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From Barriers to Solutions: Developing a Participatory Visual Health Communication Framework for Urban Informal Settlements

Author: Dennis Mutwiri Mwiti: inotidennis@gmail.com
Dr Betty Mwiti

Dr Akatch

Samuel Mwituri Maina PhD, PDr, OGW; smmaina@uonbi.ac.ke

Corresponding Author: Dennis Mutwiri Mwiti; inotidennis@gmail.com

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Abstract

Background: In recent years, there has been growing recognition of the role health communication plays in improving health outcomes within marginalized populations. Visual tools offer a powerful avenue to communicate critical health information, particularly among communities with low literacy levels. **Problem:** In Nairobi's Kibera informal settlement, women are primary caregivers and crucial agents in managing family health. Yet they face challenges in accessing and understanding health information due to literacy limitations, cultural mismatches, and the dominance of English text-heavy materials. **Objective:** This study investigates the barriers women in Kibera informal settlement face in understanding health messages and proposes a participatory framework for designing culturally relevant, user-centered visual health communication tools. **Design:** Using a Participatory Action Research (PAR) approach and Human-Centered Design (HCD) methodology. **Subjects**: This research engaged women, community health workers (CHWs), and other stakeholders in co-designing effective

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communication materials. **Setting:** the research was conducted in Kibera slums found in the Nairobi County. **Findings:** The study findings highlight the limitations of current health communication strategies and present the Participatory Visual Health Communication Framework (PVHCF) as a solution. This framework emphasizes community-driven co-design, visual literacy optimization, dual language integration, simplification of medical jargon, iterative prototyping, and cultural anchoring.

Introduction

Health communication is a cornerstone of public health, especially in underserved urban settings. In Nairobi's Kibera informal settlement, women are primary caregivers and crucial agents in managing family health. Yet they face challenges in accessing and understanding health information due to literacy limitations, cultural mismatches, and the dominance of English text-heavy materials. This study aims to bridge these communication gaps by developing a participatory visual framework tailored to their needs.

THEORY

Research shows that effective health communication must align with users' literacy levels and cultural contexts. Houts et al. (2006) found that visual aids improve comprehension and recall among low-literacy populations. Similarly, Nutbeam (2020) argues that simplified, image-based materials significantly enhance health literacy.

Jones et al. (2020) and Garcia & Kim (2021) emphasize the use of visual health communication in reducing linguistic barriers. In East Africa, Kamau & Adjei (2022) highlight the success of using culturally familiar imagery and co-design processes to enhance message retention. Karanja & Obonyo (2022) found that co-creating visual tools with women in Nairobi's informal settlements improved acceptance and understanding of health messages. These findings underscore the importance of Human-Centered Design

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(HCD), which emphasizes empathy, co-creation, and iterative feedback (Brown & Wyatt, 2010).

Other scholars, such as Smith & Lee (2021), suggest that HCD approaches in health communication not only improve engagement but also foster empowerment, especially when users become collaborators. In Nairobi's informal settlements, the complexity of sociocultural dynamics and linguistic diversity further demands that health messages be context-sensitive and community-informed.

Methodology

A qualitative research design grounded in Participatory Action Research (PAR) was adopted. Data were collected through in-depth interviews, focus group discussions (FGDs), visual analysis, and co-design workshops held at the SWOP Clinic in Kibera. A sample size of approximately 30 women aged between 18 to 60 years was targeted for initial interviews and focus group discussions (FGDs), followed by a smaller group of around 15 participants for the participatory co-design workshops. Themes were analyzed using thematic analysis to extract barriers and inform prototype development.

Findings

Language and Literacy Barriers

A major challenge identified in this study is the mismatch between the language used in visual health communication tools and what women in Kibera understand. While 100% of respondents preferred Kiswahili, most materials are in English, leading to frequent misinterpretation and misunderstanding. This theme was strongly echoed in focus group discussions (FGDs), with one participant saying, "Words are difficult, that U=U unless explained by a doctor I can't know what this poster is all about."

