Media Use for Health Information Dissemination to Rural Communities by the Ghana Health Service

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Abstract
The study investigated the patterns and challenges of media use for disseminating health information to rural communities by the Ghana Health Service (GHS), focusing on the Shai Osudoku district of the Greater Accra Region, as a case study. A case study approach using the convenient and purposive sampling techniques was used to sample 210 community members within Shai Osudoku district, two directors with the GHS and four community health workers. Descriptive analyses were used to examine the quantitative data, while qualitative thematic content analysis was used for the interview data from the GHS staff. The study found out that the GHS mostly used print media for health information dissemination namely leaflets, posters, billboard, and interpersonal channels like doctors, community health workers, family, friends, town cries, group discussions, etc. MoTech (Mobile technology for community health) and telehealth are some of the technologies being piloted in delivering health information or care via the mobile phone to rural communities in the district. Challenges in disseminating health information in the communities were inadequate mobile network connectivity, infrastructure, training and sensitization, among others. The findings suggest that the GHS can enhance its health information dissemination roles by supporting the use of traditional media with the overwhelming advantages of media such as mobile phones to disseminate health information to rural communities. The study recommends that future research focus on exploring potential mechanisms for monitoring the quality of health communication delivery using the new media.

Keywords: Health Information Dissemination, Print Media, Mobile Technologies, Rural Communities, Ghana Health Service

Introduction
Poor health status, a wide range of controlled, uncontrolled, preventable and non-preventable diseases, and inadequate healthcare services are considered a major deterrent to human, social and economic development in developing countries (Bras et al, 2007). The importance of health is evidenced by the fact that three out of the eight Millennium Development Goals (MDG’s) are directly related to health (Chetley et al., 2006), specifically: reduce child mortality, improve maternal health, and Combat HIV/AIDS, malaria and other diseases.

Decentralized and accessible health knowledge has been one of the prominent goals of primary health care in developing countries. Yet, lack of knowledge and information remains a significant deterrent to good health practices, leading to heightened health risk (Kargbo, 2008; Rhine, 2006). An individual’s access to health information especially is considered one of the ways of minimizing the social and economic impact of preventable and non-preventable diseases and illnesses (Aryee, 2014). Health communication scholars, practitioners and policy makers recognize the significance of health communication to public health (Rimel & Lapinski, 2009; Sahiavo, 2007). It is therefore not surprising that the search for and usage of health information has become a great concern for both...
individuals and health care providers (Kickbusch & Buse, 2001). The use of media has been recognized for decades as an important tool for improving health (Nurmi, 2013). Health information can be defined as recorded information in any format, oral, written or electronic. Its timely availability and accuracy is very crucial in health delivery. Health information in all its formats, be it health information management, health information system or health information technology, is geared towards the goal of providing quality health care delivery.

Gupta and Sinha (2010) opine that there is a greater demand and need for accurate, relevant, rapid and impartial public health information by people, and a growing reliance on mass media as the main source of information. It is well known that mass media is an important social institution in any modern society and provides the information that generates acceptance of new ideas to create interest. The mass media conveys information about health and makes people aware to prevent the spread of various diseases. Traditional broadcast media and mass media such as television, cinema, radio, newspaper, magazines, and social media favour one-to-many communication. Moreover, emerging media technologies have made communicating health information increasingly easier over time. The telecommunications revolution has greatly altered communication by providing new media for long distance communication through voice, text and multimedia. The spread of new technology could thus be used to disseminate health information services to populations that have had limited or no access to them until now (Olla & Tan, 2008).

Two government bodies oversee health care infrastructure and delivery in Ghana. The Ministry of Health (MOH) and the Ghana Health Service (GHS). Until 1996, the MOH oversaw the direct provision of health service delivery in Ghana. Today health service delivery is provided by the GHS (www.moh-ghana.org). The GHS is a government body established as required by the 1992 constitution under Act 525 of 1996 as part of the health sector reform in Ghana. It is an autonomous executive agency mandated to provide and prudently manage comprehensive and accessible health care service with special emphasis on primary healthcare at the regional, district and sub district levels in accordance with approved national policies. The objectives of the service are to: implement approved national policies for health delivery in Ghana, increase access to good quality health service and, manage prudently resources available for the provision of the health service (www.ghanalealthservice.org). To achieve these objectives, the GHS’s functions include:

- Developing appropriate strategies and set technical guidelines to achieve Ghana national policy goals and objectives
- Undertaking management and administration of the overall health resources within the service
- Promoting healthy living and good health habits among Ghanaians
- Determining changes for GHS with approval of the Ministry of Health (MOH)
- Providing in-service training and continuing education for health human resources in Ghana

The functions and objectives of the institution clearly point to providing an overall effective health care to the general populace. A key strategy for achieving this is making health information available to all stakeholders of public health, including the mostly disadvantaged rural communities, to equip them with timely and relevant health information to positively impact health promotion, practices and disease control. A constant challenge in this respect is that of making adequate health information readily available to rural communities. To some extent these challenges can be attributed to the growing population, the complexity of modern day diseases, and the under-utilization of the traditional and new media for disseminating health information generally or to specific communities or groups.

It is in this context that this study was conceived to investigate the patterns and challenges of traditional and new media uses for disseminating health information to rural communities by the GHS, focusing on the Shai Osudoku district in the Greater Accra Region of Ghana, as a case study. There is also the hope that findings from the case would provide valuable lessons for improving the entire health information dissemination system across the country. The specific objectives of the study are:

1. To identify the media by which the Ghana Health Service delivers health information and the media used by community members to access health information in the district.
2. To investigate the benefits of using media and emerging technologies to disseminate and access health information
3. To find out the challenges encountered in providing and accessing health information using media.

