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Can Mobile Phone Text Messaging Increase Uptake of Family Planning Services in Uganda?

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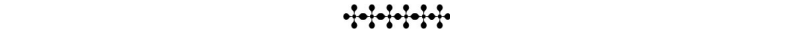

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Can mobile phone text messaging increase uptake of family planning services in Uganda?

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Photo by Health Child

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Acronyms and Abbreviations

FP	family planning
IUD	intrauterine device
LAM	lactation amenorrhea method
PRH	population and reproductive health
SMS	short message services
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic Health Survey
UNCST	Uganda National Council for Science and Technology
VHT	village health team

Executive Summary

Health Child applied for a grant from the MEASURE Evaluation Population and Reproductive Health (PRH) project through the University of North Carolina at Chapel Hill to undertake a study to investigate the impact of text messaging on family planning (FP) services uptake. The study highlights current social demographic characteristics of study participants as well as contraceptive uptake before implementation and knowledge of issues related to women's reproduction and fertility. The study objective was to determine if text messages on FP influence uptake of modern contraceptive methods and services, how the support information messages impact contraceptive services uptake, the effect of the language in which the message is sent on services uptake, and the effect of mobile phone ownership on services uptake.

The study was conducted in Jinja District in the Eastern region of Uganda. The study was a longitudinal comparison group study that included 679 women (375 women in the experimental group and 304 in the control group). These women were recruited at the same time during the beginning of the process using a study inclusion criteria study tool and were asked questions related to the intervention to compare the two groups and to draw conclusions on the outcome of the study.

Key Findings

Regarding knowledge of a woman's fertility period, there was a remarkably low level of knowledge of a woman's fertility cycle and the period when a woman is likely to conceive, with less than 6 percent of women in both the experimental and intervention groups correctly knowing that a woman is likely to conceive half way between her menstrual cycles.

There was a notable difference between women who had ever used a contraceptive method at one point in time and those who were still using a modern contraceptive method at the time of the study. Nearly 39 percent and 14 percent of women in the implementation and control groups, respectively, started using a modern contraceptive method after the intervention, with most women opting to use the injectable. There was a sizeable number of women in the implementation group (13.1%) who chose to use long acting methods of contraceptives compared to the women in the control group (0%).

There was a significant relationship between the language in which a message was sent and acceptance of a modern contraceptive method. The majority of the women in the implementation group who were using modern contraceptive methods (65.6 percent) felt that the messages they had received where helpful in contraceptive adherence/continuation decisions. They reported that the messages had helped them understand how to manage the side effects (52 percent), or use the method more correctly and effectively (66 percent). Furthermore, the majority of the women (75 percent) who received text messages mobilizing them to turn up at the health facility for FP sensitization meetings honored the invitation.

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1.0 INTRODUCTION

1.1 Background

High fertility is associated with preventable maternal and infant morbidity and mortality in low-resource settings with weak health care infrastructure (UNFPA, 2007). Research indicates that contraceptive use alone could reduce maternal deaths associated with unwanted pregnancies by 40 percent (Campbell & Graham, 2006). However, contraceptive use in sub-Saharan Africa is low at only 21 percent, mainly as a result of inaccessibility to contraceptive methods (Hubacher, Mavranezouli & McGinn, 2008; United Nations, 2006). The proportion of satisfied demand for contraception is lower, especially among young people (Bankole & Malarcher, 2010). Uganda's reproductive health indicators continue to be poor, with a maternal mortality ratio of 438 deaths per 100,000 live births (UBOS & ICF International Inc, 2012). The total fertility rate is 6.2 children per woman, and teenage pregnancies constitute 25 percent of all pregnancies (UBOS & ICF International, 2012) Birth intervals remain short, and Ugandan women have more than three children by their late 20s (UBOS & Macro International, 2007).

