Check for updates

Regular Article

International Journal of Qualitative Methods
Volume 20: 1–11
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/16094069211002421
journals.sagepub.com/home/ijq
SAGE

Designing Participatory Needs Assessments to Support Global Health Interventions in Time-Limited Settings: A Case Study From Nigeria

Kathleen A. Lynch[1], Adeleye D. Omisore[2], Olusola Famurewa[2], Olalekan Olasehinde[3], Oluwole Odujoko[4], Jacqueline Vera[1], T. Peter Kingham[5], Olusegun Isaac Alatise[3], Adedeji A. Egberongbe[6], Elizabeth A. Morris[7], Thomas M. Atkinson[1], and Elizabeth J. Sutton[7]

Abstract

Social scientists have advocated for the use of participatory research methods for Global Health project design and planning. However, community-engaged approaches can be time and resource-intensive. This article proposes a feasible framework for conducting a participatory needs assessment in time-limited settings using multiple, triangulated qualitative methods. This framework is outlined through a case study: a participatory needs assessment to inform the design of an ultrasound-guided biopsy training program in Nigeria. Breast cancer is the leading cause of death for Nigerian women and most cases in Nigeria are diagnosed at an advanced stage; timely diagnosis is impeded by fractious referral pathways, costly imaging equipment, and limited access outside urban centers. The project involved participant observation, surveys, and focus groups at the African Research Group for Oncology (ARGO) in Ile-Ife, Nigeria. Through this timely research and engagement, participants spoke about diagnostic challenges, institutional power dynamics, and infrastructure considerations for program implementation.

Keywords

global health, needs assessment, participatory methods, case study

Introduction

Approximately 70% of cancer deaths occur in low- and middle-income countries (LMIC), signifying a critical need for the global health community to turn its focus toward improving cancer-related outcomes in these settings (World Health Organization [WHO], 2018). Global health is an increasingly multidisciplinary endeavor: many teams now incorporate social scientists and applied medical anthropologists among their ranks in addition to researchers from public health and clinical sciences (Caduff et al., 2018; Hahn & Inhorn, 2009; Hewlett & Hewlett, 2007). The increasing integration of social science perspectives has brought a much-needed critical voice to the global health community, namely that of problematizing the primacy of high-income country (HIC)-driven interests and perspectives in the field (Caduff et al., 2018; Hahn & Inhorn, 2009). Multiple high-profile examples of expensive, unsuccessful global health interventions that did not account for local perspectives, needs, and practices (Closser, 2010; Kenworthy, 2017) underscore the need for anthropological, qualitative engagement with local context (Adams, 2016).

Recent projects have advocated for the use of participatory research methods in project design and planning, thereby

[1] Department of Psychiatry & Behavioral Sciences, Memorial Sloan Kettering Cancer Center, New York, NY, USA
[2] Department of Radiology, Obafemi Awolowo University, Ile-Ife, Nigeria
[3] Department of Surgery, Obafemi Awolowo University, Ile-Ife, Nigeria
[4] Department of Pathology, Obafemi Awolowo University, Ile-Ife, Nigeria
[5] Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, NY, USA
[6] Department of Radiology, Federal Medical Centre, Owo, Nigeria
[7] Department of Radiology, Memorial Sloan Kettering Cancer Center, New York, NY, USA

Corresponding Author:
Elizabeth J. Sutton, Department of Radiology, Memorial Sloan Kettering Cancer Center, 300 East 66th Street, Suite 727, New York, NY 10065, USA.
Email: suttone@mskcc.org

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).

engaging community members beyond the traditional knowledge, attitudes, and practice (KAP) needs assessment surveys to gain a deeper, contextual understanding of lived experience (Elmusharaf et al., 2017; Tillyard & DeGennaro, 2019). In participatory research methods, local stakeholders are the drivers of data collection, shaping the research questions so that they are beneficial and meaningful to the local context. Critical medical anthropologists argue that participatory approaches are the most ethical way for HIC researchers to engage in global health projects in LMIC as they shift the dynamic of power into the hands of the "subjects" of the research (Adams, 2016; Reynolds & Sariola, 2018). Beyond adapting a preexisting intervention to a local context, participatory research challenges whether an intervention is needed at all, whether there are new ways of conceptualizing the issue at hand, and what is most valuable to the community in question. Participatory research has the potential to elicit new understandings and to shift the framing of global health from a "top down" approach to a horizontal, and sustainable, collaboration (Sheikh et al., 2011).

While necessary, participatory research presents several logistical challenges for global health teams. Often, there may be a critical public health need that shortens time-to-intervention deployment, which in the past has shortchanged community engagement or failed to account for how data is translated and transformed in local settings (Biruk, 2018; Reynolds & Sariola, 2018). Collaborating with community members to understand the emic (insider) perspective can require large amounts of time in the local setting, which may be difficult in rapidly evolving situations or on projects beholden to strict timelines and budgets. Participatory engagement also requires great reflexivity and sensitivity on the part of the researcher, a cultural outsider who may not be attuned to the local context. For example, scholars have criticized previous participatory approaches for insufficient understanding of local power dynamics, as well as for a lack of clear procedures (Elmusharaf et al., 2017).

To overcome these barriers, many researchers working in LMIC contexts have turned to rapid ethnographic assessments (REAs) to understand how local norms, values, cultural practices, and social structures inform program design and influence implementation. REAs utilize the strengths of traditional ethnography—immersion, observation, in-depth qualitative data collection—to generate insights within an actionable timeframe (Vindrola-Padros & Vindrola-Padros, 2018). In sub-Saharan Africa, REAs have been used to inform HIV treatment services in Mozambique (Schwitters et al., 2015), identify barriers to treatment adherence in Uganda (McElroy et al., 2007), understand needs of persons living with HIV/AIDs in Nigeria (Garko, 2007), and explore determinants of intimate partner violence in Kenya (Schafer & Koyiet, 2018).

Yet despite their ubiquity, there are many limitations to the current REA approach in LMIC contexts. Due to the limited timeframe, research teams may rush into data collection at the expense of study planning and engagement with local stakeholders; in other words, while the focus groups or interviews themselves may be in-depth, the overall study is not truly participatory. For example, evaluation of an REA in Ethiopia to develop a new informed consent process found that 85.5% thought that the best interests of study participants were not adequately considered (Addissie et al., 2014). In this sense, there is a danger that REAs in LMICs may re-produce colonial or Western-dominated relations, under the veneer of community engagement. There is also concern that time constraints inhibit the main value of traditional ethnography, which is that long-term immersion enables the researcher to develop collaborative relationships and understand local context (Adams et al., 2014; Manderson & Aaby, 1992). Although scholars have emphasized the importance of reflexivity and local collaborations when doing research in rapidly-changing global health contexts (MacGregor & Bloom, 2016), a recent systematic review of REAs found that lack of reflexivity was a significant limitation in many of the studies assessed (Vindrola-Padros & Vindrola-Padros, 2018).