This study would provide policy-makers with findings to develop strategies and working policies to assist individuals in rural and remote areas in Ghana, which could also prove relevant in other sub-Saharan African countries. The study would also benefit various stakeholders in the health sector of Ghana, including the Ghana Health Service and Ministry of Health, by enhancing their understanding of the possible, effective and efficient modes of promoting and disseminating health information to rural communities. The study also contributes to existing knowledge in the area of health information dissemination to rural communities.

Literature Review

**Media for Health Information Dissemination (HID)**

Johnson & Meischke (1991) identified two main sources of health related information, namely interpersonal and mass media sources. The interpersonal sources of health information include doctors, nurses, family and friends, health groups, voluntary organisations, and other professions allied to medicine. These face-to-face information channels are preferred for information dissemination and the teaching of complex skills that need two-way communications between individuals (Parrott, 2004). The mass media sources include TV, radio, posters, books, magazines and newspapers, videos and the internet. In the view of Mills and Sullivan (2000) and Parrott (2004), media related sources normally offer broad coverage so that communicated messages reach a vast number of the target audience quickly and frequently.

Petro and Clark (1984), maintain that sources of information are best understood and regarded as sources by individuals in an attempt to respond to their questions. They use them to instantly satisfy their information needs or to answer questions about their own health or the health of someone who is important to them (Pietro & Clark, 1984). People’s use of information sources is dependent on their socio-economic and demographic characteristics. Cutilli (2010) and Gombeski et al. (1982), for example, have shown that individuals who have high literacy level access health information from written sources such as newspapers, magazines, books, and brochures whereas those with low literacy level access health information from television and radio and other interpersonal sources. Furthermore, individuals who consult multiple sources have greater chances of getting necessary information for making decisions about their own health than those who depend on a single source.

Beyond the variety of sources of health information, individuals’ health information seeking behaviour has also been of great research interest in many countries. Most studies of health information have examined how individuals seek and obtain information about health and illness. For example, Spadaro (2003) investigated the source of health information for European Union citizens and discovered that the majority of Europeans use health professionals (pharmacists, doctors, etc.) as their primary sources of health information. A similar study conducted in the United States showed that doctors, nurses, and other health professionals were selected as the primary source of health information by a greater percentage of the population. Connell & Crawford’s 1988 research involving two Pennsylvania counties and investigating how residents’ age and gender influenced their attainment of health information noted that the youngest and oldest age groups received and preferred printed materials as their primary sources on health information whereas the middle age groups preferred television. Printed materials were also cited as the most regularly mentioned sources of health information for women, while no particular health information source was predominant for men (Connell & Crawford, 1988). Still, both the European and US studies demonstrate that citizens from both regions seek most health information from interpersonal sources.

A 1988 study which investigated the information seeking behaviour of pregnant women in the United States revealed that a greater number of women gave priority to health care providers and books as important sources of information on health (Aaronson et al, 1988). Their research also examined the relationship between information sources and socio economic status of pregnant women and found
that women of higher socioeconomic status (SES) mostly depended on books and less on family as compared to those women of lower socioeconomic status. Davies & Bath’s 2002 study on the interpersonal sources of health and maternity information for Somali women living in the UK revealed that women prefer and make use of information from a wide range of interpersonal sources. Accordingly, most of the women rely highly on information from general practitioners and from information sought in health visits as their primary sources. They also consulted information sources like friends and neighbours (Davies & Bath, 2002).

Studies on sources of health information focusing on various health issues have also been published from developing countries including some in Africa. Pigato’s 2001 study examined the link between information and communication technology and information in sub-Saharan Africa and South Asia and revealed that the economically disadvantaged as well as people living in rural areas where information technology networks do not exist or are not well developed, use informal sources of information. For instance, while rural Nepalese and Indian communities prefer informal networks to formal sources of information and depend on and trust informal networks like family, friends and village local leaders for their information needs, they do not trust formal sources like non-governmental organisations, newspapers, politicians, and schoolteachers (Pigato, 2001).

Similarly, Gavgani (2010) indicates that among the health information seekers in Iran, passive seekers outnumber active ones. Television and group discussions were frequently used to seek health information as were search engines Google and Yahoo. Also, a significant proportion of the population searches for information on health by visiting public libraries and making good use of such information sources as medical magazines and books. In Spain, mass media are intensively used in public health, with considerable financial investment put into the output and distribution of various media through which health information is disseminated for example, newspaper articles, brochures, and radio and television programs annually (Catalán-Matamoros, 2011). To Catalán-Matamoros (2011), these media are used at all strata of public health information dissemination with the aim of having three effects: firstly, promoting learning of accurate health information and knowledge; secondly, changing people to healthy attitudes and values; and thirdly, organisation of new health behaviour.

Wathen & Harris (2006) examine the health information seeking experiences of rural dwellers in Ontario, Canada. In their study, they discovered that women were active information seekers for their own health and for the health of their family members. The Ontario rural women identified friends and family as sources of health information (Wathen & Harris, 2006). In contrast to the above finding, Hossain & Islam (2012) explored the information needs and sources of health information among rural women in Bangladesh and found that, for them, broadcast media, mainly radio and television, are the primary sources of health information, alongside entertainment and other purposes (Hossain & Islam, 2012).

Shikawa & Yano (2008), in their systematic review disclosed that most people only use their physicians as a medium for information without conferring with other media as data supplements. Similarly, Koo, Krass & Aslani (2006) add that adult patients with low health literacy, who are suffering from rheumatic pain or other health-related illnesses, show no interest in seeking written information on medicine. Regarding information of individuals concerning their health from either personal or professional sources, Kutner, Greenberg & Paulsen (2006) aver that individuals with basic or low health literacy tend to employ radio, television, and healthcare professionals but people with higher level of health literacy use print sources such as health brochures, newspapers, books and magazines for health information.

