New Media: The Changing Dynamics in Mobile Phone Application in Accelerating Health Care Among the Rural Populations in Kenya

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Abstract

Lack of access to adequate health care is largely due to lack of appropriate information. Access to information and communications technology has become a necessity for any society that seeks to be informed. Millennium Development Goals (MDGs) had health-care improvement as one of the pillars; however a majority of the African countries were not able to achieve these goals and have now embarked on Sustainable Development Goals. Sustainable Development

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J. Servaes (ed.), *Handbook of Communication for Development and Social Change*,
https://doi.org/10.1007/978-981-10-7035-8_84-1

Goal number three aims at ensuring healthy lives and promotion of the well-being of all ages.

Kenya has implemented two strategies aimed at influencing skilled facility care utilization: the provision of free maternity health services and the Beyond ZERO Campaign. However, these strategies may not have achieved much due to lack of adequate and relevant information for the populations. Therefore utilization of new media in disseminating health knowledge to populations may be an alternative to the traditional media and other channels of health knowledge dissemination which may not be in tandem with the ever-changing socioeconomic realities in the rural communities. World Health Organization (WHO) report (2011) states that the unprecedented spread of mobile technologies as well as advancements in their innovative application to address health priorities has evolved into a new field of eHealth, known as mHealth. The report further states that the use of mobile devices to send appointment reminders is becoming more common in many countries.

Advances in technology can enable patients to receive a diagnosis and treatment plans without leaving their homes. Application of mobile phones in dissemination of maternal health knowledge can strengthen health-care systems in developing countries.

This chapter seeks to assess the appropriation of mobile phone technology in accelerating the access to skilled facility health care, investigate the different types of health knowledge that can be accessed through the mobile phone, and assess the efficiency of the mobile phone in disseminating maternal health knowledge. The study will review available literature using a case study of Kenya.

Keywords

Maternal health · Knowledge · Communication · Skilled facility care · Mobile technology · Dissemination

Introduction

Mobile phone interventions have been found to improve utilization of antenatal and postnatal care services, which is essential for maternal and newborn health. mHealth applications can assist in achieving the SDG especially goal three which targets to ensure healthy lives and promote well-being for all at all ages. Mobile phone text message reminders for appointment attendance and further high-quality research are required to draw more robust conclusions, particularly for developing countries within the field of sexual and reproductive health. The challenges of access and utilization create disparities in the availability of health facilities and skilled maternal health professionals in the rural areas.

Securing Lives Through Mobile Phones

Technology has enhanced the way maternal health care is being conducted. Geographically isolated communities can now have access to vital information in the comfort of their sitting rooms. Facility health providers can track the progress of their patients from their offices. Mobile phone applications have generated hope for the maternal health patients and the service providers. Mobile phones have become more accessible than ever before. They are no longer tools of calling, texting, and sending or receiving money, but they are tools for access of critical information. mHealth is proving to be part of the solution to the maternal health information, from text messages educating mothers on what to expect when they're expecting to information that assist medical professionals to provide comprehensive care. There are various mobile phone applications available to both the antenatal and postnatal mothers in Kenya. The following are some of those applications:

Totohealth

Totohealth is a mobile technology platform in Kenya used to detect a mother's pregnancy stages and child development after birth. The aim of this mobile application is to improve the maternal and child health status of marginalized communities. Patients subscribe to the platform, and then text messages about schedules, reminders for clinic visits, and vaccinations are send to them periodically. The application also detects development abnormalities of a child and pregnancy, maps out mothers due to deliver and avails resources to ensure safe deliveries, and analyzes data collected from patients to enhance decision and policymaking. This application has motivated both the antenatal and the postnatal patients to get relevant maternal health information without wasting time and spending much money on transport costs.

mHMtaani

mHMtaani mobile application is a community-based platform that is aimed to promote healthy living among the antenatal and postnatal patients in the coastal communities of Kenya. The app monitors and tracks the health of pregnant women. The rural women are assisted in knowing the pregnancy danger signs, delivery date, use of family planning, breastfeeding, and the general well-being of pregnant mothers without necessarily visiting the facility/doctor. This service has improved the quality of care for pregnant women and increased the number of hospital deliveries. However, Fotso et al. (2008) observe that the mere availability of health services to a population may not translate into increased utilization. This is due to many other socioeconomic factors that affect the utilization of health services.