However, this does not mean that any attempt at a participatory approach should be eschewed due to time constraints. Given the limitations traditional REAs, many time-limited needs assessment projects would benefit from a participatory perspective, in order to shift pre-intervention planning from "community consultation" to true community engagement, ultimately maximizing intervention effectiveness and use. Adams and colleagues (2014) argue for the value of "Slow Research," which "prioritizes responsiveness to the constituencies with which we are engaged as targets of global health intervention and participants in this form of work" (p. 193). Despite the name, this is not necessarily an opposition to rapid research, but rather, it "approaches problems of scaling up and implementation as a problem of local constraint and priority, rather than as a problem of top-down delivery" (Adams et al., 2014, p. 183). Similarly, Pink and Morgan (2013) have argued that time-constrained ethnography necessitates "different methodological, practical, and analytical entry points into the lives of others"; rather than shortchanging rigor, rapid qualitative approaches tap into different "forms of intensity" (p. 351). Building on these approaches, this study aimed to combine the strengths of qualitative inquiry with a participatory approach to both study design and program planning.

This study presents an example of a short-term participatory needs assessment project using multiple qualitative methods to inform the development of a breast cancer detection intervention in Nigeria. In this article, the authors will detail the methods and insights gained from this approach and propose a feasible framework for participatory needs assessment in time-limited settings.

The Global Health Issue: Breast Cancer in Nigeria

Nigeria is the most populous country in Africa and has the highest breast cancer mortality rate (WHO, 2018). In fact, breast cancer incidence is the leading cause of death among Nigerian women (Bray et al., 2018). Epidemiological evidence suggests that shifting demographic profiles, obesity, and exposure to carcinogenic substances and high-fat "western" diets have contributed to an increased incidence in cancers prevalent in HIC

(Adebamowo & Adekunle, 1999; Akarolo-Anthony et al., 2010). Shifting behavioral risk factors in Nigeria are compounded by potential environmental exposures: a recent case-control study found higher levels of lead in blood and hair samples among newly diagnosed breast cancer patients than cancer-free controls (Alatise & Schrauzer, 2010). Along with increased exposure, timely diagnosis and treatment in Nigeria are impeded by fractious referral pathways, costly imaging equipment, and limited access to specialist care outside urban centers (Agodirin et al., 2020). As a result of system-related delays, most cases breast cancer patients in Nigeria present with symptomatic disease and are diagnosed at an advanced stage (III or IV; Olasehinde et al., 2021). This is reflective of a larger trend in sub-Saharan Africa, where approximately 75% of patients have advanced stage cancer at diagnosis (Jedy-Agba et al., 2016).

Proposed Intervention

Diagnosis via ultrasound-guided breast biopsy is the standard of care in most HIC but is less frequently available in LMIC due to the prohibitive costs of imaging devices, materials, and maintenance (Anderson et al., 2011). In the absence of imaging, breast cancer is commonly diagnosed either through blind biopsy, which is less accurate, or surgical excision, which increases morbidity and cost. Recently developed battery-operated, tablet-based mobile health (mHealth) ultrasound devices have the potential to expand ultrasound access in LMIC. One promising example is a portable, high-frequency, ultrasound probe that can connect via USB to a tablet or smartphone and send images to a secure mobile application. This device was developed in the United States (Philips Ultrasound, Inc., Bothell, WA, USA) but has been successfully used by midwives at Aga Khan hospital in Nairobi, Kenya (Vinayak et al., 2017). However, this device has not been piloted in oncology settings, nor within the context of the Nigerian hospital system. For an mHealth intervention to be successful, it is critical to develop an implementation plan tailored to local context. In fact, two recent systematic reviews of successful mHealth interventions for cancer in sub-Saharan Africa found that the biggest hurdle to breast cancer diagnosis is no longer lack of access to technology, but the lack of a comprehensive implementation plan (Ag Ahmed et al., 2017; Becker et al., 2016).

Currently, there is no ultrasound-guided breast biopsy-training program in Nigeria, despite the country having over 350 radiologists in-country (WHO, 2018). While Global Health advocates have called for the implementation of interventions to enhance breast cancer screening and early detection in LMIC (Pace & Katz, 2015), previous studies of mHealth interventions provide a cautionary tale of "top down" program designs that lack consultation and engagement from local clinicians and healthcare workers (Dutta et al., 2018). The objective of this study, therefore, was to engage Nigerian cancer clinicians to understand current practice, need, and interest in mHealth ultrasound-guided breast biopsy, to inform the development of a training program that is relevant to the local context.

Method

The Setting

Data collection occurred during the annual oncology symposium of the African Research Group for Oncology (ARGO) at Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC) in Ife-Ife, Nigeria. ARGO is a National Cancer Institute-recognized cancer consortium that aims to advance the frontiers of oncology practice in Nigeria that was jointly established in 2012 by OAUTHC and Memorial Sloan Kettering Cancer Center (MSKCC), in New York, United States, to improve outcomes for cancer patients through collaborative research and training efforts. OAUTHC is the central medical center in ARGO. The catchment area of the ARGO network includes the Osun, Ekiti, and Ondo states and parts of the Oyo, Kwara, Kogi, Lagos, and Edo states. In April 2019, ARGO clinicians assembled at the Sixth Annual Symposium to share practical approaches to caring for breast and colorectal cancer patients. This setting was chosen because it presented an opportunity to understand the perspectives of Nigerian clinicians working in diverse community and geographic contexts, as well as observe various didactic and training sessions throughout the week.

Study Design and Data Collection

This participatory needs assessment was built from preexisting collaborations within the ARGO network. The project was reviewed by the MSKCC Institutional Review Board and approved as an amendment to an ongoing joint protocol with OAUTHC for the collection of program evaluation data to improve implementation, delivery, and outcomes (protocol 18-114). Given the one-week window for on-site data collection and participant observation, the study authors designed a hybrid qualitative needs assessment, using multiple forms of data collection: open-ended KAP surveys, focus groups, and participant observation. Each method functioned at a different level of analysis—from group summary to granular—and was intended to uncover different aspects of contextual knowledge and practice, facilitating triangulation as depicted in Figure 1.

