Evaluating Caller Experience with a Telephone Health Hotline in Malawi

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Abstract

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Introduction: One application of mobile technology for health (mHealth) is health hotlines, which have been implemented in high-, middle-, and low-income countries to increase timely access to health information. The purpose of this study is to describe the characteristics, experiences, and overall satisfaction level of recent callers to Chipatala Cha Pa Foni, a toll-free hotline in Malawi that residents can call for health advice.

Methods: Primary data were collected through a cross-sectional phone survey of recent hotline users who left a callback number. The 30-item survey included mostly Likert scale questions and asked participants about their experience in general and about specific aspects of their most recent call experience.

Results: Interviews were completed with 239 of the 421 users who left a callback number (57% response rate). Forty-six percent of respondents were male and nearly 80% of all participants

reported living at least a one hour walk from the nearest health facility. Ninety-six percent of respondents stated their questions were "answered completely" by hotline workers, 98% reported trusting the information given by hotline workers "very much," and 96% were "very comfortable" talking to the hotline workers. Ninety-nine percent of respondents reported being "very satisfied" with the hotline and 96% said they were "very likely" to use the service again in the future. However, nearly one-third of respondents (31%) stated that they had trouble reaching the hotline at some point.

Discussion: Callers reported very positive experiences with dimensions of the Chipatala Cha Pa Foni hotline service, and 99% of the callers were "very satisfied" with the service overall. Some respondents experienced their call not being answered for a long time or at all, however, or being disconnected while talking to a hotline worker. Continued attention to the technology for a smooth call experience is needed. Further research employing qualitative methods would further illuminate caller experience with the hotline and indicate any additional areas that may warrant focused attention.

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Chapter 1

INTRODUCTION

In 2011 over 5 billion wireless subscribers were reported worldwide, 70% of whom resided in low- and middle-income countries (World Health Organization, 2011). With increasing rates of phone usage, mobile technology for health (mHealth) has emerged as an important tool to address the health needs of communities. While mHealth has no standard definition, mHealth refers to the use of mobile devices, such as mobile phones and other wireless devices, to support the achievement of health objectives (World Health Organization, 2011). mHealth programs can take various forms, including digitizing paper health records, digital delivery of training to healthcare providers, and digital appointment reminders for patients ("WHO | WHO developing Guidelines for Recommendations on Digital Health Interventions for RMNCAH and Health Systems Strengthening," n.d.). A 2009 World Health Organization (WHO) survey completed by 114 Member States revealed that the most common applications of mHealth were health call centers (59%), emergency toll-free telephone services (55%), managing emergencies and disasters (54%), and mobile telemedicine (49%) (World Health Organization, 2011). The same study revealed that although higher income countries tended to have more mHealth programs than lower-income countries, health call centers were reported by countries across all income classifications.

Health Hotlines

Health call centers, or hotlines, have the potential to be particularly impactful in strengthening health systems in low- and middle-income countries, allowing users to call in and receive health advice by phone. Offering access to health information by phone mitigates and circumvents typical barriers to health information, such as transportation cost and distance, cost of in-person services, and health professional shortages (World Health Organization, 2011).

Additionally, the anonymous nature of a hotline may alleviate stigma and nervousness that could prevent a client from discussing a sensitive health topic with a local provider face-to-face (Yagnik et al., 2015). Health hotlines differ on a variety of features, including operating hours, whether they are all-purpose or designed for specific health topics, which cadre of health workers staffs the hotline, and whether the hotlines target patients or providers. While call centers in higher income countries tend to host more all-purpose hotlines, the hotlines in lower income countries are typically designed to address content solely related to one topic area. In sub-Saharan Africa, for instance, individual hotlines have traditionally focused on one specific content area such as maternal health education, antiretroviral adherence, management of non-communicable diseases, or triaging of post-operative adverse events (Crawford, Larsen-Cooper, Jezman, Cunningham, & Bancroft, 2014; Jennings, Ong'ech, Simiyu, Sirengo, & Kassaye, 2013; Njoroge, Zurovac, Ogara, Chuma, & Kirigia, 2017; Ashengo et al., 2014).

Lack of Evaluation

Despite growing excitement around health hotlines, few evaluations have examined the hotlines' quality of service delivery and their impact on health behaviors and outcomes. Only 23% of high-income WHO Member States with at least one mHealth program reported any evaluations of those programs—an even smaller proportion of low-income countries (7%) reported any evaluations of their mHealth programs (World Health Organization, 2011). Systematic reviews of mHealth interventions note this limited evaluation of mHealth programs, which makes it difficult for countries to assess whether hotlines are a wise allocation of resources, and whether hotlines should be scaled beyond piloting (Njoroge et al., 2017; Opoku, Stephani, & Quentin, 2017). Some studies have examined user satisfaction with health hotlines in high-income countries, revealing that health hotlines are a generally accepted means of relaying health information and showing

high levels of caller satisfaction (Biggs, Shafiei, Forster, Small, & McLachlan, 2015; Thomson & Crossland, 2013).

