Iwaz, J., Takassi, E.O., Thomas, A., Eboua, T.K.F., Khanafer, N., Kenao, T., Goilibe, K.B., Sewu, E., Voirin, N. (2023) Disclosure of HIV status and adherence to antiretroviral treatment in children and adolescents from Lomé and Abidjan. PAMJ Clinical Medicine, 45: 13. DOI: 10.11604/pamj.2023.45.13.26795

5. Mabasa, R.A., Madiba, S., Mothiba, T.M. (2023) Structural, Familial, and Psychosocial Factors Affecting Long-Term Antiretroviral Treatment Adherence amongst Adolescents Living with Perinatally Acquired HIV in Limpopo, South Africa. International Journal of Environmental Research and Public Health, 20(22): 7074. DOI: 10.3390/ijerph20227074

6. Dessie, Z.G., Zewotir, T. (2024) HIV-related stigma and associated factors: a systematic review and meta-analysis. Frontiers in Public Health, 12: 1356430. DOI: 10.3389/fpubh.2024.1356430

7. Martinez, J., Harper, G., Carleton, R.A., Hosek, S., Bojan, K., Clum, G., Ellen, J. (2012) The impact of stigma on medication adherence among HIV-positive adolescent and young adult females and the moderating effects of coping and satisfaction with health care. AIDS Patient Care and STDs, 26(2): 108-115. DOI: 10.1089/apc.2011.0178

8. Robinson, A., Cooney, A., Fassbender, C., McGovern, D.P. (2023) Examining the Relationship Between HIV-Related Stigma and the Health and Wellbeing of Children and Adolescents Living with HIV: A Systematic Review. AIDS and Behavior, 27: 2853-2887. DOI: 10.1007/s10461-023-04034-y

9. Too, E.K., Abubakar, A., Nasambu, C., Koot, H.M., Cuijpers, P., Newton, C.R.J.C., Nyongesa, M.K. (2021) Prevalence and factors associated with common mental disorders in young people living with HIV in sub-Saharan Africa: a systematic review. Journal of the International AIDS Society, 24(S2): e25705. DOI: 10.1002/jia2.25705

10. Abdulai, M., Bonful, H., Hornuvo, R., Addo-Lartey, A., Anum, A., Paintsil, E., Shabanova, V. (2026) Prevalence and Correlates of Depressive Symptoms Among Adolescents Receiving Antiretroviral Therapy in Tema, Ghana: A Cross-Sectional Study. Journal of the International Association of Providers of AIDS Care, 25: 23259582261473482. DOI: 10.1177/23259582261473482

11. Ashaba, S., Baguma, C., Tushemereirwe, P., Nansera, D., Maling, S., Zanon, B.C., Tsai, A.C. (2024) Correlates of HIV treatment adherence self-efficacy among adolescents and young adults living with HIV in southwestern Uganda. PLOS Global Public Health, 4(9): e0003600. DOI: 10.1371/journal.pgph.0003600

12. Oja, D., Jiang, W., Richardson, B.A., Badia, J., Kibugi, J., Beima-Sofie, K., Hicks, S., Pintye, J., Altman, M.R., Agot, K., John-Stewart, G., Kohler, P. (2026) Psychosocial correlates of adherence self-efficacy and HIV viral suppression among adolescents and young adults in Western Kenya. PLOS ONE, 21(2): e0341269. DOI: 10.1371/journal.pone.0341269

13. Rodriguez, V.J., Gessert, M., Guerra, A. (2025) Family Influences on Antiretroviral Therapy Adherence in Youth with HIV in the United States: A Systematic Review. AIDS and Behavior, 29(8): 2621-2644. DOI: 10.1007/s10461-025-04721-y

14. Kizito, S., Nabunya, P., Ssewamala, F.M. (2023) Enhancing Adherence to Antiretroviral Therapy Among Adolescents Living With HIV Through Group-Based Therapeutic Approaches in Uganda: Findings From a Pilot

Cluster-Randomized Controlled Trial. Journal of Pediatric Psychology, 48(11): 907-913. DOI: 10.1093/jpepsy/jsad081