To obtain descriptive data on current ultrasound-guided biopsy use and attitudes across disciplines, the authors designed a KAP survey to be administered to all symposium attendees. The survey contained a mix of open-ended and Likert items on a 5-point scale (where a higher score indicates stronger agreement) and was distributed on day two of the symposium. To gain an in-depth understanding of practice-specific challenges and to collaboratively design the framework of an ultrasound-guided breast biopsy implementation and training program, we engaged radiologist attendees in 60-min focus groups. We stratified the focus groups by geographic region given the cultural, sociopolitical, and economic diversity between the Nigerian states; there is not a "one-size-fits-all" model for Nigeria. All participants gave verbal consent for focus groups to be audio-recorded. Finally, to understand how radiologist knowledge and practice are enacted in the local

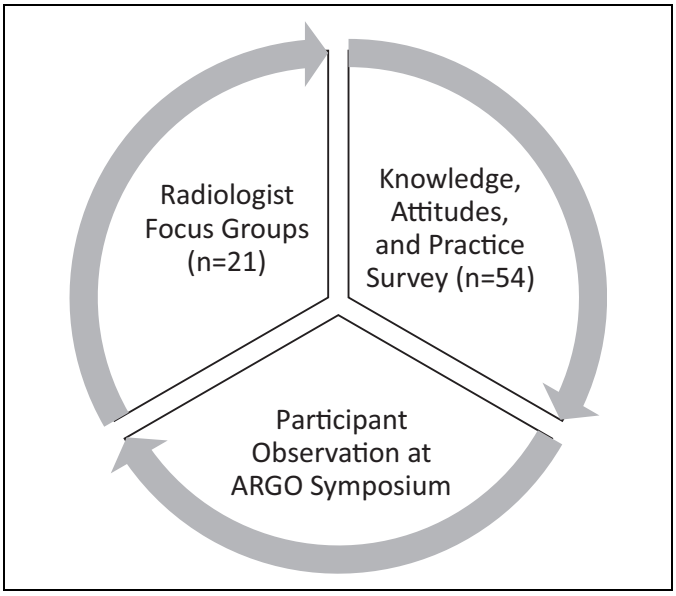

Figure 1. Framework for a multimethod participatory needs assessment.

context, the team's medical anthropologist (KAL) engaged in participant observation with the Radiologist groups throughout the week, attending didactics, procedures, and an initial training of an ultrasound breast biopsy guided by a mHealth tablet-based device, taking special note of unique characteristics of the setting that would either facilitate or complicate implementation. All data collection instruments (the KAP survey, focus group moderator's guide) were developed collaboratively by team members with local (ADO), content (EJS), and methodological (KAL) expertise prior to the symposium.

Analysis

Domains of the needs assessment were analyzed descriptively. Frequencies were calculated for categorical data; means, medians, standard deviations, and ranges were calculated for continuous data and Likert-type scale items. Open-ended responses were aggregated and analyzed in NVivo Pro Version 12.0 (QSR International, Doncaster, Australia; Bazeley & Jackson, 2013). Focus group recordings were transcribed verbatim for analysis. All fieldnotes and focus group transcripts were analyzed according to an inductive thematic content analysis approach (Creswell & Poth, 2017). For each transcript, the study's medical anthropologist (KAL) and a trained research assistant (JV) independently reviewed the document in NVivo Pro Version 12.0, highlighting significant statements within each domain and recording analytic memos (i.e., reflections about the segment of text) in the margins. Following these independent analyses, the coding team met to reach consensus regarding commonly recurring ideas (e.g., characterization of current practice, primary challenges, unique concerns) for that transcript, producing a summary document with illustrative quotes. This process was repeated for each group until all transcripts were both independently and collaboratively reviewed and analyzed. After all transcripts were reviewed, the summary documents were uploaded to the NVivo database to facilitate the identification of themes. First, similar ideas across each document were grouped into categories and compared (e.g., potential barriers to implementation, potential facilitators). Then, the team independently reviewed the quotes, across all transcripts, grouped within a category. After this quote review, the team met to reach consensus on the primary themes that emerged and whether these themes stratified across subgroups (e.g., radiologists from the North vs. South).

The focus group themes were then summarized and merged with trends from the survey data and key participant observation findings in a joint display. Following procedures found in other convergent mixed-method designs (Guetterman et al., 2015), we compared the three data sources side by side to identify common themes across the dataset. Each row of the table listed common domains of the KAP survey and focus group guide (e.g., current practices, challenges, attitudes toward ultrasound-guided breast biopsy, training program considerations) and each column contained corresponding findings (e.g., themes, summary statistics) from each data source. After constructing the table, the analysis team met to achieve consensus on major themes across each domain, supported by the three data sources.

Results

KAP surveys were completed with a 55% (54/98) response rate among symposium attendees. Respondents represented 22 ARGO hospitals, the most common being OAUTHC with 14.8% (8/54). There was a relatively even balance of male (46.2%, 25/54) and female (53.7%, 29/54) respondents. The majority were radiologists (46.2%, 25/54) or surgeons (35.2%, 19/54) who had been practicing for an average of 10.38 years ($SD = 7.77$). Three focus groups were conducted among radiologist attendees (84%, 21/25) who practiced in the Southwest, Southeast, and Northern regions of Nigeria. Full participant demographics are included in Table 1, and full KAP survey responses are listed in Table 2.

This multimethod participatory needs assessment yielded five major themes related to ultrasound-guided breast biopsy: 1) High demand but low use of ultrasound-guided breast biopsy, 2) Limited staff and device availability contribute to delays in care, 3) Cost and infrastructure concerns, 4) Mobile devices as a strategy to expand patient access, and 5) Shifting institutional prestige and program sustainability. Each of these themes will be discussed in detail below.

Theme 1: High demand but low use of ultrasound-guided breast biopsy. Responses from symposium attendees indicated a need for ultrasound-guided breast biopsy. In the survey, 50% (27/54) of respondents diagnosed two–five cases of breast cancer each week. However, only 24% (13/54) of respondents regularly perform ultrasound-guided biopsy, and just 35% (19/54) have observed the procedure. As one radiologist from Abuja stated during a didactic session, "This is the situation we have here in

Table 1. Needs Assessment Participant Demographics (n = 54).

	(N = 54)
Demographics (%)	
Age, y	
Mean (*SD*)	44.56 (9.02)
Range	25–68
Sex	
Male	25 (46.30)
Female	29 (53.70)
Position	
Senior Resident	5 (9.26)
Specialist/Consultant physician	46 (85.19)
Nurse	2 (3.70)
Missing	1 (1.85)
Specialty	
Radiology	25 (46.30)
Surgery	19 (35.19)
Pathology	4 (7.41)
Oncology	1 (1.85)
Other	4 (7.41)
Years in Practice	
Mean (*SD*)	10.38 (7.77)
Range	0.5–30
Cases of breast cancer diagnosed in a typical week	
0	4 (7.41)
1–2	2 (3.70)
2–5	27 (0.50)
≥ 5	15 (27.78)
Missing	6 (11.11)

Note. Data presented as n (%) unless otherwise noted. *SD* = standard deviation.