There is a dearth of studies investigating the user experience with health hotlines in low-income settings (Biggs et al., 2015; Carr, McNeal, Regalado, Nelesen, & Lloyd, 2013). Monitoring user experiences is vital because satisfied patients are more likely to cooperate with their treatment, continue using services, participate in their treatment, and disclose important medical information (Hudak & Wright, 2000). Dissatisfied users, on the other hand, may be more likely to neglect seeking needed care in the future or may not comply with treatment advice. Dissatisfied users will also be less inclined to recommend the service to others. Ultimately, low satisfaction rates could have negative health impacts for the users and could lead to low repeat usage and referrals.

A health hotline in Malawi, Chipatala Cha Pa Foni (CCPF), offers an opportunity to assess user experience in a low resource setting. The purpose of the study is to describe the characteristics, experiences, and overall satisfaction level of recent callers to the CCPF hotline in Malawi.

Chipatala Cha Pa Foni, "Health Center by Phone"

Chipatala Cha Pa Foni (CCPF), or "Health Center by Phone," is an mHealth program launched in partnership between Concern Worldwide, VillageReach, and the Malawi Ministry of Health (MOH) in 2011 with the goal of improving maternal, neonatal, and child health (MNCH) in the Balaka district of southern Malawi (Crawford et al., 2014). CCPF consists of two components: a toll-free hotline that residents can call for health advice and a mobile phone-based tips and reminders component in which mobile users receive weekly MNCH tips by short message service (SMS). The hotline is open seven days a week from 7 a.m. to 7 p.m. and staffed by hotline workers who are trained at a similar level as community health workers. A user, who may have heard about the service and phone number from a variety of ways (community outreach efforts,

health care worker, friend, etc.), dials the hotline number using one of several five-digit short codes linked to the hotline.

Since its initial launch with MNCH content, CCPF has evolved into a general health hotline, disseminating information across a variety of topics including HIV, cancer, and nutrition. The hotline also has expanded to serve eight districts in Malawi and has done community outreach to increase community awareness of the service and that the hotline is a resource for men as well.

A 2013 independent evaluation conducted by Invest in Knowledge revealed that those who used CCPF were significantly more likely to attend antenatal care visits during their first trimester, to attend postnatal care within two days of delivery, and more likely to sleep under a mosquito net in contrast to a comparison group in another district that did not use the CCPF service (VillageReach, 2014). The same evaluation also found that 94% of CCPF users reported being satisfied with the hotline service.

The MOH endorses CCPF, and management of the hotline is currently being transitioned from VillageReach to the MOH. The MOH is preparing to scale the program nationwide, expanding coverage from the 1.3 million people living in the districts currently served by CCPF to the roughly 18 million people (UNdata, 2016) living throughout the country's 28 districts. In preparation for this scale-up and as part of ongoing quality improvement efforts, this study was conducted to explore the user's experience with the CCPF hotline and identify strengths of the hotline service and areas for improvement.

Background on Malawi

Malawi is located in sub-Saharan Africa, bordered by Tanzania to the north and northeast, Mozambique to the east, south and southwest, and by Zambia to the west. The largest proportion of people live in the southern region (44.5%), followed by the central (42.1%) and then northern

region (13.1%) (National Statistical Office of Malawi, 2014). Malawi is one of the poorest and least developed nations in the world, ranking 170th out of 188 countries in the UN's Human Development Index Report (United Nations Development Programme, 2016). Malawi has experienced both successes and setbacks in providing the highest level of health for its citizens. As of 2015, an estimated 9.1% of Malawians 15 to 49 years-old were living with HIV, one of the highest HIV prevalence rates globally (UNAIDS, 2015). Malawi as a nation has been actively addressing HIV transmission, in addition to maternal, neonatal, and child health. The under-5 mortality rate decreased from 247 deaths to 71 deaths per 1,000 live births from 1990 to 2013. Neonatal mortality rates also saw improvement but declined more slowly from 50 deaths to 23 deaths per 1,000 live births over the same time period (Kanyuka et al., 2016). In the realm of maternal mortality, however, progress has stalled and even reversed, increasing slightly from 629 deaths per 100,000 live births in 2010 to 634 deaths per 100,000 live births in 2015 ("WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Maternal Mortality Estimation Inter-Agency Group," 2015).

The limited availability of timely and reliable health information for decision-making coupled with limited access to health facilities contributes to poor health outcomes for women and children in Malawi (Thorsen, Sundby, & Malata, 2012). The MOH has recognized the role mHealth may be able to play in improving health outcomes for Malawians.

