A designathon to co-create community-driven HIV self-testing services for Nigerian youth: findings from a participatory event

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Abstract

Background

Youth are at high risk for HIV, but are often left out of designing interventions, including those focused on adolescents. We organized a designathon for Nigerian youth to develop HIV self-testing (HIVST) strategies for potential implementation in their local communities. A designathon is a problem-focused event where participants work together over a short period to create and present solutions to a judging panel.

Methods

We organized a 72-hour designathon for youth (14–24 years old) in Nigeria to design strategies to increase youth HIVST uptake. Proposals included details about HIVST kit service delivery, method of distribution, promotional strategy, and youth audience. Teams pitched their proposals to a diverse seven-member judging panel who scored proposals based on desirability, feasibility, potential impact and teamwork. We examined participants’ socio-demographic characteristics and summarized themes from their HIVST proposals.

Results

Forty-two youth on 13 teams participated in the designathon. The median team size was 3 participants (IQR: 2–4). The median age was 22.5 years (IQR: 21–24), 66.7% were male, 47.4% completed tertiary education, and 50% lived in Lagos State. Themes from proposals included HIVST integration with other health services, digital marketing and distribution approaches, and engaging students. Judges identified seven teams with exceptional HIVST proposals and five teams were supported for further training.

Conclusions

The designathon provided a structured method for incorporating youth ideas into HIV service delivery. This approach could differentiate HIV services to be more youth-friendly in Nigeria and other settings.

Background

Youth (defined as 14–24 years old here) account for an estimated one-third of all new HIV infections globally [1]. Although youth are disproportionately affected by HIV, their contributions to the development of interventions designed for them have often been limited and sometimes tokenistic [2–9]. Young people typically contribute to research as study participants, key informants, and research assistants [10, 11]. While some studies have further expanded youth engagement in HIV research by creating youth advisory boards (YABs), the extent of meaningful engagement varies [12–21]. Providing youth with opportunities
to create solutions to health problems that affect them can enhance program implementation, accelerate recruitment, and build capacity for youth as co-creators [10, 22].

One strategy to meaningfully engage youth is crowdsourcing. Crowdsourcing is a practice in which solutions to a social problem are solicited from multiple individuals and then shared with the public [23]. It provides a space for people with diverse backgrounds to work together and share their solutions with the local community. One form of crowdsourcing is a designathon. A designathon is a problem-solving event, typically held over a few days, in which participants work together to rapidly create, design, and present their proposed solutions to a panel of judges [24]. Designathons have been previously used to solve problems in education, technology, and public health. Designathons foster multi-disciplinary collaboration, draw on end-user insights and can result in innovative solutions [24–26].

Responding to the need for youth engagement in HIV intervention design, we organized a designathon in Nigeria. The purpose of the designathon was to develop ideas on how to promote HIV self-testing (HIVST) services among youth. This is part of the “Innovative Tools to Expand HIV Self-Testing” (ITEST) project, locally known as “4 Youth By Youth” [27]. HIVST is a process by which individuals collect their own oral fluid or blood specimen, conduct the HIV test, and interpret their results [28]. HIVST may be useful to expand HIV testing services among those who have never tested before [28]. In Nigeria, many youths have never received HIV testing, suggesting an opportunity for HIVST to reach marginalized young people [29]. Moreover, designathons may be an appropriate approach to engage young people as research partners in implementing HIVST among youth. The objective of this paper is to describe the designathon, summarize the resulting HIVST proposals, and discuss public health implications.

Methods

Organization

A contest advisory panel was created to oversee the logistics and overall organization of designathon activities. The panel consisted of a diverse set of 18 experts and professionals from the fields of design thinking, public health, communications, and non-profit organizations. The purpose of the panel was to provide mentorship and guidance to the youth participants as they developed their HIVST proposals and to evaluate the entries submitted. The panel met periodically between October 2018 – March 2019 to prepare for the designathon. The designathon was part of a multi-phase contest in which young people shared their ideas on how to promote HIVST among youth in Nigeria. We describe an initial contest (phase I) preceding the designathon as well as the designathon (phase II) below.

Phase One: Open Individual Crowdsourcing Contest

Between October 15 – November 25, 2018, we conducted a crowdsourcing contest in which Nigerians aged 10–24 years submitted their ideas (written, photos, or videos) addressing the following contest question: “How will you promote HIV self-testing among young people in Nigeria” [27]? We advertised the contest through blogs, social media, print communication, and visits to secondary schools. A more
detailed description of this process is published elsewhere [27]. Of the 769 valid submissions, we invited individuals from the top 42 submissions to the World AIDS Day Event on December 1, 2018 in Lagos to pitch their ideas to a six-judge panel. The panel of judges consisted of the President of the Nigeria Youth Network on HIV/AIDS, a 4 Youth By Youth ambassador, a program manager with the Lagos State AIDS Control Agency, a public health professor, a communications expert, and an independent clinician. The participants with the top five ideas from the contest were invited to join the designathon. Furthermore, the ideas generated from the contest informed the contest question for the designathon.