Nigeria, most of us don't do what we're supposed to do as radiologists." This sentiment was echoed by a focus group participant from southern Nigeria, who stated, "I'm from the south-south [laughs] so at my hospital, we don't really have ultrasound-guided biopsy, we just do scans." In Likert scale survey responses, participants largely disagreed with the statement, "I am satisfied with the way breast biopsies are currently performed at my hospital" ($M = 2.68$, $SD = 1.19$).

Theme 2: Limited staff and device availability contribute to delays in care. In focus groups, radiologists described several workflow challenges that delayed timely diagnosis. During a didactic session, one radiologist noted that, although she has been trained in ultrasound-guided biopsy, "we get biopsy requests from every department—[there is] no schedule, everything is sent to us to interpret without notice, even if we are busy," noting that this often leads to diagnostic delays. In focus groups, most radiologists noted that although their hospitals have ultrasound machines, there may only be one or two units that need to be shared between departments: "The biggest thing for us is equipment, having a machine that is dedicated to breast imaging. We don't know what to do sometimes, we don't have the authority to know [when the machine is available]." Limited machine and staff availability mean that image-guided procedures and biopsies can only be performed on certain days of the week, making it challenging to screen and follow-up with patients, particularly those who have traveled from rural areas. As one surgeon shared, this often means that a patient either needs to wait longer to receive care, or opt for a less-accurate blind biopsy: "by the time the patient presents, you don't get radiologists who are there every day [. . .] there are days that she may be in another room, doing [other] scans, so she may have to book the patient for another time. And so, if that patient comes from far distance, you don't want it to be a big [burden] so you may need to do blind core biopsy." Radiologists shared that patients can sometimes wait hours for an ultrasound; this phenomenon was observed during the training week as well.

Theme 3: Cost and infrastructure concerns impede access to ultrasound-guided biopsy. In the focus groups with radiologists, participants emphasized equipment challenges that impede image-guided biopsies. Even when the ultrasound is available, there may be limited access to the consumables needed to perform the procedure.

> The needles they use are very difficult to visualize on ultrasound [. . .] we wish we could get the needles that would make it so easy, we could see what we're doing. Sometimes when you need to do small biopsies it's difficult to get [a good view].

In focus groups, radiologists also noted that biopsy needles are about one third the cost of the procedure itself, which is already difficult for many patients to afford. This is supplemented by open-ended responses in the KAP surveys, where the most frequently reported challenges to diagnosing cancer include high cost of biopsies (18.5%, 10/54) as well as faulty and/or lack of imaging equipment (18.5%, 10/54).

Participant observation sessions identified important infrastructure considerations affecting the use of ultrasound-guided biopsy. The sample tablets also tended to overheat during training sessions, creating concerns for device storage. The radiology wing of the hospital lost power one to two times per day, and many radiologists confided that they often use their personal data plans to access Wi-Fi in the clinic. This was echoed in focus groups with radiologists in the Southeast and North, who expressed greater concern about electricity strength and internet access needed to power imaging devices. For example, in the following exchange, radiologists from the Southeast indicated that stable electricity access was one of their biggest concerns for an ultrasound-guided biopsy program:

> [Moderator]: We've talked a lot about situations where it would be really useful to have ultrasound-guided biopsies—are there any situations where you wouldn't use it or it could be challenging to incorporate this method?
>
> [Murmuring] I don't really think so . . .
>
> As long as you have a light source!
>
> Yes, as long as there is electricity [laughter—LOTS of nods in agreement and crosstalk]
>
> Yes, the electricity going out can be a problem!
>
> At my center, we have been talking about it [a lot]!

Table 2. Knowledge, Attitudes, and Practice Survey Results (n = 54).

Current Practice (%)	
"How are breast biopsies performed at your hospital?" (Check all that apply)	
Trocar, Surgery, Ultrasound	12 (22.22)
Trocar, Surgery	11 (20.37)
Trocar, Other	7 (12.96)
Trocar, Ultrasound	3 (5.56)
Surgery, Ultrasound	3 (5.56)
Trocar only	6 (11.11)
Ultrasound only	6 (11.11)
Surgery only	3 (5.56)
Biopsies not performed	3 (5.56)
"Who performs biopsies at your hospital?" (Check all that apply)	
Surgeon	48 (88.89)
Pathologist	9 (16.67)
Radiologist	20 (37.04)
Not applicable	2 (3.70)
"Does your hospital perform image-guided procedures?"	
Yes	43 (79.63)
No	7 (12.96)
Unsure	3 (5.56)
Missing	1 (1.85)
"Have you either observed or performed an ultrasound-guided biopsy?"	6 (11.11)
Neither observed/ performed	19 (35.19)
Observed only	16 (29.63)
Brief training only	13 (24.07)
Regularly perform	

Attitudes toward ultrasound-guided breast biopsy (*n* = 54; 1= *strongly disagree*; 5 = *strongly agree*)

Item	Mean	Median	*SD*	Range
"I am satisfied with the way breast biopsies are currently performed at my hospital"	2.68	2	1.19	1-5
"I think ultrasound-guided breast biopsies would improve patient time to diagnosis at my hospital"	4.39	5	1.05	1-5
"I do not think it is necessary to incorporate ultrasound guided breast biopsy at my hospital"	1.69	1	1.20	1-5
"I think ultrasound-guided breast biopsies would have more advantages than disadvantages for patients"	4.56	5	0.88	1-5
"I would be concerned that incorporating ultrasound-guided biopsies into diagnosis would make my workflow less efficient"	1.67	1	0.93	1-4
"I think an ultrasound-guided breast biopsy training program would be useful, but I am concerned that I or my colleagues would not have time to participate"	1.92	2	1.07	1-5
"A lot of process changes would need to take place for my hospital to participate in an ultrasound biopsy training program"	2.52	2	1.29	1-5
"A lot of infrastructure changes would need to take place for my hospital to participate in an ultrasound biopsy training program"	2.37	2	1.28	1-5
"It is likely that my hospital administration would be willing to invest in a mobile health ultrasound unit that costs approximately 4000USD"	3.34	3	1.04	1-5

Interest and preferences in an ultrasound-guided biopsy training program

Item	(*N* = 54)
"What would be your level of interest in having your hospital participate in an ultrasound-guided breast biopsy training program?"	4.68 (0.83)
(1–5)	
Mean (*SD*)	1–5
Range	
"How much time would you/ your staff be able to dedicate to a training program?"	
No time	2 (3.70)
One weekend per month	7 (12.96)
One weekend w/ independent learning	42 (77.78)
Missing	3 (5.56)
"Who should participate?"	
Radiologist	8 (14.81)
Nurse	1 (1.85)
Multiple specialties	45 (83.33)

(continued)

Table 2. (continued)

Current Practice (%)	
"What would be your level of interest in a training program that included opportunities for e-learning (tablet-based learning)?" (1–5)	
Mean (*SD*)	4.74 (0.48)
Range	3–5

Note. Data presented as *n* (%) unless otherwise noted. *SD* = standard deviation.