Also vital as health information are such non-print sources as non-print sources here information technology, mobile telephones, tablets, PCs, and Internet, as indicated by Prensky (2004). According to Benigeri & Pluye (2003) health, Internet and mobile phones are viewed as real changes in the distribution of healthcare service administration and medical information, with a guarantee of transferring knowledge and data from health experts to the overall population and the other way around. Cline and Haynes (2001) noticed three primary ways that people might utilize the Internet to get to online health data: (i) hunting down health data; (ii) taking an interest in wellbeing care groups;
and (iii) collaborating with health experts. Dutta-Bergman (2004) reveals that as a rule, people who utilize the Internet as a medium of information were likely to be health cognizant and participate in numerous health related-exercises and practices. These practices might include consuming a balanced diet, taking part in necessary exercise, and going for consistent check-ups, which is in sharp contrast to people who do not access the Internet for health purposes.

Anasi, (2012) investigates the dissemination and spread of health data in Africa and demonstrates that numerous African nations use distinctive techniques and channels to disperse health information to most communities. While print, broadcast and other group channels have been generally utilized as a method of sharing health information and advancing different sorts of health issues, oral communication is also used in the dissemination of health information in numerous African nations. Besides utilizing normal speech, health messages are also conveyed as melodies, shows, stories, and talks (Anasi, 2012). In some rural African towns, town messengers as well as group and religious leaders also disperse health information. In addition, religious and global philanthropic associations join in the generation and sharing of health information (Anasi, 2012).

Momodu’s 2002 study examines rural Nigerian communities’ health information needs and their information seeking behaviour. Information sources identified in the rural communities include radio, television, newspapers, health extension workers and health agents. This research further indicated that rural communities look for information to handle the incidence of epidemic outbreaks, to identify the best treatment options, to get good health facilities and to entreat the government to support them in their health problems. Women in particular were found to be interested in seeking information on pre- and post-natal care and on immunization facilities for their children and themselves. Momodu, (2002) also identified illiteracy and language barriers as obstacles to health information dissemination in Edo State of Nigeria.

Another study in Nigeria by Popoola (2000) examines consumer health information needs and services. Participants in the study use informal source of health information and the information obtained from these informal sources are found to be less reliable and accurate. Omotoso et al. (2013) also explored the health information needs of Nigerian students and found that students’ health information needs are diversified. The study further hints that the respondents look for information on various issues including sexual health, physical exercise, medications, alcohol, and body care. However, in spite of the high needs of information, the outcome of the research found that there is both low usage and less accessibility of information sources for students. Nwalo & Stella (2010) additionally investigated the availability of reproductive health data by in-school adolescent young women in Nigeria. The study revealed that parents are the most open sources of health information while the web was identified as the least available source of reproductive health information. The findings of the study uncovered that the students relied on interpersonal and mass media sources of reproductive health information to protect themselves from sexually transmitted infections, to make healthy decision on reproductive health matters and for self-knowledge and protection of undesirable pregnancy.

In a cross-sectional quantitative study by Andualem, Kebede & Kumie, (2013), majority of the respondents acknowledged the need of health information in their normal activities. Per the responses, 54.0% of respondents did not have access to health information. Only 42.8% of respondents had access to health information on the internet. Among other reasons the following emerged as barriers to health information accessibility: geographical location, economic standing, educational status and time limitations. Tsehay (2014) also explored the maternal health information sources of women residing in five villages in Ethiopia. A qualitative research paradigm was used and focus group discussions and in-depth interviews utilized. The outcome of the study revealed that lack of knowledge, perceived personal risk of health problems, and seeking a healthy life are the main factors that motivate women to seek for information. The study further documents how women have sought and used varieties of interpersonal and media related sources to meet their maternity information needs during the process of their reproductive life. In addition, all maternity sources, health extension workers and health professionals were identified as the most usually used and reliable sources of health information.
In a study that investigated the information needs and information-seeking behaviour of rural dwellers residing in three non-urban villages in Botswana, Mooko (2005) found that rural dwellers need various kinds of information on socioeconomic issues including health care services, poverty and economic development. Their needs seem to reflect the overall situations that the women faced in the society. The findings further showed that women needed health information that would make them more effective and improve their general health and family issues. The study also found out that among the rural folks, medical practitioners were mostly consulted in cases where they wanted to seek information on health whereas printed materials, political leaders, and sales representatives were the least consulted.

Nwagwu & Ajama (2011) examine the health information needs, sources and information seeking behaviour of people living in rural Nigeria. Using data collected through focus group discussion and a questionnaire, the research reveals that women owned and used radios more than other sources and they sought health information mainly for themselves and their children. More than ninety (90 %) respondents reported that they needed information about malaria, of which they received most of the information from friends and families. As the research further explains, the respondents relied on traditional sources for health information and visited health services when they are seriously sick. However, for respondents in a study in Kenya (Naanyu et al. 2013), public media and health care providers were their major sources of health information for family planning issues. Furthermore, the research indicated that health care providers frequently shared or spread health information using the health education sessions and pregnancy follow-ups visits in which most of the women participated.

Einarsdóttir, Passa & Gumlaugsson, (2001) conducted a study to explore local ideas about cholera and the dissemination or spreading of official health educational messages for cholera prevention and to assess whether such messages contributed to changed behaviour in the population in Guinea-Bissau. The findings of the study revealed that local preventive rituals performed contributed significantly to the awareness of the epidemic. Radio and word-of-mouth communication are regarded as the most important sources of information on cholera; however, posters and television did not effectively get to the population. Omogor (2013) also conducted a similar study in Nigeria to explore the channels of health information acquisition and dissemination among rural dwellers. The descriptive research approach was employed in the study. It revealed that town-criers, marketplaces, socio-political meetings, traditional festival, lecture and exhibition, television, radio, and newspapers are vehicles of information that are used to get and distribute health information among rural inhabitants.

