Letter from Field

OPEN ACCESS

Received: Feb 26, 2019

Accepted: May 8, 2019

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Funding

The researchers are looking for the support
of research funds/grants amounting to USD
13,640 in order to successfully carry out the
research project. The project budget items,
activities and timelines are presented in the
Appendix 2.

Using mobile phones in improving mental health services delivery in Tanzania: a feasibility study at Mirembe National Mental Health Hospital in Dodoma

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Editor's note: This letter from field is an action research proposal, which calls for grant support from a research grant agency or an official development aid grant agency.

INTRODUCTION

Approaches to delivering health services, including mental health services are increasingly being re-imagined. Attempts to improve mental health services at various levels in Tanzania are hindered by various factors, including the lack of information and communications technology (ICT)/mobile phone-driven communication platforms, resulting in both health workers and psychiatric patients spending substantial amount of time and meagre financial resources interacting physically to address mental related illness. This impediment could be significantly reduced if an ICT/mobile phone-driven platform is created to facilitate communication between patients and health workers.

The prospects of psychiatric patients having access to an ICT/mobile phone platform can provide an opportunity for them to address their problems without necessarily visiting the hospitals. For instance, patients residing in a particular area can use mobile phones to get medical advice, information of side effects; also the service provider can review symptoms and provide therapeutic interventions including adherence counseling and motivation interviewing. The potential of the envisaged ICT/mobile phone driven platform between health workers and psychiatric patients for improving mental health services in Tanzania is the cornerstone of this research project.

BACKGROUND OF MENTAL HEALTH SERVICES IN TANZANIA

Tanzania has a population of 55 million people. More than 70% of the population lives in the rural areas, with 36.0% and 34.0% of the population squeezed below a basic needs poverty line as estimated by Household Budget Surveys of 2007 and 2014. Data for the population

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Author Contributions

Conceptualization: Mwambingu PH, Andrea D, Katomero J; Data curation: Mwambingu PH; Project administration: Mwambingu PH; Writing - original draft: Mwambingu PH; Writing - review & editing: Andrea D.

of people with mental health related challenges in Tanzania is scanty and patchy. However, according to the World Health Organization (WHO) Tanzania mental health profile of 2017 estimates the burden of mental illness in terms of disability-adjusted life years at 2,727.86 per 100,000 population and suicide mortality rate at 5.4 per 100,000 population. Equally, in the year 2017/2018, the Mirembe national mental hospital reported that number of patients who received mental health services was 216,321. In general, the mental health services in Tanzania still face many challenges. This calls for various interventions to improve the services, including the adoption of mobile phones to report mental health related challenges.

In Tanzania, mental health services are provided under the Ministry of Health, Community Development, Gender, Elderly and Children. The Tanzania health sector is centrally organized, with the parent ministry monitoring and coordinating national health priorities and plans, and the regional and district hospitals implementing those priorities. Organizationally, the health sector is hierarchically organized into national, regional, district and health centers and dispensaries at the village level. Thus, there is 7 tertiary hospitals at the national level, 18 regional hospitals, 86 district hospitals, 541 health centers, 4,904 dispensaries distributed across the country. The total number of psychiatric beds in the country is 900 and in most regions there are only 20 beds for a population of 1, 5 million people. There is one Tanzanian government mental health hospital: the Mirembe National Mental Health Hospital in Dodoma, with 600 beds. The Lutindi Mental Hospital of the Evangelical Lutheran Church of Tanzania in Lutindi, is the only mission mental health hospital with 100 beds and additional occupational therapy activities. Basic mental health care unit is also available in Dar es Salaam at Muhimbili National Hospital with the capacity of 100 beds.

Mental health services are coordinated and regulated by various legal and policy frameworks. These frameworks include but are not limited to the following: the National Mental Health Programme of 1980; Policy guideline for Mental Health care in Tanzania released in 2006; and the Mental Health Act (amended) of 2008. These frameworks ensure access to quality service and the rights of the mentally ill persons. They also oversee the organization and operation of mental health services in Tanzania. However, having these frameworks is one thing and the effective delivery of mental health services is yet another. Thus, improving mental health services delivery remains a key priority area of the government despite these challenges.

The Mirembe National Mental Health Hospital and Isanga Correction Center

The Mirembe National Mental Health Hospital is found in Dodoma region in Tanzania. The hospital is allied to Isanga Correction Center. This combined institution was established in 1926 with the purpose of being a main center for treating mental health patients in the country. The hospital has a capacity of 600 beds (for both the main hospital and the correction center). This is approximately 70% of the total national bed capacity for the whole country which is about 900. The facility has a total average of 600 in-patients with various mental illnesses both acute and chronic.