Phase Two, Part One: Pre-Designathon Process

From January 25 – March 10, 2019, we solicited submissions for the designathon using similar promotion methods as the contest in phase I. The eligibility criteria were that applicants were between the ages of 14–24 years, resided in Nigeria, and part of a team of two to five members. Of the 127 entries that were received, 75 met the eligibility criteria. Of the remaining 52 entries that were ineligible, three were due to incomplete application forms and 49 were due to individual applications that did not meet the team requirement. Four members of the contest advisory panel reviewed the 75 eligible entries and selected teams that answered the designathon problem statement: “How might we encourage self-testing for HIV and other sexually transmitted diseases among young people (ages 14–24) in Nigeria in a way that is low cost, accessible, youth-friendly and confidential?” The contest advisory panel determined there were 20 eligible entries that adequately addressed the designathon problem statement. These 20 entries were reviewed and scored by four members of the contest advisory panel and two 4 Youth By Youth ambassadors. Entries were evaluated on a three-point scale based on the desirability, feasibility, and impact of their HIVST proposals. The top eight teams from phase II were invited to join the five teams from phase I for the designathon (N = 13 teams total).

Phase Two, Part Two: Group Designathon Event

Between March 29–31, 2019, we hosted the designathon at the Digital Bridge Institute (owned by the Nigerian Communication Commission) in Lagos. The designathon was a three-day event in which the 13 teams designed and promoted strategies to increase youth HIVST uptake. The designathon deliverables included a prototype of the teams’ HIVST kit service delivery and a five-minute pitch of their idea to a panel of judges. The teams also developed and shared their business model canvas, a visual chart that described their goals and how they planned to achieve their desired outcomes. Teams were instructed not to give away test kits for free, but instead to develop a community-based, youth-friendly model that would rely on modest payments. The price point was determined by earlier discrete choice experiments [30].

Day 1 Activities

On the first day of the designathon, we shared the purpose and objectives of the three-day contest to the teams. We also communicated the rules of the designathon and the deliverables expected. We familiarized the participants with HIVST, emphasized the importance of linkage to care, and briefed them about HIVST kits and other STI testing kits currently in the Nigerian market. Two panel discussions were scheduled for participants on issues and challenges associated with standard HIV testing services and
understanding the process of innovative problem-solving. Following the panel discussions, participants were asked to spend the remainder of the first day in their teams to begin developing their HIVST proposals (Fig. 1).

Day 2 Activities

On the second day of the designathon, the study teams participated in a presentation on how to effectively pitch their HIVST ideas. They continued working on their proposals, receiving tailored feedback from members of the contest advisory panel (see Additional File 1: Supplement 1).

Day 3 Activities

In preparation for the final day of the designathon, the contest advisory panel identified and invited a separate independent expert panel of seven judges to listen to, review any support materials, ask questions and score the teams’ HIVST proposed solutions. The designathon judges’ expertise included telecommunications, technology, product design, youth ambassadorship, and environmental sustainability. Each team, in turn, finalized their deliverables and presented their prototypes to the judges. The judges evaluated and scored each team’s proposal according to the following criteria: desirability, feasibility, impact, and teamwork. Desirability was defined as being appealing and meeting the needs of young people. Feasibility was defined as being easy to implement in the Nigerian context. Impact was defined as having the potential to influence young people to self-test for HIV in Nigeria. Teamwork was defined as being effective in working together. Each domain was scored on a three-point scale, with one being a low score and three being a high score. The top three winners were announced at the end of the event. The judges’ scores for each team’s HIVST proposal can be found in the supplementary materials (see Additional File 2: Supplement 2). Cash prizes were provided to the top three teams: NGN 250,000 ($694) for first place, NGN 150,000 ($416) for second place, and NGN 50,000 ($138) for third place. We also provided food, transportation, and accommodation for all participants at the designathon.

Data Analysis

We performed descriptive statistics to characterize the demographic data of the designathon participants including their age, gender, current residential location, highest level of education completed, and occupation. We summarized the HIVST ideas generated from the 13 teams in the designathon contest with respect to their HIVST service delivery, method of distribution, promotional strategies, and youth audience.