In addition to the above studies on the African continent, Nwagwu & Ajama (2011) carried out a study in Nigeria to explore the health information needs, sources, and information seeking behaviour of women living in a rural palm plantation community. The survey demonstrated that nine out of every ten of the respondents reported that they needed health information about malaria, which they obtained mainly from friends, families or chemist shops. The survey also reported that the women relied on traditional sources of information, and they practiced self-medication guided by prior diagnosis and visited the hospital when their health condition deteriorated. Omedo et al. (2014) also opine that communication campaigns influence health behaviours and create awareness for disease control interventions, which may ultimately improve health care.

**Media for Health Information Dissemination in Ghana**

Numerous studies have been conducted on specific aspects of health communication in Ghana. Generally, these studies demonstrate that conveying health information to rural Ghana requires introducing communication material in a way that rural persons are acquainted with and making space for exchange and input from community members. Cultural awareness on most occasions influence the way that medical information is successfully imparted in Ghana. For example, while comparing the utilization of customary medication with Western biomedical drugs, Ghanaians commonly tend to utilize traditional medicine since it is completely incorporated in Ghanaian ways of life and they are more comfortable with it than biomedical medicine (Aries, Joosten, Wedgda & van der Geest, 2007). This preliminary comprehension of the weight given to known information sources is an important part of Ghanaian culture that should be understood when conveying biomedical health information to the populace.
A study conducted by Wolf & Bond (2002) affirms that peer education tends to increase the behavioural change of adults and adolescents due to the similarities that may exist between the educator and the target. In Ghana, these demographic similarities, along with trends toward the familiar, can be observed in effective health communication. In the latter part of the 1940s, when health communication to the Ghanaian people by the government began, attempts at showing film clips and using other innovative technology were not successful. It was only through the utilization of specially designed puppet shows and performances directed to the specific ethnic groups that the expected conduct and awareness level change happened (Du Sautoy, 1958). The best communication strategy for developing countries is based on the idea of integration with the community. However, merely improving a person’s understanding of an issue might not necessarily lead to a change in behaviour and improving consciousness singly does not hold people responsible for their own health. Ford, Abimbola, Renshaw & Nkum (2005) opine that the adoption of participation, self-determination and the inclusion principle in the information delivery strategy had a fundamental impact in helping people understand why certain health behaviour was wrong. They aver further that permitting people to deliver input on how health data is going to help them change by both talking over different communication channels to be used and setting goals for desired change together provide such responsibility. This body of literature makes clear that the closer a message is to the culture, expectations, and lifestyle of individuals and the more integrated the advert campaign is with such characteristics, the more effective health information can be passed on and behavioural change achieved among the Ghanaian public.

There have been some studies carried out to identify the best communication channels to reach Ghanaians. For example, in their 2007 study on the application of a vitamin procedure of health information dissemination in a Ghanaian village, Hill, Kirkwood, Kendall, Adjei, Arthur & Agyemang (2007) revealed that radio is the best way to communicate because, although a majority of Ghanaians do not personally own a radio, most have access to one. In addition, their study further revealed that information sources such as radio, town cries, and market announcements were very much popular and more effective compared to TV, billboards, newspapers, amongst others. Examining this data and the more traditional, less mass media-oriented methods popular among rural Ghanaians, adds credence to another study conducted on the importance of folk-media as a communication channel. Folk media is a medium that uses communication methods already in place in certain villages to discuss important issues, consisting of health education, disease prevention and care. Since this type of communication is totally embedded in the culture of a specific community, it turns to increase the belief and trust of the audience and thereby increases the likelihood of its effectiveness (Panford, Nyaney, Amoah & Aidoo, 2001).

A specific example of this situation was seen in the successful Stop Aids Love Life HIV/AIDS prevention campaign. This campaign, according to Hopkins (2003), used song and dance through multiple media channels like TV and radio to reach Ghanaians across the country. The song was sung in English, Ga, and Twi among other languages. The campaign promoted the use of abstinence, being faithful and using condoms – thus the ABC of prevention – and was a success. Moreover, it must be noted that this message increased the individual views on HIV risk, causes and prevention. Also testimonies from Ghanaians living with HIV or AIDS were used as a source of health information. The study further revealed that this form of health campaign was one of the successful health communication strategies since it employed different strategies, used different languages and different media platforms as well as live testimonies.

Bosompra (1987) also conducted a case study on two Ghanaian villages and explored the rural dwellers sources of health information in relation to popularity and credibility. The study reveals that conversation was the most popular but least trusted source of health information. However, the radio came second both in terms of popularity and credibility, whereas information from health officers was found to be the first and most reliable (Bosompra, 1987). An interesting finding among the mentioned African focused studies on sources of information is that most of Africans sought and relied heavily on information from interpersonal sources rather than other channels. With an expected two thousand doctors serving a populace of about 24 million inhabitants, doctors in Ghana need a dependable correspondence framework for leading meetings and referring patients (Kay, Santos & Takane, 2011).
With backing from New York University and in a joint effort with a mobile telephony supplier in Ghana, and Switchboard (a US-based non-benefit making association) the Ghana Medical Association (GMA) launched the Mobile Doctors Network (MDNet)/Medicareline program in Ghana in 2008. This service also gives free mobile to-mobile voice and text service to every one of the doctors in Ghana as of now enrolled with the Association. More recently, a restricted mass SMS service has been enabled, permitting GMA to send data to doctors about national crises and gatherings, and in addition to contact specialists within a particular specialty. Kay, Santos & Takane, (2011) also assert that this service provides patients the opportunity to assess health information using their mobile phones.