A 2014 national survey assessing the access to and use of Information Communication Technology in Malawi found that 34% of respondents reported personally owning a mobile phone, with 31% of those living in rural regions (National Statistical Office of Malawi, 2014). Although this is a fairly low proportion compared to other settings, the report notes that phone ownership and phone access are not synonymous, and in fact many people are able to access a family member

or friend's phone. Forty-six percent of households reported owning at least one mobile phone (National Statistical Office of Malawi, 2014). There are four mobile phone operators in Malawi—one of these operators, Airtel Malawi, has a partnership with CCPF that provides free airtime and SMS for users calling the hotline or receiving MNCH messages to their phones. Airtel also occasionally sends SMSs to their subscribers informing them of the CCPF resource. Although landlines are unable to call CCPF, only 1% of Malawians have landlines, with many citing unaffordability and their use of mobile phones as the main reasons for not owning a landline (National Statistical Office of Malawi, 2014). The CCPF model hinges on access to mobile devices and a reliable network. This study provides an opportunity to assess how users rate the ease or difficulty of using this mHealth program.

Research Question and Specific Aims

The purpose of the study is to describe the characteristics, experiences, and overall satisfaction of recent callers of the CCPF hotline in Malawi. Based on a sample of users who called the hotline in December 2016 and January 2017, specific aims are to:

1. Determine the demographic characteristics of individuals who called the CCPF service.
2. Describe the dimensions of user experience with the hotline, including to what degree their questions were answered by hotline staff, what level of trust they had in the hotline workers, how comfortable they were with hotline workers, and how difficult or easy it was to reach and to use the hotline.
3. Examine the caller's level of overall satisfaction with the hotline, as well as how likely the users were to use the hotline again in the future and how likely they were to recommend the hotline to others.

Chapter 2

METHODS

Design

Primary data were collected through a cross-sectional phone survey of recent hotline users. The survey asked participants about their experience in general and about aspects of their most recent call experience.

Setting and study participants

Data were collected by phone from CCPF users living throughout Malawi. Calls were concentrated in eight districts where the hotline was officially marketed, but callers from any district in Malawi could have called the hotline if they had a working short code to access the hotline.

Study participants were those who called CCPF at any point in the months of December 2016 and January 2017 and who supplied a contact phone number when asked by the hotline worker.

Per standard operating procedure, during each call the hotline worker used an interactive computer software system to log basic information including the age, gender, and district of the person for whom the call was regarding (e.g. if a mother calls about her child, the hotline worker records information pertaining to the child rather than the caller). The hotline worker also asked for and recorded the phone number of the caller. All callers, new and previous, were registered using software, from which reports of caller rosters and activity may be produced. We generated reports from this software to determine the unique callers from December 1, 2016, to January 31, 2017. There were a total of 607 unique callers over the two months, of whom only 421 supplied a callback phone number. We invited all 421 callers to participate in the study.

Instrument

A 30-item telephone interview survey with a mix of open and close-ended questions was designed for the purposes of this study. The survey covered background information and demographics, the ease or difficulty with which users reached the hotline, their reasons for calling the hotline, topics discussed, what the user thought of their interactions with the hotline worker, what the user liked and disliked about the service, what recommendations they had for improvement, and their overall satisfaction with the hotline. In developing the interview instrument, we consulted the literature on user satisfaction to generate ideas for potential questions and response options (Biggs et al., 2015; Finn, Garner, & Wilson, 2011; Hudak & Wright, 2000). Many questions on the final instrument employed the use of a 4-point Likert scale (e.g. "Overall, how satisfied are you with the CCPF service that you received?" with answer choices "Very satisfied," "Satisfied," "Dissatisfied," and "Very dissatisfied"). The interview instrument is presented in Appendix A.

The instrument was written in English, and a professional translator translated the interview questions to Malawi's national language of Chichewa. The translated instrument was tested internally with 5 Community Health Facilitators and program administrative staff to assess the duration of survey administration and to check for any potential issues regarding question clarity. Internal piloting with the staff yielded nominal changes to formatting and the ordering of questions. Internal staff made the minor adjustments in the Chichewa instrument.

Next, external piloting was conducted to pretest the instrument and strengthen its usability. The instrument was tested with 5 users who called CCPF in October 2016. Of 17 call attempts, 5 past users were reached, and all consented to participate. Based on the results of the 5 surveys, CCPF's Monitoring and Evaluation Officer, who administered the survey, made formatting

changes, such as enlarging the physical boxes where enumerators may prefer more space to record answers. The resulting instrument was back-translated to English by another translator. The study director compared the final back-translated English instrument to the original English survey and found them to be largely consistent. The few inconsistencies were cross-checked by another native Chichewa speaker, and in all instances the Chichewa version accurately captured the meaning intended in the original English document. Thus, the originally translated pretested Chichewa instrument was used for data collection.

Consenting

To honor the high standard of confidentiality that CCPF commits to its users, VillageReach staff members first called and requested the consent from past users to participate in the interview. Hotline worker staff performed the consent calls over a three-week period, ultimately receiving 239 consents and 20 declines to participate, for a 92% consent rate of those reached. The staff members forwarded the consented participants' phone numbers to data collectors who were hired and trained to perform the interviews.

Data Collection

Two temporary, full-time interviewers were hired for the purpose of data collection. The interviewers were trained on consenting, interviewing techniques, how to record answers, and how to store and organize files. The training was conducted by Malawi-based Monitoring and Evaluation staff with guidance from the study director.