Most radiologists noted that their hospital had a backup generator, and that it can take up to 1 hr for the power to return. Therefore, even with a backup generator, electricity disruptions can contribute to delays in care, indicating a need for a battery-operated or rechargeable device that can operate independently from a charging port.

Theme 4: Appeal of a portable unit: A strategy to expand patient access. Radiologists found the *portability* of a mHealth tablet-based U.S. device to have important implications for workflow and patient care. Participants from the Southwest were enthusiastic about the prospect of performing an ultrasound at the point-of-care, meaning that a patient can be screened same-day rather than needing to be referred to a different wing of the hospital (where the machine may be occupied) or to a separate facility (which creates treatment delays and lost-to-follow-up): "If we had this I wouldn't have to guide my big machine across the floor all the time- because we don't know what to do sometimes."

Outside the hospital, radiologists felt that an mHealth ultrasound device could expand access to breast cancer screening and diagnosis for rural patients. During a training session, one radiologist mentioned that she runs a clinic in a rural community outside Abuja and encourages women to come to the hospital for imaging follow-up, but many of the women cannot make the long journey to the city, "and you can't move the ultrasound device to them." This participant wants to be able to "take the ultrasound device into communities and do biopsies there [at a community clinic]" to "provide screening and follow-up at once." Another radiologist who works with rural populations in Gurara agrees: "This is the population who needs it." Radiologists from the Northern region noted that their patients often face greater financial constraints, which impedes access to treatment. Thus, having the ability to take a portable, mHealth imaging unit into rural communities would make a significant difference in patient outcomes. Due to difficult travel to hospitals in this region, participants felt strongly that imaging should always be accessible to patients outside the hospital, in order to reduce lost-to-follow-up after a consultation. As one participant described, "When I think about it, having that small iPad ultrasound-enabled device, you have so many people who are migrating to outpatients in the rural areas, so many patients who are in communities on the outskirts of town [. . .] we don't have much, we just have 3–4 centers at most where we can make an assessment, and maybe even few where we can assess ultrasounds [. . .] so sometimes you call them and lost them to follow up, so what this training is doing is that if we have that kind of equipment what we're able to do is be mobile with the ultrasound, have the consumables, palpate, and take biopsies, and then it's easier to follow up." In open-ended survey responses, "reduced delays to care," "improved access," "increased access to healthcare," and "easy access to services for rural community" were cited as potential benefits to mHealth tablet-based ultrasound-guided biopsy.

Theme 5: Ultrasound-guided biopsy shifts radiologist's institutional role. In focus groups and surveys, participants noted that biopsies are frequently performed by surgeons: the majority of survey respondents (88.9%, 48/54) noted that surgeons performed biopsies at their hospital, and 37% (20/54) responded that radiologists performed biopsies; notably, only 1 (1.9%) respondent indicated that radiologists were solely responsible for performing biopsies at their hospital. In focus groups, radiologists from the Southeast noted that their role was often to assist the surgeons during image-guided procedures, rather than performing the procedure themselves: "The surgeons bring their patients, depending on what specialty, and we are able to help them, even if just being their guide." In the North, some participants mentioned that they only see patients through referral: these participants mentioned that while family physicians almost always refer patients to radiologists for an ultrasound, if a patient goes to the surgeon first, then the surgeons may not necessarily refer to the radiologists. Meanwhile, participants from the Southwest noted that the specialist responsible for performing the procedure depends on the number of breast cases that week—some weeks it may be the radiologists, and other weeks it may be the surgeons. Overall, participants felt that procuring mHealth tablet-based ultrasound devices, dedicated to the breast unit, would shift image-guided procedures under their purview, away from the surgeons. As one radiologist stated, "if we have that kind of equipment what we're able to do is perform the ultrasound, have the consumables, palpate, and take biopsies, and then it's easier to follow up and [then] we can refer then to regular surgery [. . .] we wouldn't have to rely on surgeons [beforehand]."

Radiologists perceived that ultrasound-guided biopsy would increase both the standing of their hospital and their own discipline. During the focus groups, radiologists expressed that "The surgeons will have to accept this as our new area of work." Radiologists from the Southeast perceived that, rather than feeling usurped in their role, surgeons would be happy to hand off image-guided biopsy procedures to the radiologists because this would alleviate their overwhelmed caseload: "The surgeons back here [at my hospital] are like "please learn this! we are very eager to hand off that."

Sub-theme: Increased institutional prestige increases program acceptability and sustainability. Radiologists also felt that a dedicated breast unit would increase the prestige of their own hospital. This frequently came up in discussion as a primary training goal:

> When you come to any Center, you want to know what expertise the radiologists there have, so that they can say "this center is a breast center, this center is neuro, whatever," [. . .] "this center is known for breast imaging and has everything."

Radiologists felt that this potential increase in institutional prestige would make hospital leadership amenable to investing in an ultrasound-guided biopsy training program. Participants expressed interest in obtaining an official certification upon completion of the program, that they could use to signal their training in this skill and have credentials to host their own trainings, as well as justify the creation of a dedicated breast unit within their hospital. A major goal among participants was to establish a dedicated breast unit; that way, other hospitals can send their clinicians to *them* for training. For this reason, participants in the focus groups suggested a "train-the-trainer" (where recently graduated trainees mentor the subsequent cohort) model. As one focus group participant described:

> I would like to train and get better at biopsies, to be able to not just do the ultrasound, but to set up a breast clinic where we can do procedures [. . .] And having that kind of ability, the expertise established, gives us 1. the confidence and 2. actually be able to continue training the other people coming up, so that that training actually trickles down, the trainee becomes the trainer, and we are actually able to continue the program, even in our own locality, so since online, once you have trainers on the ground, it even makes your own work easier because we are able to do the online stuff. And actually, the trainings in our hospital can trickle down to our patient, effective management and things like that, and everything improves.