Unintended pregnancies have been linked to unsafe abortions that constitute nearly one third of maternal deaths among young people in Uganda (Nalwadda, Nabukere, & Salihu, 2005; Singh, Prada, Mirembe, & Kiggundu. 2005). The use of modern contraception is extremely limited in Uganda, despite services having been introduced more than six decades ago through the then Family Planning Association of Uganda. Currently only 24 percent of all women of reproductive age, and 26 percent of married women, utilize modern contraception (Khan, Bradley, Fishel & Mishra, 2008; UBOS & ICF International Inc, 2007; UBOS & ICF International Inc, 2012). Uganda lags behind in comparison with other countries in the region such as Kenya, Rwanda, and Tanzania, where 39 percent, 27 percent, and 27 percent of married women in each country, respectively, use modern contraceptives (PRB, 2010). The paradox is that two in every five women in Uganda want to space or limit childbirth, but are not using contraceptives (Khan et al., 2008). The unmet need for contraceptive use is therefore two to three times higher than the current use of contraceptives, and women exceed their desired fertility by two children (Khan et al., 2008; UBOS & Macro Inc, 2007).

1.2 Health Promotion Using Mobile Telephone Short-Message Service

As mobile phone ownership continues to increase rapidly in many countries worldwide (including Uganda), there is potential to utilize mobile telephony to improve contraceptive uptake. A growing body of empirical studies suggests that the use of mobile phone text messaging can be effective in improving health behaviors and health outcomes (Cole-Lewis & Kershaw., 2010; Fjeldsoe, Marshall & Miller, 2010; Krishna, Boren & Balas, 2009; Whittaker, Borland, Bullen, Lin, McRobbie & Rodgers, 2009). The use of short-message service (SMS) is a highly promising method of health promotion for multiple reasons: (i) it allows for instantaneous delivery of short messages directly to individuals at any time, place, or setting; (ii) the messages

are asynchronous (i.e., they can be accessed at a time that suits an individual), (iii) messages can be sent to multiple recipients simultaneously and are delivered immediately; and (iv) the cost of sending messages is relatively low (Cole-Lewis & Kershaw, 2010; Fjeldsoe, Marshall, & Miller, 2009; Lim, Hocking, Hellard & Aitken, 2008; Wei, Hollin & Kachnowski, 2011).

Recent reviews have concluded that SMS can be used successfully to promote behaviour change within a short term (one year or less) for several behaviors (Cole-Lewis & Kershaw, 2010), including smoking, dieting, and physical activity (Cole-Lewis & Kershaw, 2010; Fjeldsoe, Marshall & Miller, 2009). Additional evidence suggests that providing sexual health information via text messages is feasible and effective in promoting healthy sexual behavior (Gold, Lim, Hocking, Keogh, Spelman & Hellard, 2008). There is however limited evidence of research on the use of mobile phone SMS to improve contraceptive uptake, correct use, and continuation of chosen methods. This prompted Health Child, an indigenous organization based in Uganda, to develop and test the effectiveness of providing FP information via text message.

1.3 Health Child

Since 2009, Health Child has been using SMS for health promotion in selected districts in Uganda to increase access to information, improve attitudes, and influence behavior change towards HIV/AIDS issues and sexual and reproductive health. Since that time, there has generally been increased knowledge of HIV/AIDS in the population and awareness of existing HIV/AIDS services.

Health Child further worked with mobile telephone text messaging to reach out to pregnant women and their spouses, reminding them about their scheduled antenatal sessions in respective health facilities and sending text messages with information about pregnancy care and postnatal care. During that time, Health Child also worked with village health teams (VHTs) to remind women about their scheduled antenatal sessions and educating them at the same time. The results of the intervention showed that women generally remembered VHTs (44%) as their source of information, followed by women who remembered information from mobile telephone text messaging (28%). The conclusion was that word of mouth was still important in passing on of health information, but the use of mobile telephony should also be pursued. Using mobile telephones to communicated health information was new, but showed a lot of potential to reach a large population. With the above background, Health Child piloted the SMS methodology within Jinja District to study the impact on increase of FP uptake among mothers.

1.4 Research Question

The key research question was the following: can mobile phone SMS improve uptake of FP services and continuation of chosen contraceptive methods? Specific research questions included:

1. Does the number of SMS messages sent to a woman affect FP services use and demand at health centre?
2. Does the recipient (owner of the mobile phone to which the message is sent) of the SMS affect demand and turn up for FP services at a health facility?
3. Does the language in which the message is sent affect turn up for FP services at a health facility?
4. Does SMS follow-up information increase adherence or continuation of a FP method?