Therefore, there is need to set up and strengthen maternal-child health promotion campaigns geared toward the marginalized population groups. Ransom and Nancy (2002, pp. 19–29), in discussing maternal-child health utilization, identified four obstacles that limit women from accessing and utilizing maternal-child health services, thereby leading to maternal-child deaths: delay in recognizing danger signs, deciding to seek care, reaching the appropriate health facility, and delay in receiving health care at a health facility. mHMtaani platform has created a conducive atmosphere for mothers to be able that their deliveries are in a facility under the supervision of a facility health staff.

Baby Monitor

Baby Monitor is also a mobile phone application in Kenya used for linking pregnant women with health clinics through interactive voice response technology. The patients receive information through SMS and voice messages for those who call the hotline. The messages are disseminated in a language the patient can understand. *ChildCount+* is another mHealth platform which relies on SMS data entry to create a centralized database whose aim is to register every pregnant woman and every child under the age of 5 in rural areas. Fotso et al. (2008) observe that women should be encouraged to attend antenatal care where they can be given advice on delivery care and other pregnancy-related issues targeting the poorest, less educated, and high-parity rural women groups. These innovative technologies can provide better information to mothers to ensure that they have a safe delivery.

Setting of the Study

This study was conducted in Western Province, Busia County, a rural setting in Kenya and an area confronted with a myriad of health-related problems between April and August 2012. Thirty antenatal health patients and 28 postnatal health patients were drawn from the region to participate in the study.

Methods

The study adopted the mixed method approach. The use of both qualitative and quantitative approaches enhanced the credibility of the research findings. The two data strands were generated concurrently but analyzed differently and the interpretations mixed to establish the relationship between the variables.

In addition the use of both quantitative and qualitative approaches in combination provides a better understanding of research problems as qualitative data which is mostly a narration is backed up with statistical scores from quantitative data, hence assisting the researcher to compare and contrast both qualitative and quantitative data.

Results

In a study that sought to identify communication strategies used in promoting skilled maternal health-care utilization in rural Busia County, Kenya, among the antenatal and postnatal health patients, a question on the use of mobile phone technology was asked. This question was intended to find out the average number of people who use mobile phones to access maternal health information and the kinds of knowledge they are able to access.

Dissemination of Maternal-Child Health Knowledge to Patients (Antenatal Patients)

The dissemination of information on maternal-child health is a key factor to the utilization of maternal-child health services. A total of 30 antenatal patients filled the questionnaires and 8 of them were interviewed. A majority of the respondents acknowledged that chief's *Barazas* (43.3%) could be utilized as key avenues for dissemination of information, especially in rural areas. One of the respondents said that:

> messages from the chief's *Baraza* or a 'community worker' can be clarified and substantiated as opposed to those we 'hear' from radios.

According to her, community outreach programs offer an opportunity for patients to ask for clarification and questions on issues that are not clear. She further said that chief's *Barazas* are communal media since they act as a forum where one meets masses of people and disseminate information to them. The mobile phone was also singled out as one avenue to access maternal-child health information. Mobile phone was approved by 16.7% as an appropriate source of maternal health information.

Tables 1 and 2 shows the breakdown of the methods used for information access, the number of respondents, and the percentages for each method for both antenatal and postnatal patients.

Methods of Disseminating Maternal-Child Knowledge (Postnatal Patients)

Various methods of knowledge dissemination were recommended as the most preferred by the respondents, among them being mobile phone, mass media, door-to-door campaigns, community health workers' campaigns, chief's *Barazas*, churches, and facility health staffs. Door-to-door campaigns, which constituted 32.1% of the sample population, are to be steered by community health workers who mobilize maternal-health patients by informing them on the need to visit maternal health clinics. Though most patients claimed that they only used their

Table 1 Channels used to disseminate maternal-child health information

Method	Frequency	Percent
Mobile phone	5	16.7
Relative/friend	2	6.7
Chief's Barazas	13	43.3
CHWs	6	20.0
Information at facility/interactive posters	1	3.3
Mass media	3	10.0
Total	**30**	**100.0**

Source: Researcher

Table 2 Methods of disseminating maternal-child knowledge

Means	Frequency	Percent
Mobile Phone	6	21.4
Mass Media	7	25.1
Door to door (CHWs)	9	32.1
Chief's *Barazas*	3	10.7
Churches	2	7.1
FHS	1	3.6
Total	**28**	**100.0**

Source: Researcher

mobile phone to call, text, and receive or send money, 21.4% acknowledged using their mobile phones to access maternal health information.