Overall, previous research has proved the importance of using folk-media and the incorporation of culturally apt channels during health campaigns in Ghana. In addition, information being disseminated by personal contact during peer education is tremendously effective, although the impact on public health initiatives has not been examined. In all, integration, appropriate channels and personal contact have been shown to be truly effective Ghanaian communication strategies.

**Challenges of Disseminating and Accessing Health Information in rural communities**

NORC at the University of Chicago (2010) has it that there has been considerable amount of documentation regarding general barriers to adoption and implementation of health information technology. Additionally, access to modern communication technologies and medical assistance is a problem for the majority of people living in developing countries, particularly in rural communities (Clifford et al., 2008). Findings from a study conducted in Ghana by Aryee (2014) shows a considerable use of mobile phones for disseminating and seeking of health information in rural communities in Ghana. Findings from the study show that health-related activities performed on and with mobile phones include:

(i) inquiring about health concerns from friends, family, or healthcare personnel
(ii) practicing teleconsultation, and telehealth with health help lines that address specific health issues such as pregnancy and cholera outbreak;
(iii) clarifying any health symptom before travelling to healthcare centres
(iv) scrutinizing counterfeit medications entering the country

However, the effectiveness of this media for disseminating and accessing health information is influenced by the interplay of a number of individual factors including a person’s age, gender, level of education, individual innovativeness (National Research Council, 2011), the community’s cultural practices (Van Biljon & Kotzé, 2008), and the nature of information content sought (Chetley, Davies, Trude, McConnell, Ramirez, Shields, et al. 2006). These factors, in the view of van Biljon & Kotzé, are referred to as social constructs. Rashotte (2006) defines a social construct as a change in an individual’s thoughts, feelings, attitudes, or behaviours that results from interaction with another individual or a group. On the other hand, the influence includes: cultural practices and interests of an individual, such as beliefs, about using for example mobile phones to get important information about health as a mode of promoting a healthy lifestyle (Gerber et al., 2009; Green & Potvin, 2002; Nutbeam, 2000); demographic attributes of an individual and the kind of health information to access on the mobile phone; an individual’s security and privacy of information beliefs and concerns.

According to the National Research Council (2011) and Ouma, Herselman & VanGrauen (2011), several factors come together to influence the delivery of Mobile-Health services within communities in particular. In most cases, these elements do not operate in isolation; rather, a combination of two or more, many of which are uncontrolled elements such as demographic, environmental, and socio-economic status. The challenges/factors are categorized under three main clusters: (i) socio-economic and demographic factors including: (a) age; (b) level of education; and (c) income; (ii) technological features and service impacts; (iii) cultural beliefs and practices about health including individuals’ beliefs about health care in general and beliefs about access to health information.

Socioeconomic factors, according to Kwon & Chidambaram (2000), are a major mediating factor that may have influence on the adoption of various media platforms for accessing health information. Cline & Haynes (2001) sum these variations of access to health information based on socio-economic factors and name this factor the digital divide. Socio-economic status affecting device usage includes
variables akin to an individual’s job status, level of education, and income of most people in the rural communities. In addition, Ojo (2006) states that a high level of illiteracy, poverty, and absence of basic infrastructure prevents most people from adopting most new media device for accessing health information.

One major barrier to the implementation of any media platform be it radio, television and more recently mobile phones to access health information in rural communities in Ghana is a reliable network system to provide and access health information between health personnel to patients (Biljon & Kotzé, 2008; Jeng, Chen, Yin, Yang, Tsai, & Yeh, 2004). The network is perceived to be about how useful and easy the device is to an individual in terms of its features and reliability (Biljon & Kotzé, 2008). For Chetley et al. (2006), the problem with connectivity involves access to electricity, solar power options, and network connectivity. Similarly, Ashraf, Gine & Karlan (2005) observe that sometimes an undependable phone network for example makes it difficult to maintain or use the device, especially in rural and other medically underserved communities. Idowu, Cornford & Bastin (2008) assert that most traditionally hard-to-reach individuals are without an electrical power supply. Hence, it becomes difficult to maintain the device.

In the modern technological world, the establishment of a literate society and a system for the continuous exchange of ideas is very necessary. Olayide (1990) observes that rural people lack amenities like roads, good water supply, schools, health centres and markets. He also asserts that lack of indigenous capabilities for the acquisition and spreading of information have been creating great hindrances in many developing countries. Lack of knowledge of how to use proper instructional materials such as books, radio sets, films, slides, television, records and cassette player to mention only a few, can hinder effective communication and acquisition of new skills. Ochogwu (1998) opines that although the Nigerian information service is based on the experience of professionals, the users of the information are hardly consulted before acquisition. Omogor (2013) also observes that inadequate knowledge of the information needs of users constitutes formidable barriers to information communication. He further opines that information agents seem to be ignorant of users information needs. He also notes that lack of cooperation among related information systems form hindrances to the flow of information. Adeniyi (2007) observes that the requisite information for development has become extremely segmented, divisive and uncoordinated. For information to achieve the desired results in the rural communities, the sources that provide for the flow of information should not be monopolized and politicized. Availability as well as accuracy and currency of information is necessary to the rural dwellers.

Mtega & Ronald (2013) also investigated the factors influencing accessibility of rural information services in Tanzania. Categorically, the study revealed the kinds of information services provided in rural areas, identified the sources of information used by rural people and determined the hindrances to accessibility of information services in rural areas in Tanzania. The methodology used in the study was a meta-analysis methodology where studies on information services in rural areas in Tanzania were analysed. It was discovered that there were several information sources used in rural areas starting from simple face-to-face communication to modern interactive ICTs including the mobile phones. Even though there are a considerable number of sources of information available, several factors limited the accessibility of information services in rural areas. Findings of the study show that high illiteracy levels, poor/unreliable information infrastructure, low income, absence of electricity and high cost of ICTs have negatively affected the accessibility of information services in rural areas. The usage of technical languages in repackaging information, inadequacy of time to access information and geographical isolation also serve as barriers to accessing of information services in rural areas.