Language barriers were cited by 38.7% of respondents as a key issue, often resulting in poor adherence to health instructions. Many women rely on CHWs

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to interpret materials, but this depends on the CHWs' own understanding and ability to translate without altering the message.

This finding supports research by Nutbeam (2020) and Houts et al. (2006), which emphasize that localized, clear communication improves understanding. In FGDs, 73% of participants recommended translating materials into Kiswahili. Participants also suggested using dual-language formats and culturally familiar expressions like "Bazenga ni lugha naelewa."

This feedback influenced the co-design of more relatable bilingual prototypes, which participants found easier to understand. These findings highlight the importance of using local languages and reducing text in favor of visuals to accommodate low literacy levels.

Complexity of Medical Jargon

The use of complex medical terminology was another major barrier, noted by 40.3% of respondents. Terms like "U=U" were meaningless to many without explanation. A majority of respondents (67%) recommended simplifying medical jargon in visual health communication materials to enhance comprehension and reduce confusion. Many respondents depended on CHWs for clarification, yet 35.7% of CHWs admitted struggling with medical jargon, and 28.8% had trouble translating terms accurately into Kiswahili. This aligns with Nutbeam (2020), who found that jargon impairs health literacy in marginalized communities.

During co-design workshops, 67% of participants called for simplified language. Suggestions included replacing terms like "viral suppression" with familiar phrases like "ugonjwa umedhibitiwa" (illness is under control). Simplifying medical terms improves comprehension, adherence, and decision-making.

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Visual and Design Issues

Visual analysis revealed widespread design flaws in materials at the SWOP clinic, hindering communication. Participants in FGDs reported issues such as small, unreadable text ("Maandishi ni kidogo"), poor color choices ("Color not good"), and confusing symbols.

Unappealing and Inconsistent Use of Color

During the FGDs sessions some posters were criticized for using dull colors that fails to capture the attention of the community. One participant was captured saying that, "the color on this poster isn't appealing (its dull), wangetumia hata white".

Small and Unreadable Text

Another design aspect that was pointed out especially among older women was the use of small fonts sizes which made posters difficult to read. Such comments like "Mahandishi ni kidogo hatuelewi" (The writing is small, we can't understand it) from the participants highlighted how poor typographic decisions can negatively affect effective communication. Poor, illegible typography was noted during visual analysis which made the posters unreadable and difficult to understand thus failing to communicate the intended message.

Irrelevant Symbols

The visual analysis and FGDs sessions pointed out some symbols used in the posters that were irrelevant and lacked to communicate effectively as intended. These symbols designs led to confusion and lack of interest from the recipients. A response from one of the participants shows clearly how choice of certain symbol can influence recipient's attitude leading to lack of interest and in the end failing to achieve the objective the health message *"I don't understand that u=u symbol so I don't care what the poster is all about*". On the other hand, posters that incorporated familiar symbols or

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imagery were more easily understood and accepted.

Lack of Storytelling in Visual Design

During the focus group discussions, it was highlighted that the women in Kibera slums preferred posters that followed a narrative structure. This was evident in feedback such as *"This poster tells a story"* Designs that incorporated this design aspect were seen to be more impactful.

CONCLUSIONS AND RECOMMENDATIONS

The study proposes a human centered participatory model-the participatory visual health communication framework (PVHCF) that will improve the relevance and the effectiveness of visual health communication tools. The framework is proposed to address the gaps identified in the current health communication design for women in Kibera. The framework put into considerations findings from interviews, focus group discussions, visual analysis and participatory co-design workshop.

CURRENT PRACTICES VS. THE PROPOSED FRAMEWORK

Currently, visual health communication tools are designed through top-down approach mostly by governmental or NGO's health agencies without adequate input from target audience. In the end these materials lack cultural relevance, they adopt English as the primary