Results

Participant Characteristics

Forty-two young Nigerians were selected to participate in the designathon in 13 teams (Table 1). The median team size was three participants (interquartile range: 2–4). The median age was 22.5 years (interquartile range: 21–24), 66.7% were male, 47.4% completed tertiary education, and 50% resided in
Lagos State. Twenty-one (58.3%) participants were students and four (11.1%) were self-employed or entrepreneurs. Of the 11 (30.6%) employed participants, five were members of the National Youth Service Corps (NYSC), two were nurses, two were employees at a private company, one was a laboratory assistant, and one worked in human resources.
|                         | n   | %   |
|-------------------------|-----|-----|
| **Age (Years)**         |     |     |
| 18–21                   | 14  | 33.3|
| 22–24                   | 28  | 66.7|
| **Gender**              |     |     |
| Female                  | 14  | 33.3|
| Male                    | 28  | 66.7|
| **Location (State)**    |     |     |
| Abuja                   | 2   | 4.8 |
| Cross River             | 4   | 9.5 |
| Edo                     | 1   | 2.4 |
| Enugu                   | 5   | 11.9|
| Kwara                   | 1   | 2.4 |
| Lagos                   | 21  | 50  |
| Ondo                    | 2   | 4.8 |
| Osun                    | 1   | 2.4 |
| Oyo                     | 4   | 9.5 |
| Rivers                  | 1   | 2.4 |
| **Highest Level of Education** |     |     |
| Senior Secondary        | 15  | 39.5|
| Some Tertiary           | 5   | 13.2|
| Tertiary                | 18  | 47.4|
| Missing                 | 4   |     |
| **Occupation**          |     |     |
| Employed                | 11  | 30.6|
|                | n  | %    |
|---------------|----|------|
| Self Employed/Entrepreneur | 4  | 11.1 |
| Student       | 21 | 58.3 |
| Missing       | 6  |      |

**Designathon Pitches**

The primary goal of the pitches by the teams was to propose solutions on how to increase self-testing for HIV and other STIs among youth in Nigeria (Table 2). Their ideas varied across the HIVST service delivery, method of distribution, promotional strategies, and youth audience.

**HIVST Service Delivery**

HIVST integration with other health services was a common theme across designathon project proposals. Five teams proposed delivering HIVST kits with other STI testing or health products. Three of these teams focused specifically on creating a bundle product that combined HIVST with self-care products (e.g. condoms, lubricants, panty liners, soaps). Of the remaining two teams, one pitched the idea of selling two HIVST kits in one set to reduce the purchasing cost for young people and another proposed complementing HIVST with nutritional supplements.

**Method of Distribution**

Various approaches to distributing HIVST kits were presented. Six teams proposed an online platform to sell kits. These online platforms included websites, online retail stores, and mobile phone applications. Among the six teams with an online platform, three also had an offline distribution strategy, such as placing their kits at pharmacies, retail outlets, or gyms to reach young people who may not have access to phones or the internet. Six teams proposed to distribute their kits solely offline. Among these six teams, two developed creative methods to distribute their kits to youth. One team proposed to stock vending machines with HIVST kits in areas with more youth and another team would partner with mobile phone card vendors to distribute their kits.

**Promotional Strategies**

Seven teams incorporated digital approaches to enhance HIVST services. All seven teams planned to use social media (WhatsApp, Facebook, Instagram, and Twitter) to conduct an online marketing campaign for their HIVST kits. One team additionally developed their own social media application where young people could report their test results and find post-test HIV care services. Three study teams described a peer referral system to enhance HIVST uptake. Two of these teams incentivized youth for peer referrals.
Youth Audience

Teams focused on serving subsets of Nigerian youth. Five teams planned to focus on young people in school. Four teams focused on tertiary students and one team focused on both secondary and tertiary students. One team was interested in engaging hard-to-reach populations such as out-of-school youth, female sex workers, and men who have sex with men. One team proposed to recruit rural adolescent girls and members of the national youth service corps, a mandatory service program for Nigerian youth. This team proposed training and leveraging youth service networks to distribute the kits and encourage HIVST.

Designathon HIVST proposals shared the following characteristics: educating young people on their own health status and where to obtain appropriate services (including post-testing services); offering care that is relevant to the needs of young people; and providing the opportunity for youth to participate in health service delivery. Furthermore, the teams provided young people with alternatives to clinical settings to access HIV information and services. Moreover, all teams underscored the importance of maintaining young peoples’ rights to privacy and confidentiality. The study teams also proposed to partner with institutions (e.g. schools, local community centers) where youth frequent to advertise and distribute their HIVST kits.

Discussion

We organized a designathon in which we crowdsourced ideas on how to increase HIVST among Nigerian youth. Forty-two young individuals from across Nigeria generated HIVST ideas that were diverse, creative, and appealing. Participants at the designathon considered how they wanted to deliver HIVST services, distribute kits, generate demand, and reach a subset of youth. This designathon provided an opportunity for young Nigerians to collaborate and develop strategies to encourage HIVST among youth. We extend the literature by using a designathon methodology, allowing robust input from youth in all stages of the process, and provide structured feedback and mentorship during the designathon.