2.0 METHODOLOGY

Two groups of mothers were selected, one group being the intervention group and the second one being the control group. The intervention group received SMS messages and the control group did not. There were two levels of inclusion. The first level was for mothers who were not using modern contraceptive methods; and, to study outcome on continuation on a method after receiving SMS, a second level was for mothers who were using modern contraceptive methods.

2.1 Description of Interventions

This study sought to generate evidence or information on the effectiveness of providing FP information via text messages. Intervention activities involved developing a set of text messages on FP, using evidence-based content, and sending these messages on the mobile phones of selected recipients, that is, study participants in the experimental group. No FP messages were sent to study participants in the comparison group. Each arm corresponded to a distinct sub-area of the Jinja District.

Three sets of messages were developed. The first set of messages contained information on modern contraception methods (implants, IUDs, injectables, pills, etc.), method effectiveness, duration of use, and ability to return to fertility. The second set addressed issues of side effects, myths and misconceptions about contraception, and specific information about where women would access FP services or FP service-related assistance within their geographical locality. The third set of messages included reminder messages for women to turn up at collaborating health centres for FP sensitization meetings. Examples of messages under each category included the following:

Introductory messages

- Congratulations on your newborn baby! Health Child will be sending you text messages on family planning that will help you plan and manage your family well.
- Welcome to Health Child, we hope your family is well. You will be receiving messages from this number +256(0)788331777 on family planning free of charge.

Messages about the importance of FP

- Family planning methods help a husband and wife space their children for proper health and growth.
- A small family enables a husband and wife to spend less and save some money for future use.
- Use of family planning allows communities to have enough land for growing of food and land for grazing animals.

- Family planning will help a husband and wife to enjoy sex without fear of pregnancy.

Messages about proper usage of FP methods

- Condoms are a method of family planning that a man and woman can use together during sex. Male and female condoms are available at all health centres.
- The best place a person can receive family planning methods are at the health centre, where counselling is also provided by a trained health worker.
- Injectaplan is a family planning method that lasts for 3 months; visit a health centre for more information.
- Family planning does not reduce a man's sexual power but helps him to produce the number of children that he can easily care for.
- Did you know that family planning methods cannot cause your wife to become infertile, it only gives a woman time to prepare for the next pregnancy.
- Having a big family always gives a man a hard time to take care of. Come to Kisima Health Centre and learn more on family planning.

Messages mobilising communities to turn up at the health centre for services

- Are you a mother who has a baby of 1½ months (6 weeks)? It is time for you to turn up at the Health Centre to access your preferred family planning method.
- Today at Kabembe Health Centre II family planning methods will be provided. All breastfeeding mothers are encouraged to come for information.
- Come to Masese Health Centre today 12/1/2012 at 10:00 a.m. We are providing counselling and family planning methods to both men and women.

2.2 Study Sites

The intervention activities took place in three separate sub-counties in Jinja District namely Kakira Town Council which is peri-urban; Walukuba-Masese Division, which is purely urban; and Mafubira Sub-county, in which the rural parishes were selected. The areas have comparably the same demographics. Overall, the intervention activities took place in eight parishes and 25 villages. The total population of these villages is approximately 127,750 (Walukuba-Masese Division, 24,614; Kakira Town Council, 27,651; and Mafubira Sub-county, 75,485). Women comprised 50.4 percent (63,929) of the total population. (The population of women per sub-county: Walukuba-Masese Division, 12,261; Kakira, 12,938; and Mafubira, 38,727, according to the Jinja District Development Plan 2010-2013.)The comparison areas were Busede and Buyengo sub-counties, with an estimated combined population of 58,745 (31,172 in Busede and

27,573 in Buyengo) and 16,023 and 14,164 women of reproductive age respectively (source: Jinja District Development Plan 2010-2013, 2010).