Another radiologist echoed this sentiment during a didactic session: "The more empowered we are, the better we can grow." And went on to add, "Right now, this is what we do—if they [trainees] need to learn how to do say mammography, we need to send them outside [to a different hospital], so we're hoping what we could do here for biopsies is a train the trainer." The suggestion of a "train-the-trainer" approach, therefore, was embedded in the desire to create a program that not only grew their own skillset, but ensured a continuous knowledge-sharing process that builds skill and capacity throughout the field of radiology, as well as their local institution. As one radiologist stated in the focus groups, "We make the arrangements for someone to train us, and then we are interested in impacting the younger cohort and residents who are coming up [after us]." In the KAP surveys, many respondents (77.8%) also expressed a strong preference for ongoing trainings related to ultrasound-guided biopsy (i.e., one weekend per month). They felt that this ongoing training model would foster collaboration between radiologists and increase program sustainability. Even the radiologists who participated in the focus groups had created a WhatsApp group to continue exchanging information after the symposium.

Discussion

The results from this study support the feasibility of using multiple, triangulated qualitative methods to conduct a comprehensive participatory needs assessment in a limited timeframe. Participant observation of radiologist training, practice, and interaction helped establish rapport and enabled the study team to obtain deeper understanding of current knowledge, institutional dynamics, and challenges than through focus groups alone. Yet within the focus groups, participants were able to shed light on reasons behind their survey responses (i.e., current dissatisfaction with image-guided procedures), advocate for the needs of rural patients, and collaborate on the design and structure of an ultrasound-guided breast biopsy intervention and training program. In addition, the focus groups and informal conversations during the symposium fostered collaboration between stakeholders. By the end of the symposium, many had established channels to stay in contact.

The present study design builds on Tillyard and DeGennaro's (2019) previous work in Haiti, which expanded a KAP survey tool using participatory methods to generate community-based knowledge, while maintaining the study's simplicity and budget (Tillyard & DeGennaro, 2019). We chose to prioritize focus groups over other qualitative methods in order to observe interactions between participants, to understand the degree of convergence or divergence on a topic (Liamputtong, 2011). A unique benefit of focus groups is that they are by nature collaborative: the focus group technique allows participants to talk about their own thoughts and experiences, while interacting and sharing ideas with other group members, causing new ideas to emerge (Bernard, 2011). This enables the researcher to probe on topics that may have never come up during a one-on-one interview. Given the time-limited setting, focus groups allow for discussion of topics that the researcher, lacking contextual knowledge, may not have thought to ask. There are other rapid ethnographic approaches which employ triangulated qualitative methods, such as key informant interviews and free-list surveys. However, while these studies often illuminate the nature of problem to be solved, they seldom inform the intervention directly (Schafer & Koyiet, 2018). Our current approach intentionally combines the in-depth engagement inherent in ethnographic praxis with the well-defined domains of a pre-implementation KAP survey, in order to directly contribute to locally appropriate program development.

Through the addition of focus groups and participant observation, the present study presents a feasible scenario for using triangulated qualitative methods for obtaining in-depth, contextual perspectives in time-limited or resource-constrained settings. The study also explicitly engaged local stakeholders in the development of the KAP survey and qualitative

instruments, overcoming the limitations of other REA methodologies. In so doing, this study presents a counterargument to the impulse to shortchange community engagement for timeline or budgetary efficiency.

In fact, through uncovering insights about institutional workflow, hierarchy, and structural constraints, this stakeholder-engaged needs assessment is likely to save time and funds as the project unfolds. For example, geographic distance from tertiary care centers emerged as a primary burden both for patients as well as providers. As discussed in Theme 2, surgeons resort to blind biopsy if an ultrasound device is unavailable, to save patient travel time. In Theme 5, radiologists expressed a preference for ongoing, online-focused training. This underscores the need for disseminating ultrasound-guided training to geographically disparate areas of Nigeria, not just in the major tertiary care centers. Without the needs assessment, the intervention training may have only been implemented at a major oncology center, ultimately limiting use. Rather than violating intervention fidelity, the proposed hybrid qualitative framework maximizes the potential for intervention use and the feasibility of implementation by understanding context and interest; it benefits the community while ensuring that limited global health funding is not wasted. For instance, in Theme 4, radiologists discussed the potential of an mHealth ultrasound device to increase cancer screening within their community, in addition to interventional procedures, uncovering a new context of use and potential intervention benefit.

The themes identified in this analysis have yielded important considerations for an mHealth ultrasound-guided breast biopsy intervention that is relevant in the Nigerian context. Key infrastructure findings, such as the need for pre-charged or battery-operated devices, are critical for feasible implementation. While specific infrastructure concerns emerged—notably, Wi-Fi, cost of consumables, and electricity—the study also uncovered valuable insight into radiologist motivations and goals for engaging in a new mHealth intervention. Beyond expanding their own clinical skill set, radiologists spoke powerfully about achieving health equity for rural communities. Participants perceived the mHealth ultrasound device as a mechanism to expand rural access, screening, and education, extending the benefits of the use of tablets beyond the original conception as solely a diagnostic tool. Speaking to a primary need from lived experience, the radiologists uncovered new ways of intervention use.

The spontaneous suggestion of a "train-the-trainer model" across multiple forums (focus groups, observation sessions) indicates that this may be a locally accepted and recognizable structure for program implementation and reflects a culture of professional knowledge-sharing amongst Nigerian radiologists. Rather than a top-down approach to training influenced by Western-individualistic notions of success, the suggestion to introduce a train-the-trainer model indicates each iteration of the program will be shaped by local norms and values of collaboration and collective improvement.

Radiologists also conceptualized current challenges and training goals within their own relative positions of power, both within their own hospital and the discipline of radiology in Nigeria. Desire for a dedicated ultrasound unit grew out of frustrations that they "didn't have the authority" to know when a machine was in use, and delays in care resulted in surgeons taking on a greater share of the imaging caseload. Through training in ultrasound-guided biopsy, radiologists saw themselves as expanding their clinical authority, with the added benefit of bringing prestige to their institutions. These internally driven motivations, specific to local clinical hierarchies and norms, would have been difficult to uncover from a traditional KAP survey alone. In fact, had participant observation not occurred, it is unlikely that the voices of those with less authority would have been incorporated into "stakeholder engagement" research. Through becoming attuned to the power dynamics and protocols of local context—for example, asking the ARGO department heads to complete the survey first, so that their staff felt comfortable participating—we were able to earn trust and speak with individuals with varying degrees of power: from medical trainees to organizational leaders. By doing so, the study team uncovered information that would have been impossible to learn from the most powerful and avoided reinforcing existing power dynamics, a potential pitfall of community-based research which only engages "key stakeholders" (Reynolds & Sariola, 2018). While recent examples of short-term participatory ethnography in LMIC focus on the community context (Elmusharaf et al., 2017), this study was able to translate the approach to a complex institutional environment.

