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Reproductive Health Information Needs and Access among Rural Women in Nigeria: A Study of Nsukka Zone in Enugu State

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Abstract
This article presents a study of the reproductive health information needs and access practices of rural women in Nsukka Cultural Zone, Enugu State, South East Nigeria. Three hundred and fifty women from 14 rural Nsukka communities were surveyed and 335 responses analysed. It was found that the main reproductive health information needs of the women were related to infertility; use of contraception; abortion; prevention of sexually transmitted diseases; antenatal care; and postnatal care. The main existing sources of reproductive health information were found to be: friends and relations; hospitals and health centres; churches; women's organisations; and radio and television. Fewer than half (46%) of the women participants were found to be accessing reproductive health information using their mobile phones. The author recommends enhanced rural development approaches that include: information provision through mobile communications; opening of rural libraries and information centres with Internet hubs; and sustainable adult literacy campaigns focused on reproductive health information.

Keywords
reproductive health information, information access, rural communities, mobile information access, Nigeria

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1. Introduction: The problem of reproductive health information access

Women in rural Nigeria require information to advance their reproductive health. The study outlined in this article examined the reproductive health information needs of rural women in the Nsukka Cultural Zone of Enugu State in South East Nigeria. Specifically, the study sought to: identify the major reproductive health information needs of women; find out what were the existing governmental and/or non-governmental information access structures in the women's localities that could meet these information needs; determine the women's existing sources of reproductive health information; determine the challenges faced by women in accessing reproductive health information; and recommend strategies for improved access to reproductive health information.

Since the middle of the 20th century, there has been a gradual increase in awareness of the important role of women in households and in socio-economic development. The United Nations (UN) signed a charter for equal rights for women in 1945. A call on the global community for the increased involvement of women in national and international affairs accelerated gender studies. This call was given international support when the UN declared 1975 International Women's Year. The same year saw convocation of the first International Women's Conference in Mexico, followed by conferences in Copenhagen (1980), Nairobi (1985) and Beijing (1995) (UN, 1995). In these conferences, women's reproductive health and welfare in rural areas topped the agenda (Mongella, 1995). The concern about women in rural areas, particularly in developing countries, relates to their literacy rates, poverty, and vulnerability to diseases and social inequalities, despite their critical role in development (Kongolo & Bamgose, 2002). It is for these reasons that the UN (1995) called for abolition of all forms of discrimination against women and You, Hug and Anthony (2015) called for the empowerment of women so as to promote their access to reproductive health. Provision of adequate and timely health information is critical to empowering women in developing countries. Women seek health information for themselves and their families (Wathen & Harris, 2007). Health information is critical in health care delivery and health promotion, as it provides the direction and rationale for positive health behaviours, facilitates efficient treatments, and enhances proper decisions on health matters (Kreps, 2005). According to Saleh and Lasisi (2010), health information constitutes 20% of the information needs of rural women in Northern Nigeria. Usually, reproductive health information constitutes a large proportion of these health information needs.

Women's socio-economic conditions affect their reproductive health. Women suffer discrimination in many aspects of life, including health care discrimination (Okojie, 1997; WHO, 2014a), economic discrimination (Goutier 1995; Fatusi & Hindin, 2010; Daley & Pallas, 2014), nutritional discrimination (Shiva, 1993; Tinker et al.,

1994; Ngwena, Brookman-Amissah, & Skuster, 2015), educational discrimination (Martin, 1996) and political discrimination (Mongella, 1995; Nnadi, 2012). In many developing countries, this discrimination starts early in life. Developing-world women are often economically dependent on men (Piot, Greener & Russell, 2007) and, accordingly, tend to resort to means of survival that lead to high-risk behaviours, such as prostitution, early marriage, teenage pregnancy and abortion. These problems are exacerbated in rural areas, where access to health care facilities and up-to-date health information is often lacking.

South East Nigeria, one of six geographical zones in the country, is made up of five states, namely Abia, Anambra, Ebonyi, Enugu and Imo. With respect to demographics, the 2006 census estimated the population of the South East zone at 16.4 million, comprised of 8,246,604 females and 8,184,951 males (National Population Commission, 2006). The population of the South East zone is mainly agrarian, with a sizeable proportion of traders and civil servants. Enugu, one of the states in the zone, has predominantly a rural population, mostly focused on subsistence farming, with only a few of these rural people engaged in trading and provision of public services. In the urban areas of Enugu State, trading is the dominant occupation, followed by services, with a small proportion of the population engaged in manufacturing activities. Nsukka Zone is one of the three Cultural Zones in Enugu State.

