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Cultural adaptation of a cognitive-behavioural intervention to improve adherence to antiretroviral therapy among people living with HIV/AIDS in Zimbabwe: *Nzira Itsva*

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Abstract

Few evidence-based interventions to improve adherence to antiretroviral therapy have been adapted for use in Africa. We selected, culturally adapted and tested the feasibility of a cognitive-behavioural intervention for adherence and for delivery in a clinic setting in Harare, Zimbabwe. The intervention consisted of a single, 50-minute problem-solving cognitive-behavioural intervention session with four skill-based booster sessions, delivered by four lay adherence counsellors in the context of HIV care. Adaptation followed a theoretically driven approach to intervention adaptation, Assessment-Decision-Administration-Production-Topical Experts-Integration-Training-Testing (ADAPT-ITT), and included modifications to language, session length, tailoring content for delivery by lay counsellors and inclusion of culturally competent probes. The feasibility of the intervention was evaluated using a mixed-methods assessment, including ratings of provider fidelity of intervention delivery, and qualitative assessments of feasibility using individual semi-structured interviews with counsellors ($n = 4$) and patients ($n = 15$). The intervention was feasible and acceptable when administered to 42 patients and resulted in improved self-reported adherence in a subset of 15 patients who were followed up after 6 months.

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Authors' contributions

D. C. and M.A. are the principal investigators of the study and conceived of the design and management of the study. S.A.S. developed the original Life-Steps. K.K. was the lead qualitative researcher and was responsible for designing and supervising the data collection and analysis process for the qualitative interviews. J.F.M. and C.O. provided training and supervision, while R.M. and T.B. collected the data on the use of the intervention; R.M., K.M. and M.A. analysed data on the intervention. T.B. and P.N. wrote the first draft and J.F.M. the second draft. All authors have commented on and provided edits on drafts of the manuscript and approved the final version.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Next steps from this study include conducting a randomised control trial to evaluate the adapted intervention compared to standard of care in a larger sample over a long-term follow-up.

Keywords

adherence; AIDS; cognitive-behavioural therapy; culture; HIV; intervention

Introduction

In Zimbabwe, nearly 15 percent of adults are infected with HIV (UNAIDS, 2012) and 77 percent of eligible adults are estimated to be receiving antiretroviral therapy (ART) (UNAIDS, 2014). ART adherence to ART is crucial to suppress the virus, delay progression to AIDS and reduce the likelihood of transmitting HIV to others (Bangsberg, 2006; Chi et al., 2009; Cohen et al., 2011). Retention in care and poor adherence are major concerns in sub-Saharan Africa, with only 60 percent of people retained in care in many treatment programmes 1 year after ART initiation (Nachega et al., 2010) and 67 percent of those in touch with services having adequate adherence levels (Ortego et al., 2011). In Zimbabwe, data on early warning indicators from a national sample of sites prescribing ART to adults show that only 21 percent (22/103) of the sites managed to meet the target for on-time pill pickup suggesting that adherence remains a national public health problem (MoHCW, 2014).

Common individual-level barriers to adherence include depression, low adherence self-efficacy, concerns about adverse drug effects, and mistrust of providers and of ART (Langebeek et al., 2014). Combined cognitive-behavioural and educational interventions that seek to address such barriers have been shown in the United States to be effective at improving adherence and, in some cases, viral suppression (Koenig et al., 2008; Simoni et al., 2009; Williams et al., 2006). However, there have been few clinical trials of such interventions in treatment-experienced patients living in sub-Saharan Africa.

In high-resource settings, specialised healthcare workers, such as psychologists or masters level counselors, are likely to be involved in the delivery of ART adherence interventions. However, within low-resource settings, such as Zimbabwe, given the resource limitations for delivering an ART adherence intervention, a task-sharing model is needed, in which certain tasks are done by health workers who have relatively low levels of training and qualifications (World Health Organization (WHO), 2008).