Interviewers used VillageReach supplied phones and headsets to call users already consented by hotline staff. Interviewers attempted to reach each potential participant three times, on at least three different days at varying times of day, before ceasing to make further attempts to a consented potential participant. The guideline of three times was established after consultation

with Malawi-based staff about what would be an appropriate number of times to call in the cultural context.

Upon reaching a potential participant the interviewer explained the purpose of the call and asked if the participant still consented to participate. If the participant confirmed their willingness to participate, the interviewer began the interview. None of the potential participants declined the interview. Interviewers recorded all responses on a paper-based survey.

Sample size

We used a sample size calculator to determine a target sample size for quantitative questions (http://www.surveysystem.com/sscalc.htm). There were 421 unique callers to the hotline who supplied a callback number to the hotline worker they spoke with between December 1, 2016, and January 31, 2017. With a population of 421 users and a desired confidence interval of +/- 5%, the recommended minimum sample size was 201 participants. Expecting that some callers would be unable to participate for several reasons (such as phone number changed, phone not charged, participant unwilling), we approached all 421 eligible callers in an attempt to obtain the 201 person sample size.

Ultimately, 239 unique participants completed the interview.

Analysis

Completed paper surveys were scanned and uploaded to a secure VillageReach account with Captricity, a company whose data capture software program used a combination of machine-learning and human verification to transfer hand-written data to electronic files (https://captricity.com). The company guaranteed 99% accuracy, and the study director spot checked a sample of 10 initial paper-to-digital conversions for accuracy and found them to be consistent with the paper data.

During data cleaning, duplicate entries were identified and removed from the data set. There were 36 instances in which a unique identifying code was used more than once. Manual inspection of each response by the study director and Monitoring and Evaluation Officer resulted in eight likely duplicates being removed from the data set. In such cases where the unique identifying code was the same and the answers were the same, indicating that it was likely the same respondent, the interview that was completed second (according to the date and interview start time entered on the first page of the interview instrument) was removed from the data set. The resulting CSV file with 239 unique respondents was uploaded into STATA, and data analysis using descriptive statistics was performed for quantitative interview questions.

IRB

This study, as a program evaluation, received a formal "not research" determination from the University of Washington Institutional Review Board. We nevertheless took precautions to protect participants' confidentiality. We used the unique identifying codes assigned by the electronic software, instead of participant names, to identify participants. The unique code was entered on the interview instrument, and at no point did we collect names from participants nor store them with the paper data.

Chapter 3

RESULTS

Of the 421 eligible callers, 239 callers completed the interview for a 57% response rate.

Characteristics of Respondents and Calls

Table 1 presents the characteristics of respondents, about 46% of whom were male. The self-reported age of respondents ranged from 16 to 61 years old, with the largest proportion of participants being in the 25 to 34 years-old age range (44%).

A large majority of respondents reported using their own phone (95%) on their most recent call to the hotline, compared to those who used a shared phone (5%) and to the one participant who reported using a borrowed phone.

Participants were asked an open-ended question about how long it would take to walk from their home to the nearest facility where they could receive health information. Seventy-nine percent of respondents lived at least a one hour walk to the nearest health facility. The largest proportion of respondents (31%) reported living more than two but less than a three-hour walk from the nearest facility.

The standard language used by hotline workers is Chichewa, and 100% of participants reported speaking in Chichewa on their calls to the hotline. When asked whether they would have preferred speaking in another language, 13% replied that they would have preferred speaking in another language.

Table 1

Characteristics of Respondents

	Percentage of Respondents
	% (n)
Age (years)	
<25	21% (50)
25-34	44% (104)
35-44	25% (60)
45-54	9% (21)
55+	1% (3)
Sex	
Female	54% (128)
Male	46% (110)
Distance to Health Facility (Time walking)	
<1 hour	21% (49)
≥1 hour < 2 hours	27% (65)
≥2 hours < 3 hours	31% (75)
≥3 hours < 4 hours	11% (26)
≥4 hours < 5 hours	4% (9)
≥5 hours	6% (15)
Preferred Another Language	
Yes	13% (31)
No	87% (208)
Other Language Preferred	n = 30* (% of total 239 participants)
Yao	5% (11)
English	4% (9)
Tumbuka	2% (5)
Chitonga	2% (4)
Sena	0.4% (1)

*Note: one participant who preferred another language did not specify the other language.

When asked who they have called the hotline about, 63% of respondents reported calling about themselves, 40% reported calling about a child, and 21% said they called about another adult (the totals do not add to 100% because participants could report calling for multiple persons).

Participants were also asked to estimate *"About how many times"* they called CCPF. As noted in Table 2, 23% of users reported having called once while the other 77% of participants called at least two or more times.

Table 2

How Many Times Participants Have Called CCPF

	Percentage of Respondents (n=239)
Number of Times Calling CCPF	% (n)
1	23% (56)
2-10	66% (157)
11-19	6% (14)
20-28	4% (10)
>29	1% (2)

Dimensions of User Experience

How Completely Were Participants' Questions Answered

Participants were asked to respond to "*On your (most recent) call, how completely were your questions answered by the hotline staff?"* using 4-point Likert response options ranging from "answered completely" to "not answered at all." Table 3 shows that the vast majority of participants thought that hotline workers answered their questions completely or mostly, with only 3 participants reporting that their questions were answered not very clearly or not at all.