2. Rural women's reproductive health challenges and information needs

Studies have identified teenage pregnancy and abortion as major challenges (National Population Commission, 2009; Okereke, 2010). Evidence from developing countries shows that teenage mothers are likely to face severe complications during delivery, leading to high mortality rates (Fatusi & Hindin, 2010; Rasheed, Abdelmonem & Amin, 2011; UNICEF, 2005). A report by the World Health Organisation (WHO, 2016) indicates that there are 520 deaths per 100,000 unsafe abortions in sub-Saharan Africa. According to Leke (2014), the African continent has the highest abortion-related maternal mortality ratio, with 100 abortion-related deaths against 100,000 live births in 1990 and 80 deaths against 100,000 live births in 2008, four times higher than Asia and eight times higher than Latin America. Cohen (2012) and Geleto and Markos (2015) have found that abortion is becoming increasingly concentrated in developing countries with high rates of poverty and illiteracy, where these abortions are typically conducted in a clandestine and unsafe manner.

Apart from this, some traditional practices such as female genital mutilation, virginity tests, and violence related to dowry and widowhood, compound the reproductive health challenges of women in developing countries. Among these, female genital mutilation poses the most reproductive health challenges and seems to have a wider

geographical spread globally. Victims of female genital mutilation can be infected with illnesses such as HIV/AIDS, tetanus or gangrene, and suffer from urine retention, injury and long-term reproductive problems. According to the 1995 UN figures (UN, 1995), about 2 million girls living in 26 African countries and in a few Asian countries were estimated to be at risk from this practice every year. More recently, Yoder, Wang and Johansen (2013) estimated the total number of women aged 15 years and above who had undergone genital mutilation in 27 African countries and Yemen at 87 million. UNICEF (2013) and WHO (2014b) have reported that more than 125 million girls and women in 29 countries in Africa and the Middle East are victims of genital mutilation. The practice continues despite its abolition by the UN General Assembly in 1954 (UN, 1995).

Another reproductive health challenge is increasing violence against women. WHO (2013) found that 35% of women globally had experienced physical and/or sexual intimate-partner violence, or non-partner sexual violence, while 38% of all murders of women were committed by intimate partners. Rape has been identified as one of the greatest global health challenges for women.

India and Nigeria account for one third of all global maternal deaths (WHO, 2014). Doctor et al. (2012) observed that maternal mortality in Northern Nigeria appeared to be the worst in the world, with 1,000 maternal deaths per 100,000 live births in 2008. Reproductive health challenges and high mortality rates have been attributed partly to lack of reproductive health information (UN, 1996; Doctor et al., 2012, Rai et al., 2012).

The HIV/AIDS scourge in sub-Saharan Africa is another serious reproductive health challenge for women. Early exposure to sexual experience and lack of sex education expose females to unwanted pregnancy and sexually transmitted diseases including HIV/AIDS. A recent study by Lince-Deroche, Hargey, Holt and Shocket (2015) found that young women in South Africa are at high risk of unintended pregnancy and HIV-AIDS infection. A much earlier study by UNDP (1993) found that woman between 15 and 25 years accounted for 70% of HIV infection among females globally. The HIV/AIDS prevalence rate in South East Nigeria has been estimated at 3.1% (UNAIDS, 2015).

3. Reproductive health information access and dissemination

Nigeria's rural areas suffer from inadequate information access, with major contributors to this deficit being high levels of poverty, irregular power supply, and, in turn, inadequate electronic communications access (mobile, Internet). Access to electronic information is a major challenge in the rural areas due to irregular power supply and low Internet bandwidth, compounded by high levels of poverty among the rural dwellers, making it difficult for them to purchase mobile phones. This challenge has been underscored in the studies of Akinfaderin-Agarau, Chirtau,

Ekponimo and Power (2012) and Okuboyejo and Eyesan (2014). Information has been identified as a vital tool in combatting health challenges facing women in the developing-world (Nwagwu & Ajama, 2011; Ezema & Ugwuanyi, 2014; Murakami et al., 2015) and in improving women's reproductive health (Martin, 1996; Thapa, 1996). Martin (1996, p. 181) found that "most of the unnecessary deaths and disease burden could be prevented through application of low-cost effective technologies in medical care and provision of health information to parents and child care-takers". Lince-Deroche et al. (2015) found that one of the most successful methods of reducing health challenges, such as unintended pregnancy and HIV/AIDS infection, is women's access to reproductive health information. Dipeolu (1992) and Ravallion, Van de Walle, Dutta and Murgai (2015) document the neglect of the supportive roles of library and information centres in promoting health information provision in Nigeria. Literature demonstrates the paucity of reproductive health information available to rural women in Nigeria, while what is available is often oral (Nwagwu & Ajama, 2011), or not packaged in languages and format familiar to them.