2.3 Study Design

The quasi-experimental study sought to ascertain the effectiveness of providing FP information through mobile phone text messaging. Within this design, there were two different groups: a group of women who were not sent FP information via text message (control group); and a group of women who were sent FP information via text messages (experimental group). We determined the following outcomes that would be measured: demand for FP services (i.e., turning up at a health centre seeking FP services), acceptance of an FP method FP (modern contraceptive), the relationship between language of the messages and turn up for services at the health centres, and contraceptive continuation, i.e. continuation of method by women already using FP. The total sample size for the two groups of the study was 679women (375 women in the experimental group and 304 women in the control group). The recruitment questionnaire was pretested in a village that was not part of the study. As a result, study tools were revised to ensure validity and reliability in order to fit within the population being studied. All questions were asked in mother tongue as the majority of the respondents were uncomfortable with English. A pretest of the text messages was also done with the help of the VHT at the Health Child Resource Centre in Jinja District.

2.4 Recruitment of Study Participants

Women in both the experimental and control group were recruited with the help of VHTs from the selected study population areas. Participants received group-specific information over a period of five months and those who agreed to participate were required to complete an enrollment questionnaire with specific questions about socio-demographics (e.g., age, marital status, education level, number of children), contraceptive knowledge and use, mobile phone ownership, and desired message language. The inclusion criterion for participants in both the experimental and control group was being a woman of reproductive age. Women in the experimental group were in addition required to have a mobile phone or knowing or staying with someone with a mobile phone who would pass on the message. Women in the control group were not required to have mobile phones as they were not going to receive any message. Study participants were not given any monetary compensation.

2.5 Implementation of the Iintervention

None of the women in the control group received FP messages. For women in the implementation group, text messages about FP were sent to their mobile phones or the phone of the specified person living close to the intended message recipient at the same time with different intervals for each of the categories in the implementation group. To determine if there was an association between the number of SMS and contraceptive acceptance or continuation, respondents in the experimental group were divided into three categories with the three groups

receiving different numbers of messages over the five-month period. The first category received a total of 30 FP messages. The second and third category received 20 and 10 FP messages, respectively. These messages were aimed at raising awareness about modern contraceptives (including method effectiveness), addressing fears and clarifying misconceptions, and providing specific information about where women could access FP services or FP service-related assistance.

In addition, all women in the experimental group received message reminders (mobilizing messages) to turn up at a collaborating health centre within their locality for FP sensitization meetings.[1] One message was sent out each day prior to the meeting and a second message was sent on the day of the meeting. In total, three FP sensitization meetings were conducted at each of the nine health centres that collaborated with Health Child, translating into 27 health centre-based sessions all together. The meetings were conducted by two selected health workers in each of the facilities. At the end of each sensitization meeting, health workers attended to the specific needs and concerns of participants, including giving or administering modern contraceptive methods for the women who chose a method.

2.6 Data Collection

After five months of implementation of intervention activities, a cross-sectional follow-up survey was conducted between August and September 2012. Follow-up data were collected from all women, both in the experimental and control groups, using a standard questionnaire. The questionnaire was administered by six trained interviewers. The interviews were carried out in the participant language of choice and lasted approximately 45 minutes. The structured interviews covered the following topics: current contraceptive use practices and information about the FP messages received.

2.7 Ethical Procedure

The protocol was reviewed and approved by the Institutional Review Board of Mildmay in Uganda and by the Uganda National Council for Science and Technology (UNCST), which approves all research in the country. Informed consent was obtained from all study participants in their preferred local language. Care was taken to ensure that all interviews were conducted with due consideration for privacy and confidentiality. Interviewers were trained on confidentiality, implemented the informed consent procedure for all women who were eligible, and only interviewed women who agreed to participate. Interviews were conducted in a private space. Completed questionnaires were stored in lockable cabinets, and access to the data was restricted to the research team.

[1] Topics that were discussed during the sessions included methods of family planning, importance of family planning, side effects and their management, recommended time for starting family planning use after delivery, and myths and misconceptions.

2.8 Data Management and Analysis

Quantitative data were captured using EpiInfo and analyzed in STATA. Unless otherwise indicated, Pearson's chi-square test of independence was used to determine significance. Results were considered statistically significant when the p-value was equal or less than 0.05.