**Methodology**

A research design provides the appropriate framework that specifies how data relating to a given problem should be collected and analysed to expand knowledge and understanding. This study employed the case study approach. According to Yin (1984), case study research is an empirical inquiry that investigates a contemporary phenomenon within its real life context when the boundaries between phenomenon and context are not evident. Furthermore, case study research utilises multiple sources of evidence. This study focused on Shai Osudoku district which has all the elements of a rural
district. The target population of the study were people living in the Shai Osudoku district who come to Dodowa hospital, and community members of five of the twenty-four health CHPS zones within the district. The total population of the district according to the statistical services report of 2014 stood at 55,741. The study employed a questionnaire as its main instrument for data collection, complemented with information obtained through interviews of two directors with the GHS and four community health workers. Convenient and purposive sampling techniques was used to sample 210 community members within Shai Osudoku district for the questionnaire survey. Descriptive analyses were used to examine the quantitative data, while qualitative thematic content analysis was used for the interview data collected from the GHS staff. The Statistical Package for Social Sciences (SPSS) version 21.0 was employed to process the quantitative data.

Findings and Discussions

Preferred Modes of Access to Health Information

Mass media, including TV, radio, posters, books, magazines and newspapers, videos and the internet, is also another source of health information (Mills & Sullivan, 2000). Mills and Sullivan (2000) and Parrott (2004) view media related sources as normally offering broad coverage for the communication of messages to reach a vast number of the target audience quickly and frequently.

Table 1 summarized the responses of the respondents when asked in which mode/medium they would prefer the health information. Four out of every five of them (80.8%) preferred it in video format, while just slightly above half of them (53.8%) preferred cell phone voice and text communication. Only a third of them (33.2%) preferred books as a format for putting information across, while 20.2%, 22.6%, 47.1%, 31.3%, 22.6% of them preferred pamphlets, magazines, audio cassette, newspapers and computers CDs, respectively. These findings indicate that respondents preferred electronic to traditional media for getting health information.

<table>
<thead>
<tr>
<th>Table 1: Mode/Medium preferred for of health information dissemination</th>
<th>Frequency</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you prefer video as a format for seeking health information</td>
<td>Yes</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>20</td>
</tr>
<tr>
<td>Would you prefer books as a format for seeking health information</td>
<td>Yes</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>119</td>
</tr>
<tr>
<td>Would you prefer pamphlets as a format for seeking health information</td>
<td>Yes</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>146</td>
</tr>
<tr>
<td>Would you prefer audiocassette as a seeking format for health information</td>
<td>Yes</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>90</td>
</tr>
<tr>
<td>Would you prefer magazines as a format seeking for health information</td>
<td>Yes</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>139</td>
</tr>
<tr>
<td>Would you prefer newspapers as a format seeking health information</td>
<td>Yes</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>123</td>
</tr>
<tr>
<td>Would you prefer computer and CDs as a format for seeking health information</td>
<td>Yes</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>141</td>
</tr>
<tr>
<td>Would you prefer mobile phone voice and text communication as a format for seeking health information</td>
<td>Yes</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>76</td>
</tr>
</tbody>
</table>

Bosompra’s 1987 study reveals that conversation was the most popular but least trusted source of health information. Radio came second in terms of both popularity and credibility, whereas information from health officers was found to be the most reliable. But, in a later study by Hill et al. (2007) on how to administer vitamins in a Ghanaian village, radio was considered to be best way to
communicate because most of the people had access to radio, although most did not personally own one. Furthermore, other information sources such as town cries, and market announcements were very popular and more effective compared to television, billboards and newspapers among others. The contrast of these earlier findings in 1987 and 2007 with those of this study in 2017 seems to reflect the changing technological environment of Ghanaians where access to television, video and mobile technologies and devices is already deep in urban areas and gradually or rapidly improving in different rural areas.

Again, from other parts of the continent, a study by Nwagwu & Ajama (2011) examined the health information needs, sources and information seeking behaviour of people living in rural Nigeria. Using data collected through focus group discussion and questionnaire, the research revealed that women owned and used radios more than other sources and they sought health information mainly for themselves and their children (Nwagwu & Ajama, 2011). Also, Einarsdóttir, Passa, & Gunnlaugsson (2001) conducted a study in Guinea-Bissau to explore local ideas about cholera and the dissemination or spreading of official health educational messages for cholera prevention, and to assess whether such messages contributed to changed behavior in the population. Their research concluded that local preventive rituals performed contributed significantly to the awareness of the epidemic.

Radio and word-of-mouth communication are regarded as the most important sources of information on cholera; however, posters and television did not effectively get to the population (Einarsdóttir, Passa, & Gunnlaugsson, 2001). Omogor (2013) also conducted a similar study in Nigeria to explore the channels of health information acquisition and dissemination among the rural dwellers. Using the descriptive research approach, the study revealed that town-criers, marketplaces, socio-political meetings, traditional festivals, lectures and exhibitions, TV, radio, and newspapers are vehicles of information that are used to get and distribute health information among rural inhabitants. Omedo et al. (2014) also opine that communication campaigns influence health behaviours and create awareness for disease control interventions which may ultimately improve health care. All these studies confirm the findings of the current study in which it was found that interpersonal modes as well as radio are major channels of health information delivery modes employed to promote health understanding and improve healthcare.