Advances in information and communication technology (ICT) provide a new platform for health information dissemination in the form of mobile health (m-health) information. Mitchell, Bull, Kiwanuka and Ybarra (2011), in a study of secondary students in Uganda, found that 61% of students agreed that they can access text messages from their phones for the prevention of HIV/AIDS, an indication of the increasing use of m-health in Uganda. Lester et al. (2010) found that patients using text messaging, through their mobile phones, linked to their antiretroviral therapy (ART) adherence, had significantly greater ART adherence rates and rates of viral suppression compared to patients not usign the text-messagingt service**.** In Kenya, Zurovac et al. (2011) found the use of text messages to be efficient in the prevention and treatment of malaria. The use of social media platforms such as Twitter has also been found to be effective in health information dissemination (Scanfeld, Scanfeld & Larson, 2010). This demonstrates the potential for effectiveness of m-health in health information dissemination.

In Nigeria, the use of the mobile phone in addressing reproductive health challenges has been investigated by Akinfaderin-Agarau et al. (2012), who found that, while there is high access to mobile phones among adolescent girls and young women, their access to mobile sexual reproductive information and services is low. It was found that the major barriers to the utilisation of the mobile phone for reproductive health information are the cost of the services and lack of awareness. Similarly, Olatokun and Adeboyejo (2009), investigating the use of ICT by reproductive health workers (RHWs) in University College Hospital Ibadan, Nigeria, found extensive use of ICT among them. However, a major challenge to utilisation was erratic public power supply. Egbule, Agwu and Uzokwe (2013) found the use of mobile phones to be efficient in addressing the information needs of rural dwellers in Delta State, Nigeria. The study revealed that about 97% of the respondents (extension workers)

had mobile phones and interactions with the rural dwellers were through phone calls (84.4%) and text messages (71.9%). Okuboyejo and Eyesan (2014) developed a mobile technology-based alert system using text messages and voice features of mobile phones to remind patients of dosing schedules and adherence to medical appointments for outpatients.

4. Methodological discussion: Survey of women respondents in rural Nsukka Zone, Enugu State

My study was conducted in 2015. Enugu State was chosen for this study because of the large population of rural dwellers and the observed prevalence of reproductive health challenges. Nsukka is one of three Cultural Zones in Enugu State. Nsukka is made up of seven local government areas and hosts the country's first indigenous (established post-independence) university, the University of Nigeria, Nsukka. The majority of the communities in Nsukka Zone, being rural-agrarian, lack basic facilities, such as good road networks, good health facilities, electric power supply and libraries. The latest national population census put the total population of Nsukka Zone at 1,377,001, with women numbering 713,286, or 51.8% of the population (National Population Commission, 2006).

The study adopted a combination of random and purposive sampling techniques. The purposive sampling technique was used to select two rural communities from each of the seven local government areas in the Nsukka Zone, generating a total of 14 communities to be studied. The 14 communities were purposively selected, based on their having all the attributes relevant to rural communities. Then a random sampling technique was used to select women who participated in the study, being a random sample of the women who attended the general meeting called for the purposes of the research. Greater percentages of the women in these areas are farmers, traders, teachers and health workers. The study surveyed 350, or about 0.05% of the women in Nsukka Zone following Nwala's (1981) specification on sampling a large population. According to Nwala, if the population is several thousand, a 5% or lower sample will be adequate. Thus, from a population of 713,286 females, 350 women were sampled, 25 women from each community under study.

The instrument for data collection was a structured questionnaire with closed-ended questions for which there were only four possible responses: strongly agree (SA), agree (A), disagree (D), strongly disagree (SD). Participants with low literacy levels were assisted in completing the questionnaire through being allowed to respond verbally to the questions (with the questions translated from English into local languages). To ensure anonymity, the questionnaire had no provision that could personally identify the respondent. Out of the 350 questionnaires distributed, 335 (96%) were returned and found valid for analysis.

The data were analysed using means and percentages in relation to the objectives of the study. The mean rating for each item number was based on a four-point scale and the mean ratings of the items were calculated.

The study adopted a Likert scale for scoring the statements according to the respondent's attitude to the statements. The decision rule was determined by a division of the sum of the Likert scales of 4, 3, 2 and 1 by the 4-point scale. That is:

$$\frac{10}{4} = 2.5 \frac{10}{4} = 2.5$$

Therefore, mean scores of 2.5 and above were regarded as positive while scores below 2.5 were treated as negative.