Table 3

How Completely Participant Questions Were Answered on Their Most Recent Call

	Percentage of Respondents (n=239)
How Completely Questions Were Answered	% (n)
Answered completely	96% (229)
Answered mostly	3% (7)
Not answered very clearly	1% (2)
Not answered at all	0.4% (1)

Level of Trust in the Information Given by the Hotline Worker

Participants were asked, "*How much do you trust the information that the hotline worker gave you?"* Table 4 indicates that 98% of participants reported that they trust the information "very much."

Table 4

Level of Trust in Information Given by the Hotline Worker

	Percentage of Respondents (n=239)
Level of Trust	% (n)
Trust it very much	98% (234)
Trust it somewhat	1% (3)
Distrust it somewhat	0.4% (1)
Distrust it very much	0.4% (1)

Level of Comfort with Hotline Workers

When asked, "*How comfortable did you feel talking to the hotline worker?,"* all 239 respondents reported being either "very comfortable" (96%) or "comfortable" (4%) (Table 5).

Table 5

Level of Comfort with Hotline Workers

	Percentage of Respondents (n=239)
Level of Comfort	% (n)
Very comfortable	96% (230)
Comfortable	4% (9)
Uncomfortable	0%
Very uncomfortable	0%

Any Difficulty Reported in *Reaching* the Hotline

Participants were asked to respond with a discrete "yes" or "no" to *"Have you ever had trouble reaching Chipatala Cha Pa Foni?,"* and 31% confirmed they had trouble reaching the hotline at some point. Users who reported having trouble were asked a follow-up question of what the trouble was. A preliminary analysis revealed three main issues that callers experienced: their call was not answered for a long time, their call was not answered at all, or their call was disconnected after they had already started talking with a hotline worker.

Level of Ease or Difficulty Reported in *Using* the Hotline

Participants generally found the hotline "very easy" (93%) or "easy" (5%) to use based on responses to "*How easy or difficult is it to use the hotline?,"* as noted in Table 6.

Table 6

How Easy or Difficult it is to Use the Hotline

	Percentage of Respondents (n=238)
Level of Ease/Difficulty	% (n)
Very easy	93% (222)
Easy	5% (13)
Difficult	1% (3)
Very difficult	0%

Level of Overall Satisfaction with the Hotline

Participants were asked "*Overall, how satisfied are you with the Chipatala Cha Pa Foni service that you have received?"* Table 7 displays the distribution of responses and highlights that nearly all participants (99%) reported being "very satisfied" with the service.

Table 7

Participants' Overall Level of Satisfaction with the Hotline

	Percentage of Respondents (n=237)
Overall Level of Satisfaction	% (n)
Very satisfied	99% (234)
Satisfied	1% (2)
Dissatisfied	0.4% (1)
Very dissatisfied	0%

Likelihood of Using the Hotline Again in the Future

Table 8 highlights that all 239 participants reported that they were either "very likely" or "likely" to use the hotline again in the future.

Table 8

Likelihood of Using the Hotline Again in the Future

	Percentage of Respondents (n=239)
Likelihood of Using the Hotline Again	% (n)
Very likely	96% (230)
Likely	4% (9)
Unlikely	0%
Very unlikely	0%

Likelihood of Recommending the Hotline to Others

When asked, "*How likely are you to recommended the hotline to someone in the future?,"* 226 participants (95%) responded that this was "very likely" and 9 participants (4%) replied this was "likely," with only 3 participants who felt this was "unlikely" (Table 9).

Table 9

Likelihood of Recommending the Hotline to Others

	Percentage of Respondents (n=238)
Likelihood of Recommending the Hotline	% (n)
Very likely	95% (226)
Likely	4% (9)
Unlikely	1% (3)
Very unlikely	0%

Chapter 4

DISCUSSION

In this study we examined who called the CCPF hotline in December 2016 and January 2017, their experiences with the service, and ultimately how satisfied they were with the hotline. Users reported overwhelmingly positive experiences with CCPF. The vast majority of users thought their questions were answered completely by hotline workers, reported high levels of trust in the information given by hotline workers, and shared that they were very comfortable talking to the hotline workers. Additionally, the users' overall satisfaction with the hotline was very high. The majority of users also reported a strong likelihood that they would recommend the hotline to someone else, and that they would use the hotline again themselves in the future. The fact that 77% of callers had already called the hotline more than once offers credibility to this self-reported high likelihood of future use.

Although most CCPF users also found the hotline very easy to use and most reported not having any trouble reaching the hotline, nearly a third of users reported delays in answering and dropped calls. Additionally, there was less uniformity of positive response regarding the ease of using the hotline, with 16 participants who did not choose the highest "very easy" option. It should be noted that most participants still found the hotline very easy to use, but the slight decrease in responses at the most positive level of the scale may indicate some issues around the ease of hotline use.