At Mirembe Hospital, the recovery time of a patient is approximated to be within 6 weeks and thereafter discharged to the community. Upon discharge the hospital has responsibility of ensuring continuity of care whereby it provides outpatients clinics on daily basis. The outpatient clinic is responsible for preventing relapses by providing prescription re-fill and ongoing counseling sessions. Some of the patients improve significantly and some do not.

The reasons behind poor improvement were reported to be long distance to access care facility, financial constraints and disabling side effects following use of antipsychotics.

SUMMARY OF THE RESEARCH PROJECT

The timely and efficient availability of mental health services directly impacts the lives of psychiatric patients. ICTs, including mobile phones are increasingly being recognized and acknowledged as crucial platforms for improving the delivery of public services. The pace for adoption and uses of ICT's, including mobile phones in the sub-Saharan Africa and Tanzania is growing fast.

Notably, over the past decade, the region has generally witnessed fast growth of ICT's, particularly mobile phones quadrupling the number of mobile subscribers and connections. For instance, by June 2014 the number of subscribers reached 329 million in the region. This is equivalent to a penetration rate of 38%. In the same year, subscriber identity module connections recoded a staggering penetration rate of 68% (ibid).

With increasing number of mobile phone users, the potential for the facilitation of new communication platforms between government and citizens to improve governance and accountability is increasingly being acknowledged in studies about ICTs and governance.

Thus, the major thrust of ICTs and mobile phones is based on the assumption that accurate, reliable and timely information is critical to the provision of sufficient data for planning, budgeting and identifying areas for investments. This in turn, helps to improve the delivery of public services. This assumption translates to the prospect of having an effective ICT/mobile communication platform for psychiatric patients and health workers to improve mental health services. This is at the core of this research project.

We believe that a single focus, either on patients or health workers, is too restrictive. Instead we examine how the relation between psychiatric patients and health workers (in terms of mental health service delivery) can be improved via an innovative ICT/mobile phone communication platform.

RESEARCH PROBLEM/RATIONALE

The current state of public health entities which deliver services to patients, including mental health centers is expensive and inefficient. This phenomenon is ubiquitous in many government initiatives geared at delivering health services to patients. For instance, it is evident that low number of patients attending outpatient clinic at Mirembe Hospital which is evidenced by an increase in number of relapses of patients with mental illnesses is part of such inefficiencies. Patients come back to the hospital in acute state of mental illness after missing antipsychotic dose and follow up clinic.

The prospects of using a mobile phone to help psychiatric patients communicate with health workers will help patients get timely mental health services and reduce the number of relapses. While this observation remains a key research area in this study, most studies on mobile telephones, nonetheless, have been conducted on physical illnesses interventions

and there are a few on mental health and related disorders. Studies have shown that there is prospects and effectiveness of delivering healthcare services through the mobile technology, also known as mobile health; which include the use of devices such as mobile phones and tablet, computers etc. Because of their popularity and computing capacity, mobile phones are valuable for delivering health care services to the general public. Its mobility offers convenience for contacting health services wherever mobile networks exist. It is for this reason that this study investigates feasibility of using mobile phones in improving mental health services delivery among people with mental disorders at Mirembe Hospital.

General objective

To assess the feasibility of using mobile phones in improving mental health services delivery among people with mental disorders attending Mirembe Hospital.

Specific objectives

- 1) To explore the prevalence of mobile phones ownership among people with mental illness attending Mirembe Hospital.
- 2) To investigate how people with mental illness and their caretakers use mobile phone.
- 3) To examine the perception of mobile phone usage in improving mental health services by people with mental illnesses and their respective care takers.

Research questions

- 1) What is the prevalence of mobile phones ownership among people with mental illness attending Mirembe Mental Hospital and their caretakers?
- 2) How do people with mental illness and their care takers use mobile phones?
- 3) How do people with mental illness and their care takers perceive the use of mobile phone in improving mental health services?

LITERATURE REVIEW

Mobile phone ownership on mental ill population; worldwide

Globally, there are now more than 5.3 billion cell phone users, and 90% of the world's population is covered by a commercial wireless signal.