5. Results: ICT for reproductive health information access

As Table 1 shows, the highest proportion of women were aged between 31 and 35 years, while those within the age range of 20 to 35 constituted almost 50% of respondents. More than 57% of respondents had only primary or no formal education, indicating low literacy rates.

Table 1: Respondent demographic data (n = 335)

	Respondent profile	Number	Percentage [%]
Age range	20-30 years old	76	22.7
	31-35 years old	108	32.2
	36-45 years old	65	19.4
	46-55 years old	45	13.4
	55 years old or above	41	12.2
	Total	**335**	**100**
Educational qualification	No formal education	62	18.5
	Incomplete primary education	38	11.3
	Primary education certificate	92	27.5
	Secondary education certificates (WASC/SSC/TCII)*	81	24.2
	Tertiary education certificates (NCE/ND)**	36	10.7
	Tertiary education certificates (HND degree certificate)***	26	7.8
	Total	**335**	**100**

Marital status	Married	153	45.7
	Single	135	40.3
	Divorced	3	0.9
	Separated	2	0.6
	Widow	42	12.5
Total		**335**	**100**

**WASC =West African School Certificate; SSC = Senior School Certificate; TCII = Teacher's Grade 2 Certificate*
***NCE = National Certificate in Education; ND = National Diploma*
****HND = Higher National Diploma*

Table 2 below displays the women's responses when asked about their health information needs, indicating that the five major reproductive health information needs related to fertility; the use of contraception; abortion-related information; information on sexually-transmitted diseases; and information on managing unintended pregnancy. Information on female genital mutilation and rape-related cases had low mean scores. A possible explanation for these lower ratings is that the respondents did not feel comfortable discussing these subjects.

Table 2: Reproductive health information needs (n = 335)

Rank	Types of information needs	SA*	A	D	SD	Mean
1	Information related to infertility	180 (54%)	101 (30%)	38 (11%)	16 (5%)	3.3
2	Information on use of contraception, family planning	176 (53%)	106 (32%)	35 (10%)	18 (5%)	3.3
3	Abortion-related information	95 (28%)	190 (57%)	39 (12%)	11 (3%)	3.1
4	Information on prevention and control of sexually transmitted diseases	109 (33%)	164 (49%)	42 (12%)	20 (6%)	3.1
5	Information on managing unintended pregnancy	98 (29%)	107 (32%)	87 (26%)	43 (13%)	2.8
6	Information on antenatal and postnatal care	101 (30%)	87 (26%)	74 (22%)	73 (22%)	2.6
7	Information on managing rape-related challenges	67 (20%)	45 (13%)	167 (50%)	56 (17%)	2.4
8	Information on female genital mutilation	34 (10%)	49 (15%)	185 (55%)	67 (20%)	2.1

**SA = strongly agree (score of 4); A = Agree (3); D = Disagree (2); SD = Strongly disagree (1)*

Table 3 shows participants' responses when asked about existing governmental and non-governmental information access structures, indicating that, at a local level,

hospitals/health centres, markets, schools, churches and women's organisations were regarded as the five main information access structures for reproductive health information, followed by community-based organisations (CBOs). Libraries and information centres were not highly rated as sources of health information in the surveyed areas relative to the top five.

Table 3: Existing governmental and non-governmental information access structures (n = 335)

Rank	Existing information access structures	SA	A	D	SD	Mean
1	Hospitals/health centres	165 (49%)	158 (48%)	8 (2%)	4 (1%)	3.5
2	Markets	168 (50%)	134 (40%)	23 (7%)	10 (3%)	3.4
3	Schools	56 (17%)	67 (20%)	97 (29%)	115 (34%)	2.8
4	Churches	87 (26%)	153 (45%)	46 (14%)	49 (15%)	2.8
5	Women's organisations	96 (29)	112 (33%)	64 (19)	63 (19%)	2.7
6	Community-based organisations (CBOs)	43 (13%)	76 (22%)	167 (50%)	49 (15%)	2.3
7	Libraries and information centres	37 (11%)	66 (20%)	154 (46%)	78 (23%)	2.2
8	Banks	16 (5%)	34 (10%)	130 (39%)	155 (46%)	1.7

Table 4 below shows that, out of 15 possible health information sources, participants highlighted personal contact with friends and relatives, hospitals/health centres, churches, women's organisations, and radio and TV as the top five information sources. ICTs and ICT-enabled content (mobile and Internet communications, and social media) were noted as information