A potential limitation of this approach is that it requires many professionals to be in the same place at once, restricting the research to a narrow window of time and locale. However, since the date of original data collection, we have had to shift many research operations remote to comply with COVID-19 social distancing guidelines, which has offered an unanticipated solution. In 2020, ARGO held a successful virtual symposium with collaborators across Nigeria, where participants took part in didactic and discussion sessions over videoconference platforms. In addition, Nigerian radiologists filmed their training procedures and activities, sending the videos to the New York-based team for review. Recent research supports our finding that remote qualitative data collection, such as focus group discussions, enables the researcher to preserve many of the features of an in-person interview (Irani, 2019; Woodyatt et al., 2016) and is acceptable to participants, with the domains of inquiry being well maintained (Dangerfield II et al., 2021). Based on this experience, the framework we propose in this study may be translatable to an online format, allowing participant-engaged research to continue despite geographic limitations.

This study further uncovered vital considerations for the development, design, and implementation of an ultrasound-guided breast biopsy training program. Through the use of triangulated qualitative methods, this study presents a feasible framework for carrying out a participatory needs assessment in

time or budget constrained settings. Through the combination of participant observation, surveys, and focus groups, the framework can help global health teams develop programs driven by locally perceived public health need, rather than outsider perspective. As the cancer burden shifts to LMIC (WHO, 2018), utilizing a participatory framework will be vital to the development of effective interventions for preventing, detecting, and treating cancer.

Acknowledgments

The authors wish to thank Joanne Chin for her support on manuscript development. We would also like the thank the Obafemi Awolowo University Teaching Hospital student research assistants for their support in survey data collection.

Authors' Note

The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr. Elizabeth Morris reports funding from Grail, Inc., for breast cancer research not related to the present work. The remaining authors have no conflicts of interest to disclose.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was partially supported by a National Cancer Institute grant (1R21CA239784-01) and a National Institutes of Health Support Cancer Center Support grant (P30-CA008748-53).

ORCID iD

Kathleen A. Lynch https://orcid.org/0000-0002-2174-1604
Elizabeth J. Sutton https://orcid.org/0000-0002-1407-7012

References

Adams, V. (2016). What is critical global health? *Medicine Anthropology Theory*, *3*(2), 186-197.

Adams, V., Burke, N. J., & Whitmarsh, I. (2014). Slow research: Thoughts for a movement in global health. *Medical Anthropology*, *33*(3), 179–197. https://doi.org/10.1080/01459740.2013.858335

Addissie, A., Davey, G., Newport, M. J., Addissie, T., MacGregor, H., Feleke, Y., & Farsides, B. (2014, May 2). A mixed-methods study on perceptions towards use of rapid ethical assessment to improve informed consent processes for health research in a low-income setting. *BMC Medical Ethics*, *15*, 35. https://doi.org/10.1186/1472-6939-15-35

Adebamowo, C. A., & Adekunle, O. O. (1999, May). Case-controlled study of the epidemiological risk factors for breast cancer in Nigeria. *British Journal of Surgery*, *86*(5), 665–668. https://doi.org/10.1046/j.1365-2168.1999.01117.x

Ag Ahmed, M. A., Gagnon, M. P., Hamelin-Brabant, L., Mbemba, G. I. C., & Alami, H. (2017). A mixed methods systematic review of success factors of mHealth and telehealth for maternal health in Sub-Saharan Africa. *mHealth*, *3*, 22. https://doi.org/10.21037/mhealth.2017.05.04

Agodirin, O. S., Aremu, I., Rahman, G. A., Olatoke, S. A., Akande, H. J., Oguntola, A. S., Olasehinde, O., Ojulari, S., Etonyeaku, A., Olaogun, J., & Romanoff, A. (2020, May). Prevalence of themes linked to delayed presentation of breast cancer in Africa: A meta-analysis of patient-reported studies. *JCO Global Oncology*, *6*, 731–742. https://doi.org/10.1200/jgo.19.00402

Akarolo-Anthony, S. N., Ogundiran, T. O., & Adebamowo, C. A. (2010, December 20). Emerging breast cancer epidemic: Evidence from Africa. *Breast Cancer Research*, *12*(4), S8. https://doi.org/10.1186/bcr2737

Alatise, O. I., & Schrauzer, G. N. (2010, August). Lead exposure: A contributing cause of the current breast cancer epidemic in Nigerian women. *Biological Trace Element Research*, *136*(2), 127–139. https://doi.org/10.1007/s12011-010-8608-2

Anderson, B. O., Cazap, E., El Saghir, N. S., Yip, C. H., Khaled, H. M., Otero, I. V., Adebamowo, C. A., Badwe, R. A., & Harford, J. B. (2011, April). Optimisation of breast cancer management in low-resource and middle-resource countries: Executive summary of the Breast Health Global Initiative consensus, 2010. *The Lancet Oncology*, *12*(4), 387–398. https://doi.org/10.1016/s1470-2045(11)70031-6

Bazeley, P., & Jackson, K. (2013). *Qualitative data analysis with NVivo* (2nd ed.). Sage.

Becker, D. M., Tafoya, C. A., Becker, S. L., Kruger, G. H., Tafoya, M. J., & Becker, T. K. (2016, March). The use of portable ultrasound devices in low- and middle-income countries: A systematic review of the literature. *Tropical Medicine & International Health*, *21*(3), 294–311. https://doi.org/10.1111/tmi.12657

Bernard, H. R. (2011). *Research methods in anthropology: Qualitative and quantitative approaches* (6th ed.). AltaMira Press.

Biruk, C. (2018). *Cooking data: Culture and politics in an African research world*. Duke University Press.

Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018, November). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, *68*(6), 394–424. https://doi.org/10.3322/caac.21492

Caduff, C., Skelton, M., Banerjee, D., Djordjevic, D., Mika, M., Mueller, L., Sivaramakrishnan, K., & Van Hollen, C. (2018, July). Analysis of social science research into cancer care in low- and middle-income countries: Improving global cancer control through greater interdisciplinary research. *Journal of Global Oncology*, *4*, 1–9. https://doi.org/10.1200/jgo.18.00045

Closser, S. (2010). *Chasing polio in Pakistan: Why the world's largest public health initiative may fail*. Vanderbilt University Press.

Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Dangerfield, D. II, Wylie, C., & Anderson, J. N. (2021, January 9). Conducting virtual, synchronous focus groups in HIV prevention research among Black sexual minority men. *JMIR Public Health and Surveillance*, *7*(2), e22980. https://doi.org/10.2196/22980

Dutta, M. J., Kaur-Gill, S., Tan, N., & Lam, C. (2018). mHealth, health, and mobility: A culture-centered interrogation. In E.

