

Feasibility and acceptability of a digitally supported channel of behavioral messaging on modern contraception, a pilot cross-section study in Uganda.

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Feasibility and acceptability of a digitally supported channel of behavioral messaging on modern contraception, a pilot cross-section study in Uganda.

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Abstract

Background: With the region's highest population growth rate (30%), Uganda is at the brick of a population explosion yet access and utilization of the public health control measures like modern contraception is a challenge. This is premised on the remotely located health facilities, non-customized health content and poor or non-functional post facility follow-up.

Objective: The aim of our study was to evaluate the feasibility and acceptability of a telehealth engagement platform targeting primarily men with behavioral and informational messaging on modern contraception (family planning) and its impact on shaping their sexual and reproductive health (SRH) knowledge and uptake of family planning services

Methods: A longitudinal cohort of men aged 18 years and above were consented to receive mobile messages on family planning and followed up at month 1, 4 and 6 to assess key study related outcomes on knowledge transfer and acquisition on modern contraception, partner communication and spouse uptake of family planning.

Results: Out of the 450 males (primary study participants) onboarded onto the FP mobile messages, 426 (95%) successfully received the messages and only 24 reported not to have received the mobile health content. The average response (participation) rate to the weekly quizzes was 23% for periodic quizzes. There was a noted 18.1% increment in couple communication attributed to the mTIP and couples opened more about each other on matters concerning family planning.

Conclusions: Availing channels to address beneficiaries' concerns and inquiries in real-time or as fast as possible help to increase likelihood for adoption of family planning among couples.

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Original Manuscript

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Keywords: Telehealth; mHealth; Digital Health; Family Planning; Contraception; Messaging; Male involvement

Introduction

Background

In 2021, Uganda's population averaged 42.4 million people representing about 30% growth from 36.9 million as of the last conducted national population census in 2014 [1]. Over 55% of the country's population was below the age of 15 years who would soon move into childbearing age.

According to the 2016 Uganda demographics health survey report, the total fertility rate was averaged at 5.4 children per woman [2]. However, this is known to be higher in rural and semi-urban parts of the country where on average a woman gives birth to 7 children in her lifetime, making Uganda one of the countries with the fastest growing population in the world. These trends point to a looming population explosion in a setting of high poverty levels, low literacy rates and limited access to quality health services unless measures are taken urgently.

Population explosion control measures like modern contraception have shown promising trends in driving socio-economic growth and political stability in Sub-Saharan Africa [3,4]. However, trends of modern contraception (family planning) uptake in Uganda have remained suboptimal at 30% (contraceptive prevalence rate) with the current unmet need for family

planning among women placed at 34% [5,6].

A number of factors have been identified to account for the above trends which included the lack of access to credible information on modern contraception, lack of male partner support/engagement in decision making, poor or non-functional post service follow-up mechanisms to address challenges like side effects, myths and misconceptions among others [7,8].

Digital technology and reproductive health services delivery in Africa

The application of information technology and digital tools in the delivery of sexual and reproductive health (SRH) services is gaining momentum, with use cases of artificial intelligence (AI), mobile short messaging services (SMS) and hotlines being documented. For example, askNivi, an AI chatbot, was piloted in Kenya as a demand generation tool for contraception uptake targeting adolescents and young women showed a 41.0% probable increase in likelihood of contraceptive uptake among users [9]. A study by Njagi J showed that helplines (hotline) provided an alternative and reliable platform for young girls and women to seek clarity and guidance on their SRH issues in a society where hierarchical nature of adult-child relations are conservative [10]. The use of mobile SMS for health information dissemination on family planning and reminders for pregnant women antenatal attendance have been piloted in Sub-Saharan with positive impact [11,12].

Goal of this study

The aim of our study was to evaluate the feasibility and acceptability of a telehealth engagement platform targeting primarily men with behavioral and informational messaging on modern contraception (family planning) and its impact on shaping their sexual and reproductive health (SRH) knowledge and uptake of family planning services.

Methods

Study setting and participant recruitment

We targeted men 18 years and older who consented to participate in the study, study participant recruitment took place from 8 community settings that included academic institutions, workplaces, social gatherings among others. The study team would set-up a tent at the site with appropriate levels of privacy and confidentiality achieved for the informed consent process. Study participants that consented to take part in the study would then be required to initiate a trigger message onto the study SMS prepaid short code so as to start receiving mobile messages on family planning. Prior to full study enrollment, a beta-test study with 25 participants was done with learnings used to improve the data collection tools and informed consent documents which were re-submitted to the institutional review board for approval.

Mobile message design and dissemination

Messages on sexual and reproductive health with main focus on modern contraception were developed by the study team and reviewed by a community advisory board and an SRH specialist for appropriateness, relevancy and local context. The messages covered aspects of informational, behavioral and motivational aspects of contraception (family planning) communication. The messages were designed to go out on a weekly schedule via a prepaid short code (8884) with an average of 2 messages received weekly over a period of 60 days by the study participants. The messages were delivered in English.