A trust-wide survey of 141 psychiatric inpatients of the Oxleas National Health Service Foundation Trust was conducted by Harpreet et al, which aimed at determining whether mobile applications could be used in improving mental health care among the patients with severe and enduring mental disorders. The sample size consisted of 82% of the Trust's total inpatient population; and the results showed that 62% of the respondents owned a mobile phone, 62% could use text-messaging services and 80% were willing to use the latter as a means of communication with the Trust. Compared to patients with psychotic illnesses, those with non-psychotic illnesses reported higher rates of mobile phone ownership (78% vs. 55%, $P = 0.01$), ability to use text messaging (76% vs. 56%, $P = 0.03$) and willingness to receive text messages from the Trust (90% vs. 76%, $P = 0.05$).

Studying individual perceptions

Among technology acceptance theories, there are common theoretical themes focusing on behavioral intention and individual reactions. According to one model, actual use of information technology is shaped by individuals' intention to use it and their reactions to the technology.

People need health information for number of reasons—for gaining knowledge, making decisions about medical treatment, communicating effectively with health professionals, adjusting lifestyles, and coping.

Literacy skills are important to health information behavior. First, there is health literacy—the capacity to obtain, interpret, and understand basic health information and services for health enhancement. This skill helps patients to understand their medical condition, manage medications properly, find appropriate care, and attain many other health goals. Additionally, the proliferation of digital health tools and online information is driving Health literacy. This is the ability to seek, find, understand and appraise digital health information in order to apply it to health problem solving. Overall, health information behavior involves many activities and calls for diverse tasks, skills, and attitudes.

Health behavior and interactive technologies

Changing health behaviors—such as acquiring new behaviors, modifying current ones, or stopping risky behaviors—may reduce morbidity and mortality risks.

Overall, health behavior has a great influence on health. Health behavior theories recognize subjective perceptions as an important determinant of behavior—much as technology acceptance theories do. The Health Belief Model, the Tran theoretical model, and the Theory of Planned Behavior all highlight the role of individual perceptions in health behavior.

Another study by Stock found that many phone owners in poor communities share their mobile phones. A household survey in Botswana for example showed that 62.1% of the phone owners share their phones with their family, 43.8% with their friends and 20% share their phone also with their neighbors. Similar figures on sharing are available for Namibia.

In a national, cross-sectional study, with a cluster survey of 172 public health facilities that included 219 health workers and 1,177 patients' respondents in Kenya found that all health workers possessed personal mobile phones and 98.6% used short message service (SMS). Among patients' respondents, 61.2% owned phones and 71.4% of phone owners used SMS. The phone ownership and SMS use were similar between caregivers of sick children and adult patients.

Mobile phone technology in Tanzania

Mobile telephone has been the most visible and fastest growing media technology in Tanzania in recent years compared to radio, television, and newspapers. The growth is in terms of both the number of service providers as well as those of users. Currently, the country has 6 mobile phone service providers.

It is further known that by the year 2014, the number of mobile phones subscribed in Tanzania rose by 16% according to Tanzania Communication Regulatory Authority, but it is not known whether the mental health population is among those who possess and use mobile phones. Statistics show that the estimates of 97% of the people in Tanzania having access to a mobile phone.

A study conducted by Rich van Genuchten in 2012 on mobile phone use in Tanzania, found that 97.5% of the respondents owned a mobile phone, 18% of the phone owners had a phone with some additional features for example a colored screen and 35% owned a smart phone.

The findings also showed that on average the respondents spent 31,571 Tanzanian shillings per month on their mobile phone. The mobile spending amounted on average for 20.4% of their monthly income. In addition, majority of the respondents speak and understand English and all but 1 respondent were able to speak and understand Swahili.

RESEARCH DESIGN AND SAMPLING

The study will be a cross sectional, case study using quantitative data collection methods.

Research design

Cross-sectional study design will be employed in this study. This will involve collection of data from a representative subset at 1 specific point in time.

Study area

The study will be conducted among people with mental illness at Mirembe Hospital in Dodoma Region. It is a region centrally positioned in Tanzania and is bordered by four regions namely; Manyara in the North, Morogoro in the East, Iringa in the South and Singida in the West. The region covers an area of 41,310 km² and has 2,083,588 inhabitants. Dodoma region has 7 districts namely; Bahi, Chamwino, Kondoa, Chemba, Mpwapwa, Kongwa, and Dodoma Urban. The region is almost entirely dependent on agriculture and livestock production.

Data collections procedures

Using systematic random sampling technique 100 participants will be chosen from 600 (the total of patients admitted per year at Mirembe Hospital). The communities from which the patients hail from will be identified. For each identified community, a list of household with mentally ill person will be compiled; Field staff will conduct ethnography at the selected community and fill out a spreadsheet indicating viable time-space windows for each of these potential recruitment households. Once a time-space windows have been selected, the field team will be given a schedule of household to visit within a specified time windows. Recruitment results and contact information's for those who indicated a willingness to participate will be documented.

