

## Increasing HIV Treatment Literacy among People Living with HIV Using a Novel Health Communication Aid in KwaZulu Natal, South Africa



Effective health communication is important for promoting adherence to antiretroviral therapy (ART).

Many people living with HIV (PLWH) in South Africa face challenges in adhering to antiretroviral therapy (ART) and remaining in care, and 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, demonstrating the need for innovative and effective health communication strategies.

The B-OK Bottles were developed and piloted by Population Services International (PSI) in collaboration with Matchboxology using human-centered design sessions to improve client understanding of ART adherence.

The set of three bottles serves as a visual aid, using coloured beads to illustrate different scenarios related to HIV diagnosis, ART adherence, viral suppression, and transmission risk.

Visual aids can help change **mental models**—the simplified cognitive representations of complex concepts that can shape our understanding and influence our behavior. In the context of HIV, people may have incomplete mental models regarding viral suppression and may overestimate the risk of HIV transmission while on ART. Behavioural economics suggests that low-cost, light-touch “nudges” can help adjust these mental models and motivate healthy behaviours

### STUDY DESIGN

**Objective:** During counselling sessions with PLWH, we assessed whether using a simple visual aid (B-OK Bottles) to explain the concept of viral suppression resulted in changes in HIV treatment literacy and knowledge, attitudes, and perceptions about ART.

**Study population:** Adults who were newly initiating ART or re-engaging in HIV care at 3 public sector clinics in KwaZulu-Natal.

**Quantitative study design:** Before and directly after introducing the B-OK Bottles, counsellors administered a brief survey to 80 participants that assessed demographic characteristics, level of treatment literacy, and attitudes and perceptions about ART.

**Qualitative approach:** Directly after the B-OK Bottle counselling sessions, in-depth interviews were conducted with 20 individuals to learn more about their experience with the B-OK Bottles and how they could be improved.



One bottle is a mix of black and red beads, representing the viral load status at the time of HIV diagnosis, when the person living with HIV might feel fine.



Another bottle contains predominantly HIV-infected (red) beads with just a few healthy (black) beads, representing how HIV can multiply in the body without treatment and be transmitted.



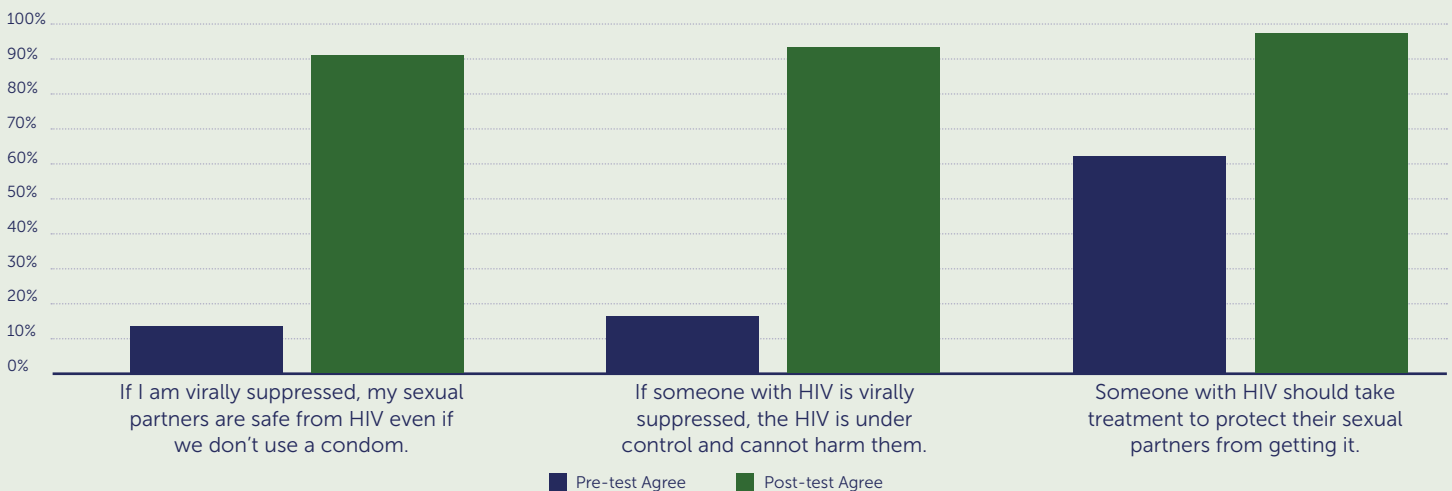
The third bottle shows predominantly healthy beads, with just a single red bead, showcasing the effectiveness of daily ART in suppressing HIV to undetectable levels, minimizing transmission risk.







## QUANTITATIVE RESULTS




- From November 2022 - January 2023, we enrolled 80 PLWH. A total of 58% of participants were male and the median age was 32 years old.
- After receiving counselling with the B-OK Bottles, understanding of U=U increased from 6% to 99% and understanding of viral suppression increased from 20% to 99%.
- Confidence in the protective effects of ART increased (64% to 100% for one's own health; 58% to 94% for transmission to partners) and was observed among participants both initiating ART and re-engaging in care.
- The number of participants agreeing that viral suppression means their sexual partners are safe from HIV even without condoms increased from 14% to 93%. However, 65% still expressed worry that ART does not completely eliminate the risk of HIV transmission.

### Participant responses before and after the B-OK Bottle Intervention



KEY FINDING 1	KEY FINDING 2	KEY FINDING 3	KEY FINDING 4
Use of a visual counselling aid in the form of coloured bead bottles to provide education about HIV and ART led to a large increase in treatment literacy among PLWH at selected clinics in KwaZulu-Natal.	While there was no significant effect on level of confidence in complete elimination of transmission when virally suppressed, there was a significant reduction in concern about HIV transmission and increased confidence in the protective effects of ART.	The B-OK Bottles offer care recipients greater autonomy and ownership of the choice to initiate and adhere, rather than being instructed what action to take	Advantages of the B-OK Bottles include the low cost, ease of assembly, portability, and the short amount of time needed to use the bottles to explain HIV, ART and VS. The bottles can also be used effectively by lay providers.
			

## POLICY RECOMMENDATIONS

	This study shows that a simple and tactile visual aid that interactively explains the effect of ART on HIV viral loads has the potential to improve awareness of the therapeutic and prevention benefits of ART among PLWH.
	Future research should evaluate the effect of the B-OK Bottles and similar visual aids not only on treatment literacy, but also health behaviour and clinical outcomes. Research should also evaluate the bottles outside of the clinic environment and among care recipients at different points in the cascade (newly diagnosed, re-initiating, disengaged).
	Implementation research that assesses strategies for introducing and adapting the B-OK bottles for large-scale use and integrating user-led design should also be a priority.

## QUALITATIVE FINDINGS

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 counseling:



**The colourful B-OK bead bottles attract attention and help demonstrate complex concepts visually.** The bottles encouraged open dialogue and simplified medical concepts to help participants easily recall the meaning of the black and red beads and narrate back to the interviewer how treatment literacy had improved.

"The bottles are the best, as the colors explain everything better. They are very attractive and clear all the confusion."



**The B-OK bead bottles specifically increase 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.

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



**The B-OK bead bottles produced positive emotions:** The counseling 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.

"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 counseling."



**The B-OK bead bottles changed priorities and decision-making:** The colourful and salient beads, the new understanding of viral suppression, the feeling of empowerment, and the positive emotions all combined to change how participants prioritized treatment.

"Yes, my perspective was changed. The way it was explained helped. I don't need to overthink it."



**The B-OK bead bottles can help start conversations 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 the elderly, youth, 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.

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

"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."