Study participant follow-up and engagement

All study participants had access to a study toll-free number and SMS platform which was available 24/7 and manned by qualified health professionals to offer remote resolutions of beneficiaries' inquiries including referrals and linkages to SRH and other health services. In addition, pro-active follow-up from the study team was done at 1,2,3 and 4 months from date of study enrollment to complete specific study procedures and information that included assessing knowledge gained on modern contraceptive methods, couple communication on family planning and partner uptake on family planning.

Data collection

During the scheduled monthly follow-up phone calls, recruited study participants underwent a phone call interview with one of the study staff trained in phone call interviews at the Medical Concierge Group (TMCG). The phone call interview date and time was negotiated and agreed upon by both the study staff and participants. The phone call interviews were conducted in either the local language (Luganda) or English. A pre-tested electronic questionnaire built on an open data kit (ODK) was used to collect information on participants' experience with the telehealth platform and phone ownership. The study telehealth platforms i.e., SMS and hotlines were analyzed for performance on message deliverance, study participants' engagement in quizzes and completion of all study requirements. In person short interviews were conducted with 25 randomly selected study participants (15 males and 10 females) to gather insights on the feasibility and accessibility of a digitally supported channel of behavioral messaging on modern contraception i.e., Men's Telehealth Information Package (mTIP).

Data analysis and interpretation

Quantitative data collected through ODK was analyzed using STATA software. Quantitative collected through TMCG's telehealth platforms (SMS and hotline) on FP following the implementation of the FP information, such as number of SMSs and voice calls, number of referrals, number of participants completing all study assessments, and any other data regarding FP was summarized and used as a measure feasibility and scalability. Qualitative data from the interviews was managed and analyzed using NVivo version 11 (QSR International Limited) for emergent themes and recurrent ideas and then aggregated into themes. Codes were assigned to relevant segments of the text; similar codes were aggregated to form themes, which were then used to address the research questions and develop coherent narratives. The team developed an explicit codebook describing each category and theme. In the next step, the team sorted the quotes based on themes. The team then examined the degree to which these themes were distributed between the male participants and their spouses.

Ethical and Regulatory Approval

The study was approved by the Joint Clinical Research Centre (JCRC) institutional review board and registered with the Uganda National Council of Science and Technology (UNCST). All the study procedures, compensation, benefits, potential risk of participation, and voluntary and confidential nature of participation were discussed. Written informed consent was obtained from all respondents before enrollment in the qualitative study. For young adults with low literacy, we used a thumbprint in the presence of a witness.

Results

Demographic characteristics

A total of 551 study participants were recruited, i.e., 450 males (primary target participants) and 101 females (spouses) and followed up over a 6 months period with proactive study team voice call follow-up calls done at month 1, 4 and 6 from enrollment. The demographics characteristics of the study participants are summarized in Table 1 below.

Table 1. Demographic characteristics of study participants.

Variable	Males Frequency (%), N=450	Spouses Frequency (%), N=101
Age (Median (IQR))	25(22-30)	25 (23-28)
Marital status		
Single	257 (57.1)	15 (14.9)
Married	177 (39.3)	59 (58.4)
Widowed/Separated/divorced	8 (1.8)	17 (16.8)
Has spouse(s)	8 (1.8)	10 (9.9)
Current occupation		
Student	143 (31.8)	15 (14.9)
Employed	296 (65.8)	59 (58.4)
Unemployed	7 (1.6)	17 (16.8)
Decline to answer	4 (0.9)	10 (9.9)
Education level		
No school	2 (0.4)	2 (2.0)
Primary level	62 (13.8)	9 (8.9)
Secondary level	234 (52.0)	60 (59.4)
University	149 (33.1)	29 (28.7)

Decline to answer	3 (0.7)	1 (1.0)
Type of digital device owned (multiple choice)		
Basic mobile phone	281 (60.8)	39 (36.1)
Smart phone	177 (38.3)	69 (63.9)
Desktop computer	2 (0.4)	0
Laptop	1 (0.2)	0
Tablet	1 (0.2)	0

User Statistics

The study participants were followed up for 6 months with voice call follow-up done at 1, 4 and 6 months from date of enrollment to assess key study related outcomes on knowledge transfer and acquisition on modern contraception, partner communication and spouse uptake of family planning. The retention rates of study participants over the 6 months periods are shown in Figure 1 below.

Measure of study participant engagement

A total of 26,988 mobile short messages (SMS) were sent out over the 6 months study period with an average of 66 messages received by each study participant. Out of the 450 males (primary study participants) onboarded onto the family planning mobile messages, 426 (95%) successfully received the messages and only 24 reported not to have received the mobile health content. The family planning mobile messages were interrupted with periodic quizzes to assess knowledge transfer and acquisition, a total of 9 questions were sent out on a weekly basis. The average response (participation) rate to the weekly quizzes was 23%. There was a noted 18.1% increment in couple communication attributed to the mTIP and couples opened more about each other on matters concerning family planning as highlighted from some responses below.

“this study has enabled us...come together as partners. You know in our local setting, we don't want to share this...with our wives...it has enabled us realign our education about FP”

“she used to hide it from me...Then when this study came in, she told me about Depo, then I said it would be better if you go in for that...”

Study participants' preferences

Interview findings revealed that the mobile messages were clear, easily shareable with peers and built confidence in their knowledge on family planning. In addition, they reported that the messaging language was simple, educative and stimulated discussion. Samples of study participants' responses highlighted below.

“When you read these messages, you find directions...you are guided...the person cares.”

"It has given us confidence about FP...when you get information from medical personnel...you are in a comfortable position to practice it."

Discussion

Innovations addressing male involvement in sexual and reproductive health information (SRH) and family planning service have mainly centered on structural barriers through extending clinic hours, allocating specific clinic times for men, using male champions among others [13,14]. However, the need to target men with informational and behavioral messages on family planning leveraging channels that find them in their localities (home, workplaces, bars) are still new with digital solutions taking center stage [12,15].

Our study assessed the acceptability and feasibility of a men's telehealth information package (mTIP) that leveraged a toll-free hotline and mobile SMS as channels of information dissemination on SRH and modern contraception. The 95% success rate of mobile message dissemination (426 out of 450 males successfully received the messages) showed the potential digital platforms have as an effective channel for cascading FP information to target audiences. This is especially important in reaching men who are often left out from the traditional physical and mass media campaigns that operate in spaces that are largely seen as spaces for women and yet require large contact time and space [16,17].

The 6 months retention rate of study participants in the virtual cohort was 88.7%, this places digital channels like SMS and voice calls as effective and sustainable platforms for continuous engagement beyond physical premises. This is supported by the rising numbers of mobile phone ownership in the country that stood at approximately 26 million subscribers in December 2020 [18]. In addition, the virtual cohorts offer an opportunity for follow-up beyond the confines of the health facility and or community outreach activity which are the traditional entry portals to accessing FP services in Uganda.

The relatively high smartphone ownership especially among spouses (63.9%) offers an opportunity to make diversity in the digital innovations that can be deployed in the space of family planning. For example, gamification mobile applications assessing decision making skills and knowledge transfer have been noted to stimulate more engagement with users [19,20]. There was a low (23%) participation rate of study participants in the weekly quizzes which was relatively low compared to the 'text-to-Change' study which had a 53% average participation rate among participants [21]. The possible explanation for this observation may be related to the utilization of complimentary media platforms like flyers and radio to increase awareness and boost participation which was not done for our study.

The need to avoid using difficult language or terminologies when developing mobile health messages is important for end-users to easily make meaning from the messages. This is noted from the fact that qualitative feedback from the interviews revealed that study messages were simple and easy to understand.

Principal Results

Out of the 450 males (primary study participants) onboarded onto the FP mobile messages, 426 (95%) successfully received the messages and only 24 reported not to have received the mobile health content. The average response (participation) rate to the weekly quizzes was 23% for periodic quizzes. There was a noted 18.1% increment in couple communication

attributed to the mTIP and couples opened more about each other on matters concerning family planning.

Limitations

Periodic downtime of the mobile SMS system that resulted in study participants not receiving their scheduled FP messages and hence a disruption in the information access process. This was addressed by setting up an alert downtime system that enabled the software developers to know of any downtime early enough for quick resolution with minimal disruption. Unavailable study participants' phone contact at follow-up, we always rescheduled the follow-up call on an alternative day with emphasis to keeping within the follow-up window.

Comparison with Prior Work

A review of demographic health data on SMS based family planning communication within low- and middle-income countries showed an uptake prevalence of about 5.4% within selected Africa countries [22]. This low utilization and uptake mirror our 24% average participation in the periodic quizzes.

Conclusions

Digitally supported communications channels (Mobile SMS and Hotlines) for health information dissemination on family planning allow for a wider reach with minimal resource input in regard to contact time and space yet allow for customization to specific demographics. Availing channels to address beneficiaries' concerns and inquiries in real-time or as fast as possible help to increase likelihood for adoption of family planning among couples. There is need for additional studies on behavioral change influence by mobile messaging

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Authors' Contributions

BH, JK and JA led the data collection and cleaning process. VN led on the data analysis, LK led the manuscript preparation, writing and reviewing process. JMB, KH, DM and AK contributed to the study design, manuscript review and approval of the final manuscript version.

Conflicts of Interest

Authors declare that there is no conflict of interest.

Abbreviations

AI: Artificial Intelligence

CAB: Community Advisory Board

COVID-19: Coronavirus disease 2019

IDI: Infectious Diseases Institute

IRB: Institutional Review Board

FP: Family Planning

mHealth: Mobile Health

mTIP: men's Telehealth Information Package

ODK: Open data kit

SRH: Sexual and Reproductive Health

TMCG: The Medical Concierge Group

UDHS: Uganda Demographic Health Survey

UNCST: Uganda National Council of Science and Technology

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Supplementary Files