Baulch, J. Watkins, & A. Tariq (Eds.), *mHealth innovation in Asia: Grassroots challenges and practical interventions* (pp. 91–107). Springer. https://doi.org/10.1007/978-94-024-1251-2_6

Elmusharaf, K., Byrne, E., Manandhar, M., Hemmings, J., & O'Donovan, D. (2017, July). Participatory ethnographic evaluation and research: Reflections on the research approach used to understand the complexity of maternal health issues in South Sudan. *Qualitative Health Research*, *27*(9), 1345–1358. https://doi.org/10.1177/1049732316673975

Garko, S. B. (2007, September). Sexual and family planning practices and needs of people living with HIV/AIDS in Nigeria: A rapid ethnographic assessment. *Annals of African Medicine*, *6*(3), 124–127. https://doi.org/10.4103/1596-3519.55721

Guetterman, T. C., Fetters, M. D., & Creswell, J. W. (2015, November). Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *Annals of Family Medicine*, *13*(6), 554–561. https://doi.org/10.1370/afm.1865

Hahn, R. A., & Inhorn, M. C. (2009). *Anthropology and public health: Bridging differences in culture and society* (2nd ed.). Oxford University Press, Inc.

Hewlett, B. S., & Hewlett, B. L. (2007). *Ebola, culture and politics: The anthropology of an emerging disease*. Cengage Learning, Inc.

Irani, E. (2019, January). The use of videoconferencing for qualitative interviewing: Opportunities, challenges, and considerations. *Clinical Nursing Research*, *28*(1), 3–8. https://doi.org/10.1177/1054773818803170

Jedy-Agba, E., McCormack, V., Adebamowo, C., & Dos-Santos-Silva, I. (2016, December). Stage at diagnosis of breast cancer in sub-Saharan Africa: A systematic review and meta-analysis. *The Lancet Global Health*, *4*(12), e923–e935. https://doi.org/10.1016/s2214-109x(16)30259-5

Kenworthy, N. (2017). *Mistreated: The political consequences of the fight against AIDS in Lesotho*. Vanderbilt University Press.

Liamputtong, P. (2011). *Focus group methodology: Principle and practice*. Sage.

MacGregor, H., & Bloom, G. (2016, December). Health systems research in a complex and rapidly changing context: Ethical implications of major health systems change at scale. *Developing World Bioethics*, *16*(3), 158–167. https://doi.org/10.1111/dewb.12115

Manderson, L., & Aaby, P. (1992, October). An epidemic in the field? Rapid assessment procedures and health research. *Social Science & Medicine*, *35*(7), 839–850. https://doi.org/10.1016/0277-9536(92)90098-b

McElroy, T., Konde-Lule, J., Neema, S., & Gitta, S. (2007, June 15–30). Understanding the barriers to clubfoot treatment adherence in Uganda: A rapid ethnographic study. *Disability and Rehabilitation*, *29*(11–12), 845–855. https://doi.org/10.1080/09638280701240102

Olasehinde, O., Alatise, O., Omisore, A., Wuraola, F., Odujoko, O., Romanoff, A., Akinkuolie, A., Arowolo, O., Adisa, A., Knapp, G., Famurewa, O., Omisile, I., Onabanjo, E., Constable, J., Omoniyi-Esan, G., Adesunkanmi, A. R., Lawal, O., & Kingham, T. P. (2021). Contemporary management of breast cancer in Nigeria: Insights from an institutional database. *International Journal of Cancer*. Advance online publication. https://doi.org/10.1002/ijc.33484

Pace, L., & Katz, I. (2015, Spring). Breast and cervical cancer screening: Investing in health care systems. *Harvard Public Health Review*, *6*. https://harvardpublichealthreview.org/breast-and-cervical-cancer-screening-investing-in-health-care-systems/

Pink, S., & Morgan, J. (2013). Short-term ethnography: Intense routes to knowing. *Symbolic Interaction*, *36*(3), 351–361. https://doi.org/https://doi.org/10.1002/symb.66

Reynolds, L., & Sariola, S. (2018, May 27). The ethics and politics of community engagement in global health research. *Critical Public Health*, *28*(3), 257–268. https://doi.org/10.1080/09581596.2018.1449598

Schafer, A., & Koyiet, P. (2018). Exploring links between common mental health problems, alcohol/substance use and perpetration of intimate partner violence: A Rapid ethnographic assessment with men in urban Kenya. *Global Mental Health (Cambridge)*, *5*, e3. https://doi.org/10.1017/gmh.2017.25

Schwitters, A., Lederer, P., Zilversmit, L., Gudo, P. S., Ramiro, I., Cumba, L., Mahagaja, E., & Jobarteh, K. (2015, March). Barriers to health care in rural Mozambique: A rapid ethnographic assessment of planned mobile health clinics for ART. *Global Health: Science and Practice*, *3*(1), 109–116. https://doi.org/10.9745/ghsp-d-14-00145

Sheikh, K., Gilson, L., Agyepong, I. A., Hanson, K., Ssengooba, F., & Bennett, S. (2011, August). Building the field of health policy and systems research: Framing the questions. *PLoS Medicine*, *8*(8), e1001073. https://doi.org/10.1371/journal.pmed.1001073

Tillyard, G., & DeGennaro, V. Jr. (2019, July). New methodologies for global health research: Improving the knowledge, attitude, and practice survey model through participatory research in Haiti. *Qualitative Health Research*, *29*(9), 1277–1286. https://doi.org/10.1177/1049732318816675

Vinayak, S., Sande, J., Nisenbaum, H., & Nolsøe, C. P. (2017, October). Training midwives to perform basic obstetric point-of-care ultrasound in rural areas using a tablet platform and mobile phone transmission technology-A WFUMB COE project. *Ultrasound in Medicine and Biology*, *43*(10), 2125–2132. https://doi.org/10.1016/j.ultrasmedbio.2017.05.024

Vindrola-Padros, C., & Vindrola-Padros, B. (2018, April). Quick and dirty? A systematic review of the use of rapid ethnographies in healthcare organisation and delivery. *BMJ Quality & Safety*, *27*(4), 321–330. https://doi.org/10.1136/bmjqs-2017-007226

Woodyatt, C. R., Finneran, C. A., & Stephenson, R. (2016, May). In-person versus online focus group discussions: A comparative analysis of data quality. *Qualitative Health Research*, *26*(6), 741–749. https://doi.org/10.1177/1049732316631510

World Health Organization. (2018). *World Health Organization Regional Office for Africa*. Retrieved August 14, 2018, from https://www.afro.who.int/