**Perceived importance and benefits of Emerging Technologies**

Acheampong (2011) asserts that “the internet has become a very useful infrastructure in utilising the opportunities of the digital revolution. Technological convergence and the development of multi-media services and increasing business applications of the internet have made access and usage a fundamental issue in the participation in the information society”. However, media and use of new technologies can be fully harnessed if ICT and technological models are put in place and inculcated into daily lives of the rural folks, which brings to focus Lucas’s (2008) discussion of the role that recent advances in information and communication technologies (ICTs) could play in improving health systems in developing countries, but limited independent analysis of existing applications. Combining a case study approach with a general discussion of the issues, this paper attempts to assess the potential benefits of a diverse range of ICT innovations and some of the constraints they will need to overcome. Four broad areas are considered: improvements in traditional health information systems; computer-aided diagnosis and treatment monitoring; a range of applications generically labelled ‘telemedicine’; and the use of ICT to inform general populations on health and healthcare.

The respondents’ views were sought on the emerging new technologies. They were asked if mobile phones, television, internet and radio are likely to promote health education, make accessible health information and improve healthcare in the rural areas in the district. As reported in Table 2, of the 208 respondents, 105 (50.5%) answered in the affirmative in respect of mobile phones, while for percentages for the other new media are: television (78.4%), internet (49.5%), and radio (63.5%). These results suggest that overall, 60.7% of the respondents recognized the important role these electronic and emerging technologies are likely to play to facilitate delivery and access to health education and to improve the dissemination of health information in the rural areas.

The respondents were further asked if they had heard about MoTech, which is a media platform being employed by Ghana Health Service to disseminate health information to mobile phones, supported by
the Grameen Foundation. A very high majority (79.3%) of the respondents said they had not heard about MoTech, while 72.1% of the respondents said they had not sent or received health information via their mobile phone. When asked “would you like to receive health information through your cell phone”, 83.2% of them affirmed. The above responses imply that the majority of the respondents had no awareness or experience of MoTech yet.

**Table 2: Perceived importance of electronic technologies for health information provision and access**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>105</td>
</tr>
<tr>
<td>No</td>
<td>103</td>
</tr>
</tbody>
</table>

Table 3 presents the findings of the study on the respondents’ perceptions of the benefits of media and emerging technologies for health information dissemination. A very high proportion (69.2%) agreed with the following benefits of the technologies: ‘use of visuals helps in understanding messages better’ (69.2%); ‘available timely health information to use in emergencies’ (68.7%); ‘widens access’ (59.1%); ‘use of mobile phones to communicate with health workers regarding any information regarding their health’ (53.9%), and ‘variety of sources to choose from’ (48.6%).

These perceptions are in general agreement with those of Moorhead (2013) that social media provide health information on a range of conditions to both the general public and health professionals, can provide answers to medical questions, allows information to be presented in modes other than text; bring health information to audiences with special needs; videos can be used to supplement or replace text and can be useful when literacy is low. A range of social media platforms can facilitate dialogue between patients and patients, and patients and health professionals. Thus, as Acheampong (2012) states, “ICT has assisted in driving down healthcare costs and improved the delivery and effectiveness of healthcare services through help in disease management, improved patient safety and decision support for practitioners.”

**Challenges in Accessing Health Information**

It has been stated that access to modern communication technologies and medical assistance is a problem for the majority of people living in developing countries, particularly in rural communities (Clifford et al., 2008). In this age of information communication technology, the use of mobile phones in healthcare delivery system has not only become relevant but also very necessary (Aryee, 2014). One of the biggest challenges confronting the use of the mobile phones for healthcare is network problems.

As summarized in Table 4, about between 50 and 60 per cent of the respondents affirmed that the following factors were important challenges they were facing in accessing adequate health information for their needs: limited information source (50.7%); lack of understanding (56.1%); lack of electricity to recharge phone battery or use television (59.1%); low network connectivity (59.2%); lack of funds (41.8%). These results indicate that the many people in the district were likely experiencing these challenges in their attempt to access health information.

For Chetley et al. (2006), the problem with connectivity involves access to electricity, solar power options, and network connectivity. Similarly, Ashraf, Gine & Karlan (2005) observe that sometimes an undependable phone network for example makes it difficult to maintain or use the device,
especially in rural and other medically underserved communities. Idowu, Cornford & Bastin (2008) assert that most traditionally hard-to-reach individuals are without an electrical power supply and therefore it becomes hard to maintain electronic devices (Biljon & Kotzé, 2008; Jeng, Chen, Yin, Yang, Tsai, & Yeh, 2004). Bukachi & Pakenham-Walsh (2007) describe factors like lack of resources, such as poor infrastructure and road network, and inadequate political commitment to and support for information accessed on the Web for health purposes, as traditional obstacles. Malhotra & Galletta (1999) add another factor known as individuals’ attitudes toward technological usage. In other words, employing a mobile phone to execute an activity may largely depend on personal preference and the importance of that activity to an individual. Parveen & Sulaiman (2008) note, for example, that adopting mobile phones as a new media to execute any form of activity whether health-related or not is probably dependent on the individual’s acceptance of the devices as an explorative and learning tool.