Interviews

A semi-structured interview will be used in this study. This will allow new ideas to be brought up during the interview as a result of the responses.

Questionnaires

The questionnaires will include an introductory note of the researcher, socio-demographic profile of the respondents and several questions pertaining to mobile phone possession, as well as factors that influence use and ownership.

Data analysis and presentations

Data will be analyzed to answer the study objectives. Then results will be presented in tables, figures, and graphs in relation to the research objectives and variables. The χ^2 tests will be used to examine demographic and other factors influencing mobile phone ownership and use. Frequencies and cross-tabulations for mobile phone ownership and use will be computed.

The researcher will use SPSS (IBM Corp., Armonk, NY, USA) to analyze data collected.

ETHICAL CONSIDERATION

Ethical clearance will be obtained from Ethical Review Board of the University of Dodoma. Permission to conduct the study will be obtained from the respective local authorities. The researcher will ask for an oral and written informed consent from the study population. Respondents will be made aware of the benefits of the study, assured of confidentiality of their responses and their refusal to participate in the study will not affect their treatment at Mirembe.

IMPACT IN THE FIELD

It is expected that there will be reduced health care costs both to the hospital and the patients, reduced time of travelling unnecessarily to the hospital, improved health and reduce relapse rate because of early diagnosis and treatment; reduced hospital stay, increased family involvement in patients care, increased productivity of patients and self-reliance because of better mental health.

This study will minimize stigma to mental health patients and help them feel close to services, and valued than it is at current. It will uncover the people's awareness on the use of mobile phones technology in the delivery of mental health services. Many and different stakeholders, particularly community and public stakeholders will be able to participate into taking care of mental health problems among our population. Mirembe Mental Health Hospital (MMHH) will be inspired to come up with more innovation to improve mental health service provision.

STATEMENT OF POTENTIAL RESULTS

At the end the research study is expected to improve mental health service provision by using mobile phones technology. Whereby information such as relapses, clinic schedule fall ups, refilling schedule of drugs to patients will be easily communicated to patients, care takers and public stakeholders. This will significantly minimize number of cases as well needs for physical attendance at the hospital. Moreover, via this technology, MMHH will provide more outreach service and reach a significant number of people, hence minimizing costs associated with doing the same in physical basis.

WORK PLAN

The Gantt chart will be used to describe the work plan for this study. Hereunder is the Gantt chart for description of the work plan (**Appendix 1**).

Improving Mental Health through Mobile Phones

Appendix 1. Work plan

Description of task	First (mo)	Second (mo)	Third (mo)	Fourth (mo)	Fifth (mo)	Sixth (mo)
Preparing						
Research proposal						
Develop and test Questionnaires						
Data collection						
Analysis of data						
Compilation of results						
Preliminary report writing						
Finalizing report writing						
Publishing						

Appendix 2. Tentative detailed budget for the study

S/N	Activities description	Unit	Qty	Price per unit in USD	Total cost in USD
1	Proposal preparation				
	Stationary	Lump sum	1	150	150
	Internet services (literature searching)	Bundle	1	100	100
	Sub total				250
2	Testing questionnaire/interview				
	Stationery	Page	100	100	100
	Sub total				100
3	Training of research assistants				
	Hiring cost for projector	Peace	1	100	100
	Hiring of venue (including refreshments, stationeries etc)	Package	2	250	250
	Sub total				350
4	Data collection				
	Allowances for research assistants (accommodation, transport, and report writing fees)	Person	3	20 days@100	2,000
	Perdiems for the principal Investigator	Person	1	20 days@200	4,000
	Perdiems for co-investigator	Person	2	20 days@150	3,000
	Stationary	Lump sum	1	500	500
	Transport (4 × 4 car hiring)	petrol	1	1,000	1,000
	Sub total				10,500
5	Data processing				
	Data processing and report writing	Package	1	250	250
	Sub total				250
6	Dissemination workshop				
	Venue	Package	1	250	250
	Hiring projector	Peace	1	100	100
	Food and refreshments	Package	1	20 × 20 ppl	400
	Stationaries	Lamp sum	1	10 × 20 ppl	200
	Sub total				950
	Grand total				12,400
	Contingency 10%				1,240
	Grand total in USD				13,640

S/N = serial number; Qty = quantity; USD = United States dollar.