Primary aims of this study were to develop and systematically adapt an evidence-based cognitive behavioral therapy intervention for adherence (Life-Steps; Safren et al., 1999; 2001) for delivery in HIV care in Zimbabwe using a task sharing model. Treatment selection and adaptation was guided by the 'Assessment-Decision-Administration-Production-Topical Experts-Integration-Training-Testing' (ADAPT-ITT) model (Wingood and DiClemente, 2008). In the current study, we follow the ADAPT-ITT model to outline the process of culturally adapting and evaluating the intervention for this context.

Methods

A number of steps are needed when selecting and adapting a behavioural intervention for a new cultural setting, including formative work and pilot testing (Craig et al., 2008). The ADAPT-ITT model provides a clear and easy-to-follow framework that can be used to adapt HIV-related, evidence-based interventions. It consists of up to eight sequential phases for adapting evidence-based interventions, including assessment, decision-making, administration, training and testing (Wingood and DiClemente, 2008). Here we outline each step of the model in our efforts to culturally adapt Life-Steps for HIV care in Zimbabwe.

Assessment

To answer the key formative assessment questions, in a prior study (Kidia et al., 2015), we triangulated several qualitative methods (direct observation of clinicians and adherence counsellors, focus groups and in-depth interviews with key informants and with 47 clients) to gather multiple perspectives to guide implementation. Key informants were selected using purposive sampling to capture information-rich perspectives of both frontline providers of psychosocial care and supervisory staff. Methods have been presented elsewhere (Kidia et al., 2015).

This earlier qualitative research revealed many common barriers to ART adherence, which was used to draft a checklist of barriers to ART adherence for the adapted intervention. As shown in Table 1, these included transport difficulties in coming to the clinic, forgetting to take ART, belief that all ART had to be taken after food, inability to take medication or collect prescriptions due to fear of disclosure and missing doses when visiting rural homes or attending funerals. Another key barrier was *kufungisisa* ('thinking too much' or rumination) (Abas and Broadhead, 1997; American Psychiatric Association, 2013; Kidia et al., 2015). *Kufungisisa* was perceived as reducing adherence to ART because of poor concentration.

Further findings from this prior formative work were that the staff were committed to improving adherence for their clients and particularly wanted access to visual aids for clients and access to simple reminder tools. We learned that the standard adherence counselling gave a mixture of messages about HIV and sexual behaviour rather than focusing on helping the person with their adherence. In the two standard care adherence counselling sessions typically delivered in HIV care, counsellors try to cover as many topics as possible including the difference between HIV and AIDS, safe sex practices, diet, keeping a positive attitude towards living with HIV, why ART is important and how to take medication. The large list of topics may detract from a focus on adherence. In addition, 'scare tactics' (for instance saying to patients that they are going to die if they fail to adhere) were sometimes used rather than the counsellor being motivational. We hypothesised that a structured, agenda-focused, motivational and problem-solving intervention with prior evidence base for improving ART adherence may be particularly useful in this setting.

Decision

In this phase, we reviewed systematic reviews of evidence-based interventions for adherence (Barnighausen et al., 2011; CDC, 2015; Rueda et al., 2006; Thompson et al., 2012). We aimed to select an adherence counselling approach that was evidence-based, appeared suitable for delivery by adherence counsellors in sub-Saharan Africa, and would use techniques compatible with psychological support for depression.

We thus selected the Life-Steps intervention. Life-Steps is a brief evidence-based intervention to improve ART adherence that uses cognitive-behavioural principles (Safren et al., 1999, 2001). Life-Steps has been evaluated in resource-limited global contexts (Simoni et al., 2009, 2013), is potentially sustainable and scalable using a task-shifting approach (CDC, 2015; Papas et al., 2011) and has been used in international clinical trials in the AIDS Clinical Trials Group and the HIV Prevention Trials Network (Safren et al., 2014, 2015).