For both antenatal and postnatal patients, mass media (a channel known to inform, educate, entertain, persuade, socialize, and market health products) did not score highly. For antenatal patients, only 10% preferred the use of mass media, while among the postnatal patients, only 25.1% preferred it to any other as a channel most suitable to disseminate maternal-child health knowledge. CHWs, chief's *Barazas,* relatives, and friends are seen as a means that can achieve better results in maternal-child health campaigns, especially when it relates to immunization than any other means.

One of the respondents said:

> the health facilities are too far away and there are a lot of tests before one is enrolled into the program 'we' would be better if all maternal health information was easily available.

This shows that women would prefer to get this information on a mobile platform so that they only visit facilities for critical issues.

Table 2 gives a summary of modes postnatal patients used to access maternal-child knowledge.

Discussions

Most maternal health patients both in the pre- and postnatal stages claimed that they got information about maternal health-care services from chief's Barazas and community health workers. However, patients said that mobile phone applications could be of assistance as other patients turned to family, friends, co-workers, women who had been pregnant before, and older women in the community.

Communication about the benefits of utilizing skilled maternal-child health services is necessary. Ivanov and Flynn (1999) point out that entry or early access into the health-care system is an indicator of health-care utilization (p. 374). They further say that negative experiences with health providers decrease women's satisfaction with prenatal care services (ibid. p. 383).

Strategic Communication

The source of information determines the level of trust placed on the message. Patients may trust the message from the mobile phone as opposed to one from a community volunteer worker or one from a TBA as opposed to a message from a community health volunteer/worker. Communities have to be educated on the need to access and utilize skilled maternal-child health care, and this can only be possible if appropriate strategies of disseminating this knowledge are used. It also emerged from the study that mass media is not the most appropriate means to disseminate maternal-child health knowledge as it is not interactive and participatory. Most mothers can rely on mobile phone text messages to access meaningful pre- and postnatal care information in SMS format that can be easily consumed.

Mass media are more effective when backed by complementary activities on the ground such as door-to-door campaigns. Oronje et al. (2009) say that the mass media has the ability to disseminate information in a broad, timely, and accessible manner; it constitutes an important source of information for the general public and policymakers. They further say that as information providers, the mass media informs, educates, entertains, persuades, socializes, and markets commercial products, among other roles (p. 2). However, most of the maternal health information disseminated through radio has been termed as a nonparticipatory. Participatory communication is usually relevant in achieving rural development.

Communication strategies that embrace new technology and are illustrative and participatory, such as the use of mobile phones, should be used. Therefore, health providers can use technology to enhance maternal health knowledge dissemination. Oluwaseun et al. (2015) say that e-health interventions for MCH can improve access to health information, influence pregnant women to adopt safe MCH practices, encourage prompt patient diagnosis, and increase the utilization of health facilities.

However, Fotso et al. (2008) acknowledge that to ensure wider reach, health education programs should be channelled through a mix of avenues including the mass media, organizations working in the communities such as chiefs, community

outreach activities, posters, and leaflets. In addition, Winskell and Enger (2005, p. 412) document that it is generally agreed that health communication through the mass media has great impact when it is reinforced through interpersonal channels. These channels include discussions, educational sessions, local theaters and songs, and debates to generate emotional engagement, thereby influencing behavior change. The mass media messages cannot singly influence behavior change as Adam (p. 363) documents that Bandura proposes that "social persuasion" by itself will not succeed in bringing about adoptive behavior and that the mass media is more effective when backed by complementary activities on the ground.