Table 3: Perceived benefits of emerging technologies in accessing health information

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety of sources to choose from (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>101</td>
<td>48.6</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
<td>18.7</td>
</tr>
<tr>
<td>Not sure</td>
<td>52</td>
<td>25</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>16</td>
<td>7.7</td>
</tr>
<tr>
<td>Widens access (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>123</td>
<td>59.1</td>
</tr>
<tr>
<td>No</td>
<td>50</td>
<td>24.0</td>
</tr>
<tr>
<td>Not sure</td>
<td>30</td>
<td>14.4</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>5</td>
<td>2.4</td>
</tr>
<tr>
<td>Available timely health information to use in emergencies (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>143</td>
<td>68.7</td>
</tr>
<tr>
<td>No</td>
<td>38</td>
<td>18.3</td>
</tr>
<tr>
<td>Not sure</td>
<td>23</td>
<td>11.1</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Use of visuals helps in understanding messages better (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>144</td>
<td>69.2</td>
</tr>
<tr>
<td>No</td>
<td>31</td>
<td>14.9</td>
</tr>
<tr>
<td>Not sure</td>
<td>21</td>
<td>10.1</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>12</td>
<td>5.7</td>
</tr>
<tr>
<td>Use of mobile phones to communicate with health workers regarding any information regarding their health (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>124</td>
<td>53.9</td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>19.7</td>
</tr>
<tr>
<td>Not sure</td>
<td>37</td>
<td>17.8</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>6</td>
<td>2.9</td>
</tr>
</tbody>
</table>

There are several daunting challenges with regard to the use of mobile phones in health-related activities. According to Michael (2006), in Egypt, these factors are cost, perceptions of risk, reliability of telephone systems in health facilities, safety, liability, and cost recovery for unknown contacts as well as information and services provided at a distance, lack of understanding and use of a range of functions available through mobile phones and poor quality of health services. In another study, Haddon & Vincent (2007) noted the cost of phone service as the biggest challenge for individuals, especially among youth, to use the device for any form of activities. A systematic literature review conducted by Dégli, Suggs & Odermatt (2012) on the use of the SMS feature for disease prevention in developing countries such as India, Kenya, and South Africa, identified main barriers to include language, timing of messages, mobile network fluctuations, lack of financial incentives and data privacy.
Table 4: Challenges in accessing health information

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limited information source (n=207)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>105</td>
<td>50.7</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
<td>18.8</td>
</tr>
<tr>
<td>Not sure</td>
<td>50</td>
<td>24.2</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>13</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Lack of understanding (n=205)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>115</td>
<td>56.1</td>
</tr>
<tr>
<td>No</td>
<td>54</td>
<td>26.3</td>
</tr>
<tr>
<td>Not sure</td>
<td>31</td>
<td>15.1</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>5</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Lack of electricity to recharge phone battery/ or use television (n=208)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>123</td>
<td>59.1</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>28.4</td>
</tr>
<tr>
<td>Not sure</td>
<td>23</td>
<td>11.1</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Low network connectivity (n=206)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>122</td>
<td>59.2</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>24.8</td>
</tr>
<tr>
<td>Not sure</td>
<td>26</td>
<td>12.6</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Lack of funds (n=208)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87</td>
<td>41.8</td>
</tr>
<tr>
<td>No</td>
<td>78</td>
<td>37.5</td>
</tr>
<tr>
<td>Not sure</td>
<td>37</td>
<td>17.8</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>6</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Individuals living in rural areas frequently experience these daunting challenges involved in employing the device to perform health related activities. In addition to the above challenges, other influential factors include a person’s age, gender, level of education, and individual innovativeness. These factors, in the view of van Biljon & Kotze, are referred to as social constructs. Mtega & Ronald (2013) also investigated the factors influencing accessibility of rural information services in Tanzania. Findings of the study show that high illiteracy levels, poor/unreliable information infrastructure, low income, absence of electricity and high cost of ICTs have negatively affected the accessibility of information services in rural areas. Aryee, (2014) opines that rural communities in Ghana face several health care challenges including limited healthcare, and health information provision and this level of satisfaction demonstrated by respondents affirms the general health information system provided by the Ghana Health Service.

**Conclusion**

Rural communities in Ghana face several health related challenges including limited healthcare facilities and poor road conditions that make access to health facilities difficult. Health promotion through direct and remote health information dissemination and education is crucial in order to adequately equip communities with needed information and advice to improve their health. Mass media are not only for disseminating health information to the right many people at the right time to promote behavioural change. Culture-based media and radio media had been traditionally and long-standing popular means for accessing health information in rural communities, but new information and communication technology media, particularly video and mobile phone are gradually complementing and sometimes replacing these as the recognized, preferred or used media for accessing and disseminating such information. The Ghana Health Service (GHS) has been exploiting
traditional print, radio and TV to promote information access by communities, as well as the pilot use of some of the new media, such as MoTech programme. However, the level of awareness and actual experience of programmes that use the new media appears very low, at least in the surveyed communities.

**Recommendations**

- The GHS should strategize to exploit more the overwhelming and complementary advantages of diverse forms of print and electronic media to disseminate health information.
- The GHS must also exploit the full interactivity of the mass and electronic media, which allows rapid feedback and change between communicators and audiences.
- The GHS must organize from time to time public sensitization programmes to educate people on how to use their mobile phones to interact with the health professionals in the districts. This will ensure that the people are always in touch with their healthcare providers so they can easily solicit for any information on their health.
- Health information delivery programmes that utilize emerging technologies, such as the MoTech, have great potential to reach more people on the move and in rural communities quickly and cheaply per person, and should be designed, tested and rolled out nationally to aid health workers in their service delivery.
- The use and impact of the new technologies can be maximized if the problem of poor inadequate infrastructure in rural areas, specifically electricity, mobile network and radio/TV coverage is addressed. The adequate improvement of such infrastructure should be a vital national development agenda pursued vigorously by all the responsible national public agencies and private organizations such as electricity and mobile network operators and regulators, guided and coordinated by government policies. The GHS and technology organizations and bodies should collaborate and partner to bring Internet access into more rural communities in the country.
- It is recommended that development projects on health should involve the use of visuals such as images and videos to tell health stories as a way of promoting health information dissemination and education in rural communities where literacy levels are likely to be low. Health literacy programmes targeting skill improvement should be organized regularly by the GHS for the benefit of people with marginal literacy skills, with health information and education provided to match their capabilities.

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Media use for health information dissemination to rural communities by the Ghana Health Service


The Composite Budget of the Shai Osudoku District Assembly for 2014 composite year.


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