Life-Steps uses a checklist to identify barriers to ART adherence and a problem-solving approach for the client to identify barriers to ART adherence and potential solutions. Life-Steps is often delivered in a single session, with optional booster sessions, or in multiple sessions when integrated with another behavioural intervention. The barriers commonly addressed through Life-Steps, such as getting to appointments and forgetting doses, resonated with barriers perceived as important locally (Kidia et al., 2015). Other cognitive-behavioural therapy (CBT) strategies included in Life-Steps are psychoeducation, motivational interviewing and the use of reminder strategies.

Administration and production

We made several linguistic adaptations to the intervention prior to translating it into the Shona language. The first linguistic modification we made was to clarify the distinction between ‘motivation’ and ‘goals’ as this distinction was not initially clear in the Shona language. The second set of modifications we made was to add additional phrases and metaphors, making sure that we maintained the core elements of Life-Steps, focusing on motivation, psychoeducation and problem solving. We replaced a graph to illustrate the importance of on-time adherence in the current original version with a psychoeducation animation video from an earlier version of Life-Steps (Safren et al., 1999). The video shows how the HIV virus copies itself. We showed the animation using a tablet. The animation, to which we applied a Shona voice-over, illustrates the ART as a hammer that can suppress the virus if taken correctly on time.

Finally, we used qualitative data on barriers related to marital, cultural and religious issues to add culturally sensitive probes to enquire about barriers and potential solutions.

Topical experts

We put together a bilingual team of people with relevant experience to conduct the forward translation. This included an expert in medical education and two bilingual psychologists with experience in HIV care and CBT who worked as a team to translate the intervention from English to Shona. The emphasis was on ensuring conceptual equivalence. An independent translation team fluent in English and Shona but without previous experience of

the intervention carried out a back-translation to English. The translation team then reviewed the documents and came to a consensus about the final version. Bilingual senior medical staff at the University of Zimbabwe – College of Health Sciences and local experts in health education provided feedback on the initial draft of the intervention. The developer of Life-Steps and members of his team, as well as local psychologists provided further input. Additional modifications and adaptations to the intervention were ongoing through the piloting phase (Wingood and DiClemente, 2008).

Training and pilot practice

Two experts in Life-Steps (C.O., S.A.S.) met and trained the principal investigator (PI) (M.A.) in Boston. The PI then trained the first local psychologist (A.C.), who has been working in HIV clinical research since 1998. The PI and the psychologist (A.C.) introduced Life-Steps to the second psychologist (T.B.) who, together with C.O., S.A.S. and J.F.M., worked on the preparations of the local training. C.O. and J.F.M. carried out the first training over 2.5 days in English to the second psychologist and the adherence counsellors. This comprised approximately 30 percent didactic and 70 percent skill-based work. The two bilingual local psychologists (A.C. and T.B.), who had been involved in the formative work, conducted a further 2 days training in Shona comprising 20 percent didactic and 80 percent skill-based work. From then on, the local psychologist (T.B.) led the supervision of the adherence counsellors, with mainly Skype supervision from the experts based in Boston.

Before the Life-Steps training began, the experts in Boston also trained the local psychologist (T.B.) to rate the competence and fidelity of the adherence counsellors to deliver the intervention.

Testing

Testing occurred at a large Opportunistic Infections (OI) clinic in the capital city of Zimbabwe, Harare. This government-funded clinic serves patients from central and northern Harare and has a total caseload of over 3500 adult patients and more than 1000 children and adolescents, attending monthly appointments. The clinic provides adherence counselling by trained adherence counsellors (typically with a secondary school-level education only), which is available to all patients initiating ART and which is repeated for adults suspected of poor adherence. This counselling consists of two 1-hour information-giving sessions, the first in a group and the second individually.

Each trained adherence counsellor and the supervising psychologist spent two mornings per week over 3 months (November 2014 to January 2015) gaining experience with the intervention. This comprised the adherence counsellors delivering the intervention for a convenience sample of 42 patients, the first 12 being a pilot practice sample. We recruited at the clinic for patients who met these criteria: (1) missed two or more HIV care appointments in the last 6 months, (2) self-reported poor adherence or (3) suspected of poor adherence due to having a detectable viral load or failing CD4 count. We excluded anyone aged under 18 years, those on ART for fewer than 4 months or those who scored above cut-off points on tests for cognitive impairment (Joska et al., 2011; Sacktor et al., 2005) and heavy alcohol use (Bohn et al., 1995). As many people in Zimbabwe initiate ART when they are symptomatic,

we wanted to ensure that people were stable and had recovered from any acute illness. Also after 4 months people would have experience of taking medication and of potential barriers to adherence. Thus, we focused the study on people who were treatment experienced.

We collected anonymised basic demographic information on 30 of the 42 clients; the first 12 clients comprised a pilot and were practice cases. A researcher also interviewed all 30 participants with the Adult AIDS Clinical Trial Group (AACTG) questionnaire for self-reported adherence (Chesney et al., 2000) which had been translated into Shona. We asked the last 20 of these 30 participants for permission to re-interview them 6months later when they would be attending their routine clinic visit. Ethical approval was obtained from the Research Council of Zimbabwe (RCZ 02330), the Medical Research Council of Zimbabwe (MRCZ/A/1736), the Joint Parirenyatwa Research Ethics Committee (JREC 18/13) and King's College London (PNM/11/12-147).

Feasibility

At baseline, the supervising psychologist observed the four adherence counsellors delivering the intervention in a role play and rated their fidelity to the intervention using a therapist checklist derived from the original Life-Steps intervention (Safren et al., 2009). A score of 1 was given for each step that was done correctly and a 0 for each step that was not conducted, up to a maximum of 18 points. The psychologist (T.B.) also directly observed each adherence counsellor deliver the intervention to six clients following the training, taking notes and then giving individual and group feedback. She then repeated the fidelity rating for each counsellor by directly observing them delivering Life-steps to a further three clients. Spot checks, where the supervising psychologist sat in on the sessions to observe, were then carried out during the 6-month testing period in order to see whether fidelity was being maintained.

Acceptability

We continually collected field notes during the clinical sessions and, in particular, noted the feedback we received from clients. We also conducted semi-structured interviews with 15 patients at 6-month follow-up to explore their experiences of *Nzira Itsva*, especially in relation to the acceptability of the intervention and its possible benefit. The interview guide included questions about what they did in the sessions, what they learned, what they liked/disliked about the sessions, what could be improved and how the sessions may or may not have influenced their medication routines. We also interviewed the four trained adherence counsellors asking them about their experiences of the intervention, what they liked/disliked, what challenges they faced, how different it was from standard care and whether they recommended it become a permanent feature of care. We coded and analysed the responses to the interviews using grounded theory principles (Glaser and Strauss, 1967) and thematic content analysis (Miles and Huberman, 1994) with the aid of NVivo10.

Results

Differences and similarities between the original Life-Steps and the adapted *Nzira Itsva* version for Zimbabwe are shown in Table 1.

While the original Life-Steps intervention was delivered as a single session (Safren et al., 1999), our team found that many patients needed up to four 10- to 15-minute booster sessions, which was similar to other adherence interventions in developing countries (Simoni et al., 2011; Psaros, 2014) especially when psychosocial stressors and interpersonal issues were present and interfering with ART adherence. Thus, in the adapted version, each client is offered one first *Nzira Itsva* session and up to four 10- to 15-minute booster skill-based sessions at weekly or 2-week intervals.

Pilottesting

Of the 30 patients who comprised the study sample (first 12 were practice); 18 (60%) were women and 12 (40%) were men, with a mean age of 44.5 (range: 21–65) years. Of the 30 patients, 21 (70%) were on a first-line ART regimen and 9 (30%) were on second-line treatment.

Fidelity rating—At baseline the mean fidelity rating for the four adherence counsellors was 8/18. This rose to a mean of 14/18 after 4.5 days' training. After supervised practice on six cases, all fidelity scores rose to either 17/18 or 18/18 for all four counsellors (mean 17/18). Spot checks found that these scores remained at a mean of 17/18 across the 6-month period.

Adherence—We were able to re-interview 15 of the 20 patients we had invited to be re-interviewed at 6months after *Nzira Itsva*. Reasons for not being able to see 5/20 included 2 uncontactable by phone, 1 travelling and 2 attending the clinic on days we were not available. There was a improvement in self-reported adherence; 40% (6/15) had missed doses in the last four weeks at baseline, whereas 0% had at the 6-month follow up.

Acceptability

The semi-structured interviews with clients showed high levels of acceptability and of possible benefits of the intervention. Of the 15 patients interviewed, the majority reported that they were satisfied and/or happy to have had the intervention, with 4 clients spontaneously proposing that their sessions should continue. Examples of the types of comments made include *'the project should continue educating me on how to take my medications'* or that *'this really benefitted me'*. Out of 15 patients, 14 said that that the counselling sessions had affected the way in which they take their medication, with 13 saying that they were now able to take their pills on time:

I learnt the importance of adherence ... I now always move around with my medication so that I will avoid missing my doses. I am now using reminders

I benefitted a lot from all the sessions

I did not understand the difference between viral load and CD4 but now I know the difference

I can now manage to solve my problems on my own.

The counsellors appear to share these positive views. All four said that they had valued learning *Nzira Itsva* and implementing it. Aspects of the intervention that emerged as

particularly acceptable included the client-centred nature of the intervention and the continuity. All of the counsellors interviewed felt that the intervention should be continued and scaled up to other settings:

The clients could take the lead ... coming up with solutions to their problems, I was only there to guide them ... the clients found it very helpful.

In standard care, the client is not given the chance to think on their own. But with Nzira Itsva, it is the client who will be in control ... this helps them to empower and think for themselves.

The good thing in Nzira Itsva is continuity ... this is very helpful because you will then be able to get a better understanding of the client's problems.

The clients really opened-up, because you were doing a follow up ... unlike standard care where we just see the client once, and then they will see someone different the next time ... So it is really good for monitoring the adherence.

Discussion

This study demonstrates the systematic adaptation of Life-Steps (Safren et al., 1999) for implementation in a Harare HIV clinic using lay counsellors as interventionists. The resulting intervention adapted for Zimbabwean culture, *Nzira Itsva*, was feasible and acceptable for delivery by lay adherence counsellors with supervision by one local psychologist, in consultation with two clinical psychologists who supported the initial training. In addition to feasibility and acceptability, we have preliminary data to support that the intervention was associated with improvements in ART adherence at 6-month follow-up among those who we could reach for re-assessment.

The current findings are consistent with evidence of Life-Steps being culturally adapted in other international contexts such as China (Shiu et al., 2013; Simoni et al., 2013) and being feasibly implemented using a task-sharing approach (Safren et al., 2014, 2015). We have demonstrated feasibility and acceptability with both the patients and adherence counsellors by showing that, with 5 days of training and direct supervision on 10 cases, adherence counsellors showed excellent fidelity to the intervention, as rated by an 18-item therapist rating scale (Safren et al., 2009). The intervention was delivered individually in one 50-minute session and four 10- to 15-minute booster sessions, which is comparable to usual care counselling.

The primary changes in the cultural adaptation to Life-Steps for the Zimbabwean culture included selection of non-specialist adherence counsellors to deliver the intervention, translation into the Shona language and addition of local phrases and metaphors to increase clarity of concepts while maintaining conceptual equivalence with the original Life-Steps intervention. We added culturally competent probes to elicit barriers to ART adherence and aid clients to generate solutions. We also translated a psychoeducation video used for an early version of Life-Steps. For the purpose of the study, we used Samsung tablets to show the video. However, in the future we would need to make this part of the intervention sustainable by using applications that adherence counsellors and clients could use via their

own phones. The video can also be transferred to CDs that can be read on desk top computers and laptops. Clients found this very helpful in demystifying the HIV virus, and this was particularly relevant for low literacy clients. Finally, the intervention was delivered over multiple sessions, as opposed to a single session, due to the difficult barriers to adherence that were identified which required greater therapeutic attention.

Although the skill of problem solving around specific barriers to ART adherence was consistent across the original and adapted Life-Steps interventions, we did observe some distinct differences in the barriers to adherence reported that largely derived from sociocultural differences between the United States and Zimbabwe. The most common barriers reported were missing appointments (due to being unable to afford transport to the clinics or due to being out of town for work), stigma (in the workplace and at home), religious beliefs and lack of knowledge about ART. Similar factors have been identified in studies conducted in other sub-Saharan countries, including South Africa (Kagee and Delport, 2010; Kagee et al., 2014; Kagee and Martin, 2010). Because of the recent economic crisis in Zimbabwe, many Zimbabweans are living in poverty. An average person lives on less than US\$2 a day (Skovdal et al., 2011). Finding money to get to the clinic is therefore a major challenge and this was evident in many of the clients we saw, underlining the structural barriers that underpin 'individual-level' barriers in low-income country settings (Kagee et al., 2014). Additionally, the unemployment rate is estimated to be between 80 and 85 percent in Zimbabwe, and many people have resorted to trading within and across the borders, which can contribute to missed doses and missed HIV clinic appointments.

Although these barriers can seem insurmountable, some of the solutions the clients generated included starting small projects such as selling tomatoes and loaning credit for phone calls. This enabled them to make money to get to the clinic for their appointments. The cross-border traders found close relatives or friends they could trust to go to the clinic to get their medication at times when they were out of the country.

In problem solving around stigma that was interfering with disclosure at work, several clients came up with the solution of asking the doctors to shift their review dates so that they could come on the day they were given time off at the end of the month to collect their salaries from the bank.

To deal with interrupted supply of medication, which was only common among clients on the second line, we gave information of private pharmacies to those who could afford to buy medication from private pharmacies. We also told them about various non-governmental organisations (NGOs) that provided medication for free and referred those who needed the third-line therapy to a study that was providing such therapy.

One challenge we faced was that some senior staff at the hospital outside the HIV clinic perceived that introducing Life-Steps was an implicit criticism of usual care counselling. This concern was dealt with by the medical and nursing staff from within the HIV clinic, who had been involved from the outset. Getting buy-in from the HIV clinic proved vital to ensure that introducing the new intervention was perceived positively by staff within the

HIV clinic. This will also increase the likelihood that the intervention will ultimately be adopted by the clinical setting.

Although the counsellor fidelity scores indicate potential feasibility of the approach, there were significant challenges in training and orienting the counsellors to more of a CBT-type approach. For instance, the adherence counsellors initially found it difficult to stick to discussing adherence only and often asked questions to their client about other health-related topics, including unprotected sex, diet, stress management and exercise. These often took them away from the main focus of adherence to ART. In response to this, one minor modification we made was to add a 5-minute 'open topic' section at the end of each session for the counsellors to address these other relevant issues. *Nzira Itsva* differs from usual care adherence counselling in Zimbabwe in several ways, including its collaborative approach to generating client-led possible solutions to barriers to adherence and finding pill-taking strategies that suit the client rather than using more of an authoritarian approach. The initial training of this new approach was thus challenging and took more time than initially anticipated. Although initially the shift from prescriptive counselling to a more collaborative, motivational, problem-solving-based approach was challenging and new to counsellors, they were able to make this shift by the end of the training and supervision period as evidenced by the fidelity data.

Limitations

As a treatment adaptation and pilot implementation study, there are numerous methodological limitations that must be considered when interpreting these results. First, the focus was on the process of adaptation, not on establishing efficacy of the intervention. This will be further established in a subsequent trial. As such, rigorous assessment of ART adherence using objective methods such as electronic adherence measurement or biological indicators was not included in this study. Additionally, given that we only had follow-up data for a relatively small number of patients, it is possible that the large increase in ART adherence may be a chance finding or in part a result of social desirability bias. However, the results of the semi-structured interviews did suggest that the intervention positively impacted adherence. In future studies that are more focused on establishing efficacy and effectiveness of the approach, it will be important to compare rates of ART adherence to a comparison condition and conduct follow-up assessments outside of clinic visits and for all those enrolled at baseline rather than a subset as we did for this study. The issue of long-term fidelity and adherence to the model by lay counsellors will also prove critical, and we did not measure this.

At an institutional level, long waiting times, delays in decentralising HIV care, erratic drug supply and challenges in communication between service users and providers also deter some ART users from adhering to treatment plans (Campbell et al., 2011). It will be an ongoing challenge to understand how a CBT intervention such as *Nzira Itsva*, can work alongside the structural challenges to ART adherence.

Conclusion and future directions

We selected, culturally adapted and tested the feasibility of a cognitive-behavioural intervention for adherence and for delivery in a clinic setting in Harare, Zimbabwe. The adapted intervention was feasible and acceptable for adherence counsellors to deliver and for clients who said it gave them a ‘new direction’ or ‘new map’ in their outlook towards living with HIV. Careful work in building stakeholder involvement in the clinic may have contributed to feasibility of the whole adaptation project in the existing clinical service. The intervention is low cost and potentially scalable using a task-sharing approach. Next steps will be a randomised clinical trial (RCT) to see whether *Nzira Itsva* versus usual care adherence counselling is more effective at improving adherence, especially in people who admit to difficulties, or who have been missing appointments, or whose blood tests for viral load indicate probable poor adherence. A future RCT will address the limitations noted in this article and will enable us to test whether the intervention is associated with clinically meaningful changes in ART adherence using objective methods, changes in viral suppression and improved retention in HIV care compared to usual care.

If adherence counsellors in the Zimbabwe HIV clinic setting can deliver these evidence-based techniques, this may be a potentially cost-effective and sustainable model for task-sharing ART adherence counselling in Zimbabwe.

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Table 1

Differences and similarities between the original Life-Steps and the adapted version for Zimbabwe, *Nzira Itsva*.

Original Life-Steps	Adapted Life-Steps, <i>Nzira Itsva</i>
Life-Steps name	Life-Steps was given a local name <i>Nzira Itsva</i> which translates roughly as 'new direction' or 'new map'. Clients expressed that going through the intervention had given them a new direction or new map in their outlook towards living with HIV
Set agenda	Set agenda
Education using a graph	Education using a culturally relevant video animation and other visual aids to accommodate low literacy levels
Identify the patient's motivation for taking medication	Motivation was explicitly linked to financial responsibility for children and other relatives and to future aspirations
Identify the patient's goals for adherence	Local idioms and linguistic modifications were made to distinguish between motivation and specific goals
Review medication in the past week	Review medication in the past week
Getting to appointments	Using probes, strategies were focused specifically on generating solutions to the key barriers to getting to appointments, such as very limited financial resources, stigma and lack of autonomy at work to receive time off for health appointments
Talking to the doctor	Focused on cultural pressure not to question one's medical team. Counsellors encouraged patients to ask questions to providers
Coping with side effects	A particular focus on problem solving when side effects interfered with work functioning or attendance
Getting medications	An additional consideration in Zimbabwe was interrupted supply of certain medications from time to time, particularly for individuals on second-line treatment
Linking medication to schedule	Stigma and non-disclosure to family members were additional barriers to linking medication to one's schedule
Extra reminders/stickers	Extra reminders/stickers
Storing medications	Stigma and lack of disclosure of HIV status interfered significantly with storing and were an explicit focus in this step
Handling slips	Fear of facing authority/medical team after a slip was an additional consideration (e.g. when doctors know a patient has missed doses, the patient will be asked to go through a repeated counselling.)
Identify a plan to overcome barrier one	Identify a plan to overcome barrier one
Identify a plan to overcome barrier two	Identify a plan to overcome barrier two
Assign stickers as reminders	Assign stickers as reminders
Schedule next session	Schedule next session