Infrastructural support on maternal health is necessary as some of the cases relate to access to maternal-child health facilities. Pade-Khene et al. (2010), quoting McNamara (2003), point out that health infrastructure hampers the ability of rural communities to preserve good health and treat illnesses. They further note that facility health workers have to have appropriate communication channels to receive and disseminate current and new health or medical information (*ibid*.). Health infrastructure in terms of accessibility to the health facilities in the area under study is an issue that needs to be addressed for the realization of appropriate maternal-child health service utilization. Fotso et al. (2009) findings support the view that in developing countries patients face significant obstacles in accessing health care. Therefore those who live nearby hospitals are most likely to access health services than those who live far away. There are those patients who prior to giving birth they always felt sick and hence had to visit the clinic regularly for check-ups and even the birth of their child had to end up in a health facility. Magadi (2000, p. 188) also observes the same; that the issue of physical access to health services is a critical problem in many rural parts of Kenya, where long distance to hospitals and poor road conditions are actual obstacles to reaching health facilities and often a disincentive to even trying to seek care. Generally, communication strategies in rural areas have to be participatory and illustrative and have to make use of new technology and the opinion leaders. Pade-Khene et al. (2010), quoting McNamara (2003), point out that health infrastructure hampers the ability of rural communities to preserve good health and treat illness. They further observe that facility health workers have to have appropriate communication channels to receive and disseminate current and new health or medical information (*ibid*.).

Client-Service Provider Communication

Client-service provider communication enhances dissemination of maternal-child health knowledge and facilitates appropriate decision-making so that through participatory communication, patients can share and exchange knowledge. Once done, appropriate rating of the facility health staff could be given. Thomas (2006, p. 53) says that health-care audiences are hampered by lack of knowledge on the cost of care and other issues as well.

Consumers must make judgments based on the provider's reputation or on superficial factors such as the appearance of the facilities, the available amenities, or the tastiness of the hospital's food.

Education could play a major role in influencing the behavior of the maternal-child health patients. TBAs are assumed to be more hospitable and loving than the FHSs who have been branded by some patients as cruel and arrogant; as such, patients avoid utilizing skilled facility health care and resorting to using the TBAs. Through strategic communication, this mind-set and attitude can be eradicated. Mobile phone technology could be of importance in dealing with such situations. Pade-Khene et al. (2010) observe that facility health workers have to have appropriate communication channels to receive and disseminate current and new health or medical information, whereas Fotso et al. (2008) observe that women should be encouraged to attend antenatal care where they can be given advice on delivery care and other pregnancy-related issues targeting the poor, less educated, and high-parity rural women groups.

Conclusion

Communication is very essential in health as health-related information disseminated enables the patients to understand the importance of accessing and utilizing skilled facility maternal-child health services. Information dissemination and behavior change strategies should be embraced in promoting the utilization of skilled maternal-child health services in rural areas. Servaes (2007) says communication should influence attitudes, disseminate knowledge, and bring about a desired and voluntary behavior change. This clearly indicates that the information reaching maternal-child health patients should be informative.

Information dissemination of maternal-child health knowledge is a key factor in the utilization of maternal-child health services. The interview with maternal-child patients revealed that the empathy in communication of the caregiver at the health facility was an indicator for facility health-care utilization by the patient. Thomas (2006) reports that communication experts indicate that effective communications must be meaningful, relevant, and understandable to the receiver and it must be relevant to the lives of "real 'people, and stimulate the receiver emotionally (p. 99).

Service provider-client communication is very essential in the realization of positive maternal-child health. Fotso et al. (2008) document that lack of or poor transportation facilities and poverty are also key contributing factors to non-institutional deliveries, especially those deliveries that take place en route to health facilities.

Participatory communication is very vital here, and these messages could be passed through mobile phone technology. Lack of equipment and personnel in health facilities hinders some patients to access and utilize skilled maternal-child health services. Unfriendly health facility staff and long procedures at the facility centers

that force patients to make very long queues make the patients not to utilize skilled maternal-child health services and hence opt for other services which are instant and unfortunately may not be skilled. Negligence by maternal-child patients and lack of information are also other challenges that lead to non-utilization of skilled maternal-child health services. Mobile phone applications may be a solution to all these.