In terms of respondent characteristics, we found that both men and women from various age brackets used the hotline. The relatively high percentage of male callers suggests the community outreach efforts that the service is not strictly for MNCH have taken root. In districts served by CCPF, community members often travel by foot or renting a bicycle—nearly 80% of

respondents reported that they lived at least a one hour walk from the nearest health facility where they could receive health information, indicating that CCPF plays a large role in increasing access to timely health information. Another finding was that speaking in Chichewa was acceptable to the majority of callers, while 13% would have preferred speaking with a hotline worker in another language.

Previous Literature

The high level of satisfaction expressed with CCPF is largely consistent with findings from other phone-administered user satisfaction studies in high-income settings—Biggs et al. (2015) found high levels of satisfaction with a perinatal depression hotline in Australia, and Thomson, Crossland, Dykes, & Sutton (2012) observed high levels of satisfaction with a breastfeeding hotline in the United Kingdom. And yet while other studies have also shown high levels of satisfaction, the percentage of very satisfied CCPF respondents (99%) surpasses the level of satisfaction observed in these other hotline user satisfaction studies. It is possible that the heightened level of satisfaction observed in this study may be due to the distinct setting, methodological differences, or true differences in satisfaction with aspects of the hotlines.

Limitations

A limitation to this study is that our sampling frame of December 2016 to January 2017 users who left a callback number may result in a sample that is not representative of the larger CCPF user population. Specifically, there may be seasonality issues due to sampling from two consecutive months only, and those who were willing to leave their callback numbers may be inherently different from the larger population of callers who were unable or unwilling to do so. Also, although respondents found the hotline generally easy to use and two-thirds have never had trouble reaching the hotline, the sampling frame excludes any would-be users who attempted but

were unable to reach the hotline due to cellular network or technological difficulties. Further research with varying methods (e.g. community survey) would offer more representative insight into the experience of reaching the hotline.

Furthermore, some participants were asked to assess their call experience up to 2.5 months after it took place and, thus, recall bias may have skewed their responses (Brusco & Watts, 2015). Finally, Malawians have been known to be especially polite (Sawatsky, Parekh, Muula, Mbata, & Bui, 2016) and thus social desirability bias may have inflated participant responses, as respondents may have answered the questions in a way that would be viewed favorably by the interviewer (Burroughs et al., 2005; Giebel & Groeben, 2008). We attempted to mitigate social desirability bias by hiring external data collectors, but the participants may still have associated them with CCPF. Also, it is possible that collecting the data by phone rather than participants completing the feedback on their own could have inflated the positivity of the responses (Hammarstedt et al., 2017).

Implications

Overall, the findings revealed that users are highly satisfied with components of the CCPF hotline and with the overall service. The fact that 80% of respondents lived at least a one hour walk from the nearest health facility indicates that CCPF may be an appropriate intervention for connecting rural citizens with more timely health information.

Given that one-third of respondents had trouble reaching the hotline at some point, however, the MOH may consider further exploring what the underlying cause(s) is, be it network connectivity, software issues, whether operating hours or staffing need to be extended, or perhaps a combination. Chichewa was by far the most common language preferred for hotline conversations, but 13% of respondents would have preferred another language. When the MOH

scales the program from eight districts to nationwide, the MOH might consider staffing the hotline with employees who can meet the linguistic needs of all callers to increase caller comfort and assure access to information.

This user experience study offers valuable insight into the general experience of a subset of CCPF callers. It is important to note, however, that respondents were prompted to respond to a pre-determined set of questions, which may not be the components they hold as most important. Further analysis of the open-ended questions posed in this study should be conducted, as well as additional research employing qualitative methods and in-person dialogue to further illuminate what experience callers have with the hotline and any areas that may warrant focused attention.

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APPENDIX A

Chipatala Cha Pa Foni
Hotline User Experience Survey

This section to be filled out by the interviewer prior to the call.

Identification	
Patient ID Number	
Residence District	
Date of Completed Interview	____/____/_____ day/month/year
Interviewer Code	

First Call Attempt	**Second Call Attempt**	**Third Call Attempt**	**Fourth Call Attempt**
Date: Time: Outcome: 1. Completed 2. Did not answer 3. Declined 4. Call dropped 5. Other: _____ (Specify)	Date: Time: Outcome: 1. Completed 2. Did not answer 3. Declined 4. Call dropped 5. Other: _____ (Specify)	Date: Time: Outcome: 1. Completed 2. Did not answer 3. Declined 4. Call dropped 5. Other: _____ (Specify)	Date: Time: Outcome: 1. Completed 2. Did not answer 3. Declined 4. Call dropped 5. Other: _____ (Specify)

Introduction

Hello, my name is <name> *and I am calling about the Chipatala Cha Pa Foni service. You were recently contacted by a hotline worker and it seems you were open to participating in a survey that will help us learn what you think about the hotline. I am now calling to talk more about and conduct that survey. Thank you for being willing to share with us—it will help us to make the service better!*

Before we get too far I'd like to make sure my records are accurate.