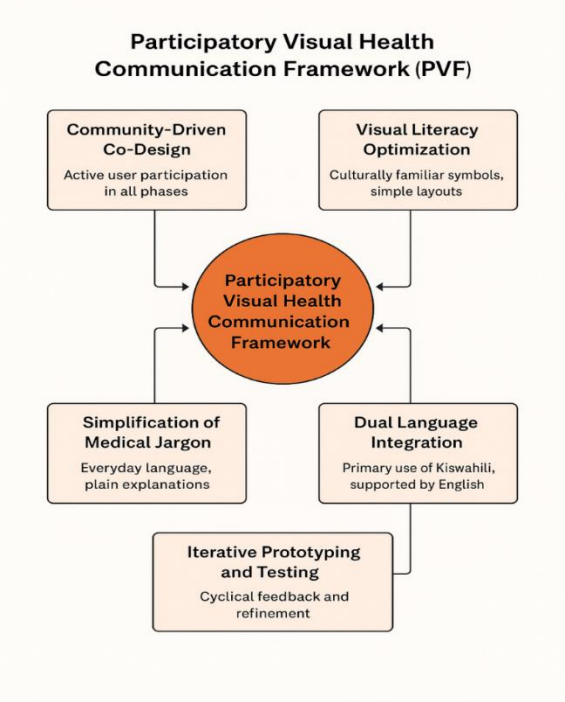


Fig 1: The proposed Participatory Visual Health Communication Framework (PVHCF) model Community-Driven Co-Design

language, and some are designed with

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foreign imagery and with complex medical jargons. When these materials are presented to women in Kibera they are out of touch with the recipients simply because no end user input was considered.in general these materials are created without any feedback from communities. Findings from this study reveal that such tools are often ignored by the target population simply because they don't understand the messaging. For instance, in FGDs one respondent stated that she doesn't waste her time on a poster that doesn't catch her attention on the first glance, particularly if the colors are dull colors or terms used are hard to understand.

This proposed model offers a different approach by adopting a more inclusive approach by emphasizing community participation, local context, visual literacy, and iterative design. Participatory visual health communication framework is a two-way co-designing process incorporating the lived experiences of the target users. Unlike the conventional model, which treats communication as a one-way transmission of expert information. The model is built upon the principle of human centered design which emphasizes involvement of end users as co-creators throughout the designing process. Conventional top-down model heavily rely on expert content and the messages are usually generalized for a large community. The Participatory Visual Health Communication Framework (PVHCF) is designed to be culturally relevance, the context is relatable, the visuals are relatable and the messaging is locally grounded. The key features of this model are;

The target users remain active participants in the whole PVHCF design process. The model suggests that all inputs from the experts and the target audience is so crucial in determining the outcome of the solutions. Its stress the need of co-creation rather than creating for the end user.in the design process all the members will identify their unique

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needs, create prototype designs their needs, seek feedback and have final validation on the prototypes.by co creating solutions together the community feels it owns the solutions and the materials reflect real needs solutions.

Visual Literacy Optimization

The framework considers the different literacy levels of the community and thus it prioritizes the aspect of visual storytelling using culturally relevant symbols, colors, and visual simplicity. Designs are tested for visual clarity, readability, and intuitive meaning without relying on text-heavy content.

Dual Language Integration

PVHCF model proposes all materials to be designed with bilingual content adopting both Kiswahili and English languages where applicable. This ensures inclusivity across literacy levels while maintaining professional clarity when needed for healthcare providers.

Simplification of Medical Jargon

The framework ensures that medical terminologies are either replaced with everyday language or are accompanied by short, plain-language explanations and visuals. Terms like “U=U” are broken down into meaningfully illustrated, contextually framed stories that emphasize impact rather than technicality.

Iterative Prototyping and Testing

Rather than producing final products in isolation, PVHCF incorporates cyclical feedback loops through workshops and focus groups. Each prototype is reviewed by users, revised accordingly, and re-tested, ensuring that materials evolve with input from the ground up.

Cultural Anchoring

Cultural sensitivity and contextual appropriateness are non-negotiable in this model. Every image, message, and symbol are carefully validated against local norms, dress, gender roles, and

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beliefs to avoid miscommunication or resistance.

Empowerment of Community Health Workers

CHWs are trained not just as information disseminators, but also as facilitators of design. The framework includes capacity-building sessions where CHWs learn to critique, co-design, and adapt materials to specific household or community contexts, increasing sustainability.

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