Education on maternal-child health issues should be geared toward behavior change among the maternal-child health patients. Health communication is concerned with a shift from previous visions of health care and prevention which is largely dominated by high technology and hospital-based concepts of health care to searching for innovative and flexible approaches that pay greater attention to knowledge dissemination already possessed by local people. The use of mobile technology in solving health-related matters does not imply that health-care professionals have to ignore their respective role. Rather, the goal of technology is to uncover alternative solutions that will better service for the pre- and postnatal women. It should also foster local microenterprise, creating upgraded platforms and new functionalities that will generate ongoing economic opportunities for communities. Thomas (2006) reports that communication experts indicate that effective communications must be meaningful, relevant, and understandable to the receiver and it must be relevant to the lives of "real 'people, and stimulate the receiver emotionally (p. 99). He further says that the conveyance of information can increase or decrease people's anxiety, depending on their information preferences and the amount and kind of information they are given (*ibid*.). Therefore, maternal health messages must be developed with knowledge of the cultural characteristics of the audience. Culture has been known to be a major determinant of maternal-child health services in many African communities. Magadi (2000) notes that the poor health outcomes (e.g., high infant and child mortality) consistently observed in Nyanza Province, for instance, may be more of a factor of cultural practices, rather than availability and accessibility of health services.

References

Adam G (2005) Radio in Afghanistan: socially useful communication in wartime. In: Oscar H, Tufte T (eds) Media and glocal change: rethinking communication for development. Nordicom, Göteborg, pp 349–365

Fotso JC, Ezeh A, Oronje R (2008) Provision and use of maternal health services among urban poor in Kenya: what do we know and what can we do? J Urban Health 85(3):428–442

Fotso JC, Ezeh AC, Essendi H (2009) Maternal health in resource-poor urban settings: how does women's autonomy influence the utilization of obstetric care services? Reprod Health 6:9. Nairobi. African Population and Health Research Center (APHRC)

Ivanov LL, Flynn BC (1999) Utilization and satisfaction with prenatal care services. West J Nurs Res 21(3):372–386. Sage Publications

Linda VW (2006) Beliefs and rituals in traditional birth attendant practice in Guatemala. J Transcult Nurs 17(2):148–154. Sage Publications

Magadi MA (2000) Maternal and child health among the urban poor in Nairobi, Kenya. Afr Popul Stud 19:179–198. Centre for Research in Social Policy (CRSP), Loughborough University

Magadi M, Diamond I, Madise N (2000) Patient socio-demographic characteristics and hospital factors associated with maternal-mortality in Kenyan hospitals (working papers). Population Council, Nairobi

Oluwaseun OI, Mabawonku I, Lagunju I (2015) A review of e-health interventions for maternal and child health in sub-Sahara Africa. Matern Child Health J. https://doi.org/10.1007/s10995-015-1695-0. Springer, New York

Oronje NR (2009) The maternal health challenge in poor urban communities in Kenya. A Policy Brief no 12, 2009. African Population and Health Research Centre

Oronje RN, Undie C, Zulu EM, Crichton J (2009) Engaging media in communicating research on sexual and reproductive health and rights in sub-Saharan Africa: experiences and lessons learned. Health Res Policy Syst 9(1):S7

Pade-Khene C, Palmer R, Kavhai M (2010) A baseline study of Dwesa rural community for the Siyakhula information and ground, communication technology for development project: understanding the reality. J Inf Dev 26(4):265–288. Sage Publications

Ransom IE, Nancy VY (2002) Making motherhood safer: overcoming obstacles on the pathway to care. Population Reference Bureau, Washington, DC

Servaes J (2007) Harnessing the UN system into common approach communication for development. Int Commun Gaz J 69(6):483–507. Sage Publications

Thomas KR (2006) Health communication. Springer, New York

UN, UNICEF, UNFPA, WB (2011) Trends in maternal mortality: 1990 to 2010. WHO, Geneva

Winskell K, Enger D (2005) Young voices travel far: a case study of scenarios from Africa. In: Oscar H, Tufte T (eds) Media and global [sic] rethinking communication for development. Nordicom, Göteborg, pp 403–416