Have you ever called the Chipatala Cha Pa Foni hotline?

- ☐ YES → **continue consenting**
- ☐ NO → **describe hotline and ask again**
- ☐ NOT SURE → **describe hotline and ask again**

***If "NO" or "NOT SURE" after re-orienting then thank participant and end survey.**

What we discuss will be treated as confidential; it will be included in the final report without ever saying who made any specific comment. I myself am not a hotline worker and hope that you feel comfortable speaking honestly and openly about your experience.

If at any point you wish to seek more information regarding this study you may call the hotline at a time convenient to you.

This survey will take approximately 15 minutes to complete.

Are you still willing to participate?

Give Instructions:

1. No right or wrong answers
2. Can ask to have a question repeated or refuse to answer any question that you don't want to answer
3. Let me know if you have any questions as we talk

Do you have any questions before we begin?

We are very grateful for your help!

Start Time: ⌊__⊥__⌋ : ⌊__⊥__⌋ **am pm**

	Question	Recording answers
1.	*How did you hear about Chipatala Cha Pa Foni?* **Respondent answers first. CIRCLE respondent answer(s).** **ASK:** *Have you heard about it from anywhere else?* **Read all answer options and checkmark accordingly.**	☐ CHIPATALA CHA PA FONI VOLUNTEER ☐ HEALTH SURVEILLANCE ASSISTANT ☐ OPEN DAY ☐ FLYER/PRINTED MATERIALS ☐ FRIEND OR RELATIVE ☐ AIRTEL TEXT MESSAGE ☐ NGO WORKER/FIELD OFFICER _____ **(specify NGO)** ☐ OTHER:_____ **(specify)** ☐ NOT SURE
2.	*About how many times have you called CCPF?*	☐☐ TIMES
3.	*How did you reach the hotline the last time you called? Did you use a…* **Read all answer options. Record only one.**	☐ PERSONALLY OWNED PHONE ☐ SHARED PHONE → **record with who below** ☐ BORROWED PHONE → **record from who below** _____ Relation (not name)
4.	*Thinking of your most recent call, how long do you estimate that it took you to reach a hotline worker after you dialed?*	☐☐ MINUTES ☐☐ SECONDS
5.	*Have you ever had trouble reaching Chipatala Cha Pa Foni?*	☐ YES → **Continue below** ☐ NO

<table>
<tr><td></td><td></td><td>ASK: What was the trouble? (phone issues, system hung up, no one answered, etc.)

_____
(specify)

ASK: What was the short code you used?

☐☐☐☐☐</td></tr>
<tr><td>6.</td><td>When you have called the hotline has it been about yourself, another adult, or a child?

Mark all that apply.</td><td>☐ SELF
☐ ANOTHER ADULT
☐ CHILD</td></tr>
<tr><td>7.</td><td>For what reason(s) have you called CCPF?

WRITE in respondent answer(s).

Then ASK: Have you called for any other reasons? Write in their answers.

DO NOT READ ANSWER OPTIONS but check the appropriate box(es) based on their stated reasons for calling.</td><td>Reasons Open Response:<table><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td></td></tr></table>☐ MATERNAL & CHILD HEALTH –GENERAL ADVICE
☐ MATERNAL & CHILD HEALTH –SYMPTOMS
☐ REPRODUCTIVE HEALTH (NOT PREGNANT)- GENERAL ADVICE
☐ REPRODUCTIVE HEALTH (NOT PREGNANT) –SYMPTOMS</td></tr>
</table>

		☐ HIV - GENERAL ADVICE ☐ HIV –SYMPTOMS ☐ TB –GENERAL ADVICE ☐ TB –SYMPTOMS ☐ MALARIA - SYMPTOMS ☐ NUTRITION ☐ REGISTRATION WITH THE HOTLINE ☐ OTHER (see written answer(s) above)
8.	*You may have called the hotline for one reason but then also talked about additional topics with the hotline worker. Have you ever talked about food, nutrition, breastfeeding, or hygiene with a hotline worker?* **DO NOT READ ANSWER OPTIONS but check the appropriate box(es) based on the specific topics they discussed.**	☐ YES → **Continue below** ☐ NO ☐ NOT SURE **ASK:** *What specifically did you discuss?* **(do not read options)** ☐ BREASTFEEDING ☐ WHEN TO START FEEDING SOLIDS TO BABIES AND HOW TO PREPARE THEM ☐ WHAT TO EAT DURING PREGNANCY OR BREASTFEEDING ☐ NUTRITION FOR CHILDREN ☐ CLEAN WATER ☐ HYGIENE ☐ SANITATION ☐ HEALTHY LIFESTYLES (like avoiding alcohol and tobacco, exercising regularly, eating healthy and regularly) ☐ VITAMIN A SUPPLEMENTATION ☐ ZINC SUPPLEMENTATION FOR DIARRHOEA ☐ DEWORMING ☐ IRON AND FOLATE SUPPLEMENTS ☐ SALT IODIZATION AND HOUSEHOLD SALT CONSUMPTION ☐ PREVENTION AND TREATMENT OF UNDERNUTRITION **ASK**: *Was the information helpful?* ☐ YES ☐ NO