The designathon generated HIVST proposals that were determined by an independent judging panel to be potentially feasible, desirable, and impactful. The participants’ diverse backgrounds and expertise may have played a role in the development of promising proposals. Youth with different perspectives can draw from their experiences to develop innovative and potentially feasible interventions. This insight is consistent with a previous designathon in the United States that brought together diverse individuals [25]. The high quality of submissions may also have been related to strong youth input and their personal experience and knowledge of local health services and youth preferences [22].

The designathon engaged local youth and allowed them to meaningfully contribute to developing new ideas for HIVST. Youth participants at the designathon led the design of HIVST interventions, which is rare in health research [31, 32]. There are important implications for allowing youth to design solutions to health problems that affect them. Although the designathon was open to youth 14–24 years, individuals selected to participate in the event were all 18–24 years. Thus, older adolescents were more successful in
presenting promising HIVST ideas. Moreover, designathon participants were aware that selected finalists would be allowed to not only design an HIVST strategy but implement them in their local areas. Therefore, it is possible that this designathon may have encouraged a sense of community ownership among participants, which has been observed in a previous HIV-related designathon [24].

Several HIVST strategies integrated HIV self-testing services with sexual and reproductive health services for youth. This finding is consistent with a larger literature underlining the importance of integrating HIV testing services and sexual/reproductive health services [33–37]. In these other contexts, HIV testing service had been embedded within family planning, STI testing, and sexual health counseling services. These studies demonstrate that the integration of HIV services with other health services increases testing acceptability and health service use, improving the quality of care [33–37]. Given that many youths at risk for HIV also need other services, such as STI testing and family planning, integrated HIV care may be an effective approach to reach young people.

Our study has several limitations. First, the judges selected HIVST proposals that had the potential to be feasible, desirable, and impactful. Judges did not have outcome data on these domains when judging, but pilots are now underway. Second, designathons are typically held over a brief period of several days, much shorter than would allow them to develop a comprehensive HIVST plan. However, following our designathon, selected finalists were then invited to a four-week training program to build research and entrepreneurial skills and to implement and manage their programs. Finally, the designathon is resource-intensive, which can be a challenge in resource-limited settings. To minimize costs, we leveraged local resources, such as staffing from the Nigerian implementing team, and volunteers who were passionate about the work to serve as mentors.

The designathon contained novel features, which has important implications for public health research and policy. First, this event allowed young people to lead in the development of interventions that could benefit them, which is rare in many HIV programs for youth in low and middle-income countries. Designathons may provide an opportunity for youth to take ownership of their health and lead health research. Furthermore, results from these teams’ HIVST services can help HIV testing services to be more responsive to the unique needs of youth. Further implementation science is needed to evaluate the effectiveness of the proposed ideas.

**Conclusions**

In this study, we described the processes and outcomes of the first health-related designathon in Nigeria that focused on how to improve HIVST among youth. Youth-led development of HIVST strategies offers diverse and promising solutions to expand HIVST among young people in Nigeria.

**Abbreviations**
AIDS: Acquired Immunodeficiency Syndrome; HIV: Human Immunodeficiency Virus; HIVST: HIV Self-testing; ITEST: Innovative Tools to Expand HIV Self-Testing; NGN: Nigerian Naira NYSC: National Youth Service Corps; STI: Sexually Transmitted Infection; YAB: Youth Advisory Board

**Declarations**

*Ethics approval and consent to participate*

We obtained ethical approval from the institutional review boards of Saint Louis University (St. Louis, MO), University of North Carolina at Chapel Hill (Chapel Hill, NC), and the Nigerian Institute of Medical Research (Lagos, Nigeria).

Individuals between the ages of 14-24 years were eligible to apply and participate in the study. Individuals aged 14 years and older in Nigeria can independently consent for reproductive health research.

*Consent for publication*

We obtained verbal consent from designathon participants to publish photographs of their participation in the event.

*Availability of data and materials*

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

*Competing interests*

The authors declare that they have no competing interests.

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*Authors’ contributions*

KMT: data analysis, writing the manuscript.

CO, TG: project administration, data collection and analysis, writing the manuscript.

UN: project administration, data collection, reviewing and editing the manuscript.

DO, AZM, II, JO, AND, TAB: project administration, reviewing and editing the manuscript.
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Tables

Due to technical limitations, Table 2 is only available as a download in the supplemental files section

Additional Files

Additional File 1.

File name: Additional File 1

File format: .pdf

Title: Supplement 1. Photographs from the designathon: Nigeria 2019
Additional File 2.

File name: Additional File 2

File format: .xls

Title: Supplement 2. Judges' scores for all teams at the designathon: Nigeria 2019*

Figures

Figure 1

Designathon team discussing their project and receiving mentorship from member of the contest advisory panel

Supplementary Files
This is a list of supplementary files associated with this preprint. Click to download.

- AdditionalFile1.pdf
- NigerianGuideline.pdf
- AdditionalFile2.xls
- Table2.xls