2.9 Study Limitation

The women who were included in the study were followed up after a period of five months. A study period of five months may be relatively a short time to assess the effects of mobile phone text message on contraceptive decisions of women. More studies need to be conducted for a longer duration.

3.0 RESULTS

3.1 Study Population

Overall, the women surveyed shared some similarities across the experimental and comparison groups as seen in table 1. The mean age of women in the experimental and control groups was nearly the same (25.6 years for the intervention group vs. 25.4 years for the control group). More than 89 percent of the women in both groups were married or cohabiting and more than 70 percent had two or more children.

Table 1: Socio-demographic Characteristics of Study Participants

Socio-demographic Characteristic	Intervention Group	Control/Comparison Group
Number of Women	375	304
Mean age in years	25.6	25.4
(Range); SD	(16-45) 5.4	(14-45);6.2
Number of Children (living)		
None	0.0	0.3
1	18.4	27.6
2	24.3	15.8
3	19.5	12.8
4-6	32.3	30.6
>6	5.6	12.8
Mean # of people in household	5.2	6.4
Marital Status (%)		
Married/Cohabiting	89.6	91
Separated/divorced	0.53	3.3
Never married	9.9	5.3
Religion (%)		
Protestant	30.9	39.1
Catholic	21.9	16.2
Moslem	32.3	33.8
Pentecostal	13.9	8.9
Seventh Day Adventist	1.1	2.0
Ever Attended School (%)		
Yes	93.3	91.1
No	6.7	8.9
Highest Level Schooling (%)		
Primary	58.3	71.0
Secondary	38.3	27.5

Socio-demographic Characteristic	Intervention Group	Control/Comparison Group
Post-secondary/Tertiary	3.4	1.1
No response/refused	0.0	0.36
Occupation (%)		
Subsistence farming	14.4	62.8
Service	9.3	6.6
Trade/retail	28.8	11.2
Fishing	1.1	0.0
House wife	12.4	10.2
None	34.4	9.2
Income earning frequency (%)		
Daily	70.3	56.5
Weekly	6.9	2.4
Monthly	22.9	41.2
Mean income, by earning frequency (mean)		
Daily	10,747	9,977
Weekly	48,556	55,500
Monthly	87,541	116,969

Over 90 percent of the women in both groups had ever attended school, with the majority of the respondents in both the implementation and control groups having a primary school education. Among those who had ever attended school, variations were observed between the control and intervention groups in the highest level of school achieved. In the intervention group, 58 percent had primary education compared to 71 percent in the control group while for secondary school education it was 38 percent and 28 percent in the intervention and control groups, respectively.

3.2 Knowledge of Fertility Period

The successful use of traditional methods of contraception, especially the rhythm method, depends in part on understanding when during the ovulatory cycle a woman is most likely to conceive. Being able to accurately identify when women are most fertile could help young adults make informed decisions about sexual activity and contraceptive use. During enrollment, all women were asked when a woman is most likely to conceive with four options: just before her period begins, during her period, right after her period has ended, or halfway between two periods. Table 2 provides the results for all women in both the intervention and control groups.

Table 2: Knowledge of Fertility Period

Knowledge of Fertility Period	Experimental Group (%) n=375	Comparison group (%) n=304
Just before the menstrual period begins	7.3	6.6
During her period	4.3	3.7
Right after her period	69.5	71.3
Halfway between two periods	5.6	4.1
Don't know	13.3	14.3

Less than 6 percent of women in both the experimental and intervention group understood that a woman is most likely to conceive halfway between her menstrual periods. Almost 70 percent of the women in both groups wrongly believe that the fertile period is right after a woman's period has ended. These findings indicate that the use of periodic abstinence (rhythm method) may not be a reliable method of contraception as its effectiveness is highly hinged on the accuracy of knowledge of ones' fertility period.