15. Simms, V., Weiss, H.A., Chinoda, S., Mutsinze, A., Bernays, S., Verhey, R., Wogrin, C., Apollo, T., Mugurungi, O., Sithole, D., Chibanda, D., Willis, N. (2022) Peer-led counselling with problem discussion therapy for adolescents living with HIV in Zimbabwe: A cluster-randomised trial. PLOS Medicine, 19(1): e1003887. DOI: 10.1371/journal.pmed.1003887

16. Ndhlovu, C.E., Kouamou, V., Nyamayaro, P., Dougherty, L., Willis, N., Ojikutu, B.O., Makadzange, A.T. (2021) The transient effect of a peer support intervention to improve adherence among adolescents and young adults failing antiretroviral therapy in Harare, Zimbabwe: a randomized control trial. AIDS Research and Therapy, 18: 32. DOI: 10.1186/s12981-021-00356-w

17. Abbasi, A., Tran, T.K., Nguyen, C.T.K., Nguyen, L.V., Du, Q.T., Le, N.N.T., Do, V.C., Nguyen, L.T., Khuong, D.K., Olson, L., Larsson, M. (2026) Peer Group Support to Children and Adolescents with HIV: A Randomized Controlled Trial in Vietnam. AIDS and Behavior. DOI: 10.1007/s10461-026-05204-4

18. Kizito, S., Ssewamala, F.M., Nabayinda, J., Nabunya, P., Sensoy Bahar, O., Neilands, T.B., McKay, M.M. (2025) The Effect of Depression on the Pathways Between an Economic Strengthening Intervention and ART Adherence in Youths with HIV: Findings from a Moderated Mediation Model of the Suubi + Adherence Cluster-Randomized Study. Prevention Science, 26(6): 862-872. DOI: 10.1007/s11121-025-01821-y

19. Mavhu, W., Willis, N., Mufuka, J., Bernays, S., Tshuma, M., Mangenah, C., Maheswaran, H., Mangezi, W., Apollo, T., Araya, R., Weiss, H.A., Cowan, F.M. (2020) Effect of a differentiated service delivery model on virological failure in adolescents with HIV in Zimbabwe (Zvandiri): a cluster-randomised controlled trial. The Lancet Global Health, 8(2): e264-e275. DOI: 10.1016/S2214-109X(19)30526-1

20. Ketchaji, A., Fokam, J., Assah, F., Ateba, F., Wandji, M.L., Pamen, J.N.B., Djoko, G.R.P., Seugnou, C.D.N., Kah, E., Atangana, A.F., Ateudjieu, J. (2025) The impact of short message service reminders or peer home visits on adherence to antiretroviral therapy and viral load suppression among HIV-Infected adolescents in Cameroon: a randomized controlled trial. AIDS Research and Therapy, 22: 49. DOI: 10.1186/s12981-025-00746-4

21. Agbo, C.E., Agu, M.C., Ogieuhi, I.J., Chima, U.E., Okoye, C.O., Akinmeji, O., Ajekiigbe, V.O., Anthony, C.S., Bakare, I.S., Ngwu, K.E., Isah, A. (2025) The role of digital tools in enhancing antiretroviral therapy adherence among adolescents and young adults with HIV: a systematic review of randomized controlled trials. BMC Infectious Diseases, 25: 353. DOI: 10.1186/s12879-025-10724-w

22. Mehra, N., Tunje, A., Kristensson Hallström, I., Jerene, D. (2021) Effectiveness of mobile phone text message reminder interventions to improve adherence to antiretroviral therapy among adolescents living with HIV: A systematic review and meta-analysis. PLOS ONE, 16(7): e0254890. DOI: 10.1371/journal.pone.0254890

23. Jegede, O.E., van Wyk, B. (2022) Transition Interventions for Adolescents on Antiretroviral Therapy on Transfer from Pediatric to Adult Healthcare: A Systematic Review. International Journal of Environmental Research and Public Health, 19(22): 14911. DOI: 10.3390/ijerph192214911

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Ethical Approval

Not applicable, as this review did not involve human or animal subjects, primary data collection, or any procedures requiring ethical committee approval.

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