9.	*Have you learned anything new from calling the hotline?*	☐ YES → **Continue below** ☐ NO **ASK:** *"What have you learned?"*
10.	*Now I want to ask you about the (last) time you called the hotline. On your (most recent) call, how completely were your questions answered by the hotline staff? Were they…* **Read all answer options. Record only one.**	☐ ANSWERED COMPLETELY ☐ ANSWERED MOSTLY ☐ NOT ANSWERED VERY WELL ☐ NOT ANSWERED AT ALL
11.	*How much do you trust the information that the hotline worker gave you? Do you…* **Read all answer options. Record only one.**	☐ TRUST IT VERY MUCH ☐ TRUST IT SOMEWHAT ☐ DISTRUST IT SOMEWHAT → **Continue below** ☐ DISTRUST IT VERY MUCH → **Continue below** **ASK:** *Why did you not trust the information?* _____
12.	*How comfortable did you feel talking to the hotline worker?* **Read all answer options. Record only one.**	☐ VERY COMFORTABLE ☐ COMFORTABLE ☐ UNCOMFORTABLE → **Continue below** ☐ VERY UNCOMFORTABLE → **Continue below** **ASK:** *What made you feel uncomfortable?*

13.	*What happened in your (most recent) call to Chipatala Cha Pa Foni? Did the hotline worker…* **Read and pause after each answer option. Mark all that apply.**	☐ GIVE YOU HEALTH INFORMATION/ADVICE ☐ ADVISE YOU TO GO TO A HEALTH CENTER (small health facility) ☐ ADVISE YOU TO GO TO A HOSPITAL (big health facility) ☐ OTHER:_____ **(specify)**
14.	*Did you follow this advice?*	☐ YES ☐ NO → **Continue below** **ASK:** *What was the reason you did not follow the advice?* **ASK:** *What did you do instead?*
15.	*What, if anything, could the hotline worker have done to make your call experience better?*	
16.	*How easy or difficult is it to use the hotline? Is it…* **Read all answer options. Record only one.**	☐ VERY EASY ☐ EASY ☐ DIFFICULT → **Continue below** ☐ VERY DIFFICULT → **Continue below** **ASK:** *What is the reason you found it difficult?*
17.	*What do you like about the Chipatala Cha Pa Foni service?*	

		***If more than one thing:** summarize their likes and ask *"Of these things, which do you like the <u>most</u>?"*
18.	*What do you dislike about the Chipatala Cha Pa Foni service?*	***If more than one thing:** summarize their dislikes and ask *"Of these things, which do you dislike the <u>most</u>?"*
19.	*What do you think could be improved about the hotline service?*	
20.	*Overall, how satisfied are you with the Chipatala Cha Pa Foni service that you have received? Are you…* **Read all answer options. Record only one.**	□ VERY SATISFIED □ SATISFIED □ DISSATISFIED □ VERY DISSATISFIED
21.	*How likely are you to use the hotline again?* **Read all answer options. Record only one.**	□ VERY LIKELY □ LIKELY □ UNLIKELY □ VERY UNLIKELY
22.	*Have you ever recommended the hotline to anyone?*	□ YES → **Continue below** □ NO **ASK:** *"Who have you recommended it to?"* **Read answer choices and mark all that apply.**

		☐ RELATIVE:_____ **(specify relation)** ☐ NEIGHBOR ☐ FRIEND ☐ OTHER:_____ **(specify)**
23.	*How likely are you to recommended the hotline to someone in the future?* **Read all answer options. Record only one.**	☐ VERY LIKELY ☐ LIKELY ☐ UNLIKELY ☐ VERY UNLIKELY
24.	*What was the gender of the hotline worker you spoke to (most recently)? Were they…*	☐ MALE ☐ FEMALE ☐ DON'T KNOW
25.	*In what language did you talk to the hotline worker?*	☐ CHICHEWA ☐ TUMBUKA ☐ OTHER: _____ **SPECIFY other language**
26.	*Is there another language you would have preferred to speak in?*	☐ YES: _____ **SPECIFY other language** ☐ NO
27.	*How long would it take you to WALK to the nearest health facility where you could receive health information in person?*	☐☐ ☐☐ HOURS MINUTES ☐ DON'T KNOW
28.	*How long would it take you to RIDE A BICYCLE to the nearest health facility where you could receive health information in person?*	☐☐ ☐☐ HOURS MINUTES ☐ DON'T KNOW

Now I just have a couple brief background questions that will not be used to identify you but will help us know the general characteristics of who took the survey.		
29.	*What is your gender?*	□ MALE □ FEMALE
30.	*How old are you?*	☐☐ YEARS

That's my last question. Thank you very much for talking with me today! Your answers are important for our study of the hotline. Is there anything we overlooked about your hotline experiences that you would like to tell us? **Record what they say.**

End Time: ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ **am pm**