3.3 Knowledge of Contraceptive Methods

During enrolment, information on knowledge of contraception was collected by asking women, both in the experimental and control groups, to name ways or methods by which an individual can delay or avoid pregnancy. Table 3 shows data on the extent of knowledge of contraceptive methods. All women had heard of at least one method of contraception. Modern methods were more widely known than traditional methods (rhythm and withdrawal). The most widely known FP methods were injectables (78 percent for the intervention and 83 percent in the control group) and pills (77 percent intervention and 60 percent comparison). This is not surprising considering that injectables are the most widely distributed FP method in health facilities, implying that most women seeking FP services are also exposed to them. The least known methods were emergency contraception, lactation amenorrhea method (LAM), and male sterilization. These findings were consistent with results of the 2006 and 2011 Uganda Demographic and Health Survey (UDHS)[2] (UBOS & Macro International, 2007; UBOS & Macro International, 2012).

Table 3: Knowledge of Contraceptive Methods

Method	Experimental Group (%) n=375	Comparison Group (%) (n=304)
Female sterilization	4.8	11.3
Male sterilization	2.1	2.2
Pill	77.2	60.4

[2] The 2006 and 2011 UDHS also reported LAM and emergency contraception as the least know methods, and pills and injectables as the most commonly known method alongside male condoms.

Method	Experimental Group (%) n=375	Comparison Group (%) (n=304)
IUD	31.6	12.7
Injectables	77.5	82.6
Implants	31.4	18.8
Male condom	33.8	27.1
Female condom	18.2	2.2
LAM	1.6	0.9
Emergency contraception	0.8	0.0
Rhythm method (periodic abstinence)	3.2	0.9
Withdrawal	3.2	0.0
Other methods	4.3	2.0

3.4 Ever Use of Contraception

All women who said that they had heard of any method of contraception were asked about ever use of any method. About two thirds (66 percent) of women in the experimental group, and about one in two women in the comparison group reported ever use of a contraceptive methods. The method most commonly used by women was injectables (75 percent for experimental and 77 percent of the comparison group). The least used modern methods included IUD, diaphragm, and foam/jelly. This is also consistent with other previous studies conducted in Uganda.

Table 4: Ever Use of Contraception, by Group

	Experimental Group (%) n=375	Comparison Group (%) n=304
Any method?		
Yes	65.9	50.5
No	34.1	49.5
If yes, which method?	**n=247**	**n=152**
Female sterilization	1.2	2.0
Pill	14.8	7.8
IUD	0.0	0.7
Injectables	75.2	77.3
Implants	1.6	0.7
Condom	6.0	9.1
Diaphragm	0.0	0.67
Foam/jelly	0.0	0.0
LAM	0.0	2.0
Rhythm method	0.0	0.0

	Experimental Group (%) n=375	Comparison Group (%) n=304
Withdraw	1.2	0.0
Was method effective?		
Yes	86.2	92.7
No	13.8	7.3

3.5 Current Use of Contraceptive Methods

Results in table 5, show the contraceptive prevalence rate (percentage of women using any method of FP) at the time of enrolment. More women in the experimental group reported use of any FP method compared to those in comparison group (35.5 percent vs. 21 percent, respectively). By far, the most commonly used method was injectables, which is one of the short-acting methods of contraception. This is consistent with results of the 2006 UDHS (UBOS & Macro International, 2007). More women in the experimental group reported using long-acting methods (i.e., implants, IUD, permanent methods) than those in control group (22 percent versus 6 percent, respectively). Findings also indicate that more than 65 percent of the women using any FP method, in both the experimental and the comparison group, did not report any complication/side effect resulting from use of their chosen method.

3.6 Difference Between Ever Use and Current Use of Modern Contraceptives

It is important to note differences between ever use of modern contraceptive methods and current use of modern contraceptive methods as shown in tables 4 and 5 Results in the table 4 showed that 66 percent of women in the implementation and 51 percent in the control study group had used a modern contraceptive method at one point in time. However, only 36 percent and 21 percent of women in the implementation and control populations, respectively, were still using a modern contraceptive method at the time of recruitment (table 5). This indicates high dropout rates among women who start on modern contraceptives and discontinue along the way.

Table 5: Contraceptive Use at Enrollment

	Experimental Group (%) n=375	Comparison Group (%) n=304
Any method?		
Yes	35.47	21.1
No	64.53	78.9
If yes, which method?	**n=133**	**n=64**
Female sterilization	0.0	4.76
Pill	8.3	6.35

	Experimental Group (%) n=375	Comparison Group (%) n=304
IUD	4.5	0.0
Injectables	65.7	68.25
Implants	17.4	1.59
Condom	3.8	12.7
Female condom	0.0	1.59
Lactation amenorrhea	0.0	4.76
Experienced any complication?		
Yes	33.83	32.81
No	66.17	67.19

3.7 Messages Received on Mobile Phones

During follow-up, women in the experimental group were asked specific questions concerning the message received, number of messages received, owner of phone on which method was received, message language and content, and whether they had discussed the messages they had received with anyone in their family or social network.

Results from the follow-up data collected showed that 326 out of 375 women in the experimental group had FP messages, either on their own mobile phones (41 percent) or a mobile phone of someone else who stays with or lives near the intended recipient, e.g., spouse (29 percent) or a VHT member (32 percent).

Two-thirds (66 percent) of the women received 10 messages over the intervention period, while 13 percent had received 20 messages and 20 percent of the women received 30 messages. More women reported receiving messages in Luganda (a local language), than English (91 percent vs. 10 percent, respectively). Most women (64 percent) reported receiving reminder messages concerning health facility FP sessions. Others received messages concerning the different methods of contraception and importance of use (54 percent), correct use of contraception (21 percent), facilities providing contraceptive services (12 percent), and management of side effects associated with contraceptive use (7 percent).

About 79 percent of the women also reported that they had discussed the FP messages they had received with someone; in most cases, a spouse (> 80 percent). Other persons with whom the women shared the messages with included siblings (6 percent) and female friends (47 percent). Those who did not discuss the FP messages with any person cited reasons such as fear of spousal reaction, personal opposition to FP, or did not take the FP message seriously.

3.8 Acceptance of Modern Contraceptives after Implementation of SMS Programme

All women who were not using any method of contraception at the time of enrollment, in both the experimental (n=242) and control group (n=240), were asked whether they had started using contraception during follow up. More women in the experimental group reported having started using at least one FP method compared to those in the comparison group (39 percent vs. 14 percent, respectively, table 6). In both groups, the most commonly accepted FP method was injectables.

There was no significant association between the number of SMS received and acceptance of FP use by women in the implementation group (p=0.225) or ownership of the mobile phone to which the FP message is sent and demand and/or uptake of FP services (p=0.227). However, acceptance of contraception was associated with the language in which the FP message was sent to the intended recipient, with more women who received FP message in Luganda accepting at least one FP method compared to those who received the messages in English (p=0.013).

Table 6: Acceptance of Modern Contraceptives, by Group

	Experimental Group (%) n=242	Comparison Group (%) n=240
Started using an FP method		
Yes	38.7	13.6
No	61.3	86.4
If yes, method accepted		
Female sterilization	1.1	0.0
Pill	7.7	2.7
IUD	0.0	0.0
Injectables	64.8	85.7
Implants	12.1	0.0
Condoms	9.9	0.0
Female condoms	3.3	0.0
Diaphragm	1.1	0.0
LAM	0.0	7.4
Others	1.1	0.0

It is also important to note that women in the implementation group took on implants (12 percent) compared to none in the control group. Similar observations were made for male and female condoms. The difference could be attributed to the planning meeting held with the District Health Office, which had committed itself to stocking the selected health facilities with a mix of FP methods.

3.9 Benefits of FP Messages

Women in the experimental group reported that the messages they received helped them in several ways, including knowing the facilities where they could access FP services (44 percent), obtaining information about the benefits of FP (36 percent), clearing myths and misconception about FP (24 percent), and gaining confidence to talk about FP (11 percent). Most women also reported fears about side effects associated with contraceptive use such as prolonged menstrual periods, loss of libido and vaginal fluid, giving birth to children with deformities, etc. Nearly three in 10 women (29 percent) however, reported that their fears had been allayed.

3.10 Contraceptive Continuation

The UDHS survey report which was published in 2012 reports high dropout rates in use of modern contraceptive as a hindrance to use of modern contraceptives. During follow-up, all women who reported contraceptive use at the time of enrollment in both the experimental (n=133) and control group (n=64) were asked whether they were still using contraception (i.e., continuation of FP use). Higher contraceptive continuation rates were reported among women in the control group than in the experimental group (96 percent vs. 75 percent, respectively). Contraceptive discontinuation rates were almost six times higher among women in the experimental group compared to those in the control group (25 percent vs. 4 percent, respectively). The reported discontinuation rates for both groups are however lower than those reported in the 2011 UDHS report at 43 percent (UBOS and ICF International Inc, 2012). The commonly reported reasons for discontinuation were method-related side effects and desire to have a baby.

About two-thirds (66 percent) of the respondents felt that the messages they had received where helpful in contraceptive adherence/continuation decisions. They reported that the messages had helped them understand how to manage the side effects (52 percent), or use the method more correctly and effectively (66 percent).

3.11 Mobilizing Women for FP Sensitization Meetings Using Text Messaging

The potential for using mobile phone text messaging to mobilize women for FP sensitization meetings organized at health centres was also studied. Findings in table 7 show that up to 75 percent of the women in the experimental group who received mobile phone text message requesting them to turn up for FP sensitization at the health centre honored the request (i.e., turned up). Results from a study by Chen and colleagues also show that use of SMS messaging to send appointment reminders is effective in improving attendance rate at a health promotion centre (Chen, Fang, Chen & Dai, 2008). This points to the potential of mobile text messaging as a mobilizing tool in health promotion programmes.

Table 7: Mobilizing Women for FP Sensitization

	Experimental Group n=375
Did receive a message informing you about FP sensitization at the health centre	number (%)
Yes	312 (83.2)
No	63 (16.8)
Have you attended any meeting at health centre	
Yes	234 (75)
No	78 (25)
Do you still remember the topics that where discussed during the health centre FP meeting?	
Yes	198 (84.6)
No	36 (15.4)
Discussion topics in the FP meeting	
General information about FP	156 (78.8)
Importance of FP	113 (57.1)
Managing side effects	95 (47.9)
Modern Methods of FP	122 (62..2)

4.0 DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The use of mobile telephone text messaging was associated with high turn up at health facilities (75 percent of women who received messages turned up at health facilities for services) for accessing FP services, hence a possible avenue for mobilizing communities for responding to available health services. Mobile telephony was also associated with increased rates of uptake of modern contraceptive methods: 39 percent in implementation area compared with 14 percent in control population.

Ownership of a mobile phone does not affect turn up of women at health facilities nor acceptance of a method. In the study, only 41 percent of women who received messages personally owned a mobile phone. The rest of the women received messages passed on by their husbands (29 percent) and by a VHT (32 percent). It is therefore important to consider the information network available for the beneficiary woman when planning for communication messages of FP use. Furthermore, although the majority of the respondents had access to mobile phone services, they had little knowledge with regard to its usage, especially opening and reading messages. This affected timely receipt and consumption of information communicated and, as a result, many mothers missed sessions and services. This problem was aggravated by lack of power where some mothers could not charge their phones.

Acceptance of a modern contraceptive was more common among women who received messages in Luganda (a local dialect) than women who received messages in English ($p= 0.013$).

Supportive follow-up information did not increase continuation of use of modern contraceptives. There were high dropout rates (25 percent versus 4 percent) respectively. It is however important to note that support with follow-up information was important in providing women with information on managing side effects (66 percent), hence a vehicle for promotion of continuation rates.

Because higher contraceptive continuation rates were reported among women in the control group than the experimental group, any short-term benefits of using SMS appear to be insignificant in the long term.

A difference of 25 percentage points is by no means indicative of work done. From this study, it can be concluded that when couples get the right FP message after childbirth, there is a high likelihood that they will take on an FP method to either delay a pregnancy or prevent any further pregnancies. It is one thing to accept a contraceptive method and it is another to continue using it. In order to improve continuation of the use of FP, it suggested that women who take on any method should be followed up within one month to find out if they have encountered any side effects and explain what they can do to reduce on the side effects. The follow up should be consistent with the specific contraceptive method the woman took. It has been found out that most contraceptive discontinuation is due to inconsistent use of the method. Consistent use of contraception has been found to be associated with previous knowledge.

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