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Behavioural Insights Report

How do recipients of care respond to the B-OK bottles
as a way to communicate HIV treatment effectiveness,
viral suppression and U=U?



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In collaboration with Population Services International

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MOTIVATION

People living with HIV (PLHIV) in South Africa face challenges in adhering to antiretroviral therapy (ART) and remaining in care. Poor adherence and retention mean that PLHIV may struggle to achieve viral suppression and remain healthy.

One driver of poor adherence and retention may be a lack of understanding of complex concepts related to HIV treatment literacy including treatment effectiveness, viral suppression, treatment as prevention (TasP), and undetectable=untransmittable (U=U). There is a demonstrated need for innovative and effective health communication strategies to support treatment literacy.



The B-OK bead bottles were developed and tested under the Mpilo Project, a collaboration between Population Services International (PSI) and Matchboxology, using human-centred design principles to improve client understanding of ART and U=U in order to enhance linkage, adherence and retention. The set of three bottles serves as a visual aid, using coloured beads to represent the human body and HIV-infected cells.

The bottles illustrate different scenarios related to HIV diagnosis, ART adherence, viral suppression, and transmission risk. One bottle contains a mix of black and red beads, representing the viral load status at the time of HIV diagnosis. At this stage, while a person living with HIV might still feel fine, this bottle helps to illustrate that HIV is already multiplying in the body and potentially being transmitted to others. A second bottle contains predominantly HIV-infected (red) beads with just a few healthy (black) beads, representing how HIV can eventually overwhelm the body's immune system without treatment, leaving a person vulnerable to a range of other illnesses and even death. The third bottle shows predominantly healthy beads, with just a single red bead, showcasing the effectiveness of daily ART in suppressing HIV to undetectable levels, eliminating transmission risk, and enabling a long, healthy, normal life.

Simple visual aids can be particularly beneficial for individuals with low literacy or numeracy skills, as they allow for the use of metaphors and stories to enhance comprehension, retention and recall of complex health information. Visual aids can also help change *mental models*—the simplified cognitive representations of complex concepts that can shape our understanding and influence our behaviour. In the context of HIV, people may be basing important decisions on incorrect mental models, underestimating the need for and benefits of ART and overestimating the risk of HIV transmission even when virally suppressed.

Behavioural economics suggests that inexpensive, light-touch interventions or nudges can help to correct these mental models and positively influence behaviour. Health education messages can be more effective if they can engage mental models that motivate healthy behaviours.

STUDY BRIEF

While the B-OK bead bottles had previously been piloted with healthcare workers (HCWs) in South Africa and showed high levels of acceptability and feasibility, there was a need to assess their feasibility, acceptability, and appropriateness among care recipients. Our study aimed to capture perceptions of PLHIV regarding the B-OK bead bottles as well as changes in knowledge and attitudes about HIV treatment, to understand the mechanisms of action and determine the appropriateness of using these visual aids within a public health setting.

APPROACH

We conducted in-depth interviews with 20 individuals newly diagnosed with HIV and PLHIV who were initiating or re-engaging in ART in the iLembe district of KwaZulu-Natal province in South Africa in November and December 2022. During the interviews, trained research assistants used the B-OK bead bottles to explain concepts related to viral load, viral suppression, and the concept of U=U. An interview guide was used to probe the participants' knowledge, attitudes, and perceptions about ART. The interviews were conducted in isiZulu (the local language), audio-recorded, and then translated and transcribed into English for analysis. Working iteratively and collaboratively, the team identified and interpreted themes and sub-themes related to the participants' responses to the B-OK bottles and their knowledge, attitudes, and perceptions about ART.

INSIGHTS

Our analysis of the interview data revealed five key insights about the B-OK bottles and their potential use in HIV treatment initiation and adherence counselling:

The colourful B-OK bead bottles *attract attention and represent complex concepts visually.*

Participants easily recalled the meaning of the black and red beads and could narrate back to the interviewer how their treatment literacy had improved:

“The bottles are the best, as the colours explain everything better. They are very attractive and clear all the confusion.”

“The bottles themselves got my attention, especially seeing how one can move from one bottle to the other.”

The visual nature of the bottles was particularly effective at describing viral suppression in a more tangible way that participants could understand and remember:

“The black ones show that the virus is suppressed, the mixed beads show that you are HIV positive, and the red ones show that your viral load is high.”

The B-OK bead bottles specifically improved understanding of the connection between treatment adherence and viral suppression. The B-OK bead bottle demonstration was a novel and engaging approach to learning more about the importance of HIV treatment adherence:

“The black means I am taking my treatment, the virus is suppressed, I won’t transmit it, and I remain healthy. The red one means the virus is all over my body, and the mixed one means I am HIV positive and can move to the red or the black.”

“I remember that the black bead bottles demonstrate that when you take your treatment correctly, the virus becomes suppressed in your body.”

This new understanding of bead bottles was particularly effective in emphasising the benefits of treatment adherence:

“I got to understand how the HIV treatment works and that my immune system remains healthy as a benefit of staying on treatment.”

The B-OK bead bottles generated a positive emotional response: The counselling session built around the B-OK bead bottles elicited feelings of gratitude and happiness among the participants. The visual aid had a positive emotional impact on their perception of HIV treatment that boosted understanding and motivation:

“I felt encouraged to take treatment correctly so that I live healthily and can even have children. I am very grateful, I can even spread the word so that other people, too, can learn more about treatment.”

“Thank you, I wasn’t expecting this. We can also teach others, it is a good and beautiful thing. It assists in understanding HIV. I am grateful that I came and got such counselling.”

“It makes me feel happy. Your explanation makes me understand how the virus gets suppressed with treatment.”

“I am happy as I gained more knowledge. I was impressed, never received such kind of counselling, and am motivated to take my treatment.”

The B-OK bead bottles changed priorities and decision-making: Improved understanding of HIV treatment and viral suppression, combined with the bead bottles’ visual appeal and positive emotional associations, changed how participants prioritised treatment adherence:

“They have changed my opinion on how I should take my medication, and I will take them correctly.”

“Yes, my perspective was changed. The way it was explained helped. I don’t need to overthink it.”

For some participants, the B-OK bottles were a tangible reminder of the consequences of not taking treatment, and helped reinforce a commitment to taking medication going forward:

“I learned a lot and was encouraged. Looking at the red one reminded me of my late friend who did not take the treatment. Now I have decided to take my treatment and adhere, as per the black one.”

“It encouraged me to keep and take my medication collection dates consistently. I was educated that I would commit to taking my medication to stay healthy and strong.”

The B-OK bead bottles can help improve communication with different groups of people:

Participants reflected that the B-OK bead bottles can serve as a valuable tool for initiating conversations about HIV treatment and adherence with diverse groups, including youth, the elderly, family, friends, and community members. The bottles can reduce barriers to conversation, including stigma, generational differences, and different levels of familiarity and comfort with HIV-related topics.

Youth:

“The youth can learn a lot because, in most cases, they are stubborn, and this will be very beneficial.”

The elderly:

“The bead bottles are the easier way, especially for the elderly as the different bead colours can easily be understood. The elderly can understand a lot better as most use beads (beadwork).”

“You should consider teaching the elderly as well because the bead colours demonstrate very clearly.”

Family and friends:

“The bead bottles helped me; I now know and understand HIV, and I think I will tell my mother about them.”

“My friends will also benefit because if I explain to them they don’t understand, I know their lifestyle, and I would love for them to get this kind of counselling.”

The community:

“I wish it were possible to educate the people, even calling community meetings to teach them about HIV and demonstrate treatment using bead bottles.”

“This is a great idea; it should be rolled out to the community and not limited to the clinic because we are scared of the big words they will tell us.”

These insights indicate that the B-OK bottles have a positive impact on participants' knowledge, emotions, learning process, decision-making, and their potential to engage individuals in conversations about HIV treatment and adherence.

IN CONTEXT

- These insights contribute to the accumulating evidence about the acceptability, effectiveness, and mechanisms of action of the B-OK bead bottles when used as visual aids for treatment adherence counselling for PLHIV in public health settings. Our findings can inform the further development, testing, and implementation of interventions built around the B-OK bottles.
- Our results suggest that a primary mechanism of action through which the B-OK bead bottles work is the visual and tactile representation of complex clinical concepts. Participants can hold the bead bottles, ask questions, and engage in dialogue with counsellors that advances their understanding of treatment and viral suppression.
- We found that PLHIV responded very positively to the B-OK bottles, feeling gratitude and excitement about their new knowledge and understanding around HIV treatment. PLHIV had many ideas of other groups who might benefit from discussions about HIV and HIV treatment that could be facilitated with the B-OK bottles.
- The B-OK bottles are a low-cost intervention that can be easily integrated into existing HIV treatment adherence counselling programs.
- More research is needed to assess the impact of the bottles on treatment adherence, retention in care, and viral suppression, as well as to determine optimal implementation strategies for the use of the B-OK bottles at scale, including training protocols for counsellors on using the B-OK bottles effectively.
- The B-OK bottles can be easily adapted to different target populations, languages, and cultural contexts. Healthcare workers readily personalise the tool, developing their own language and approach.
- By prioritising implementation science on the potential of the B-OK bottles as a health communication tool, we can further enhance treatment literacy, improve ART adherence, enable better outcomes for PLHIV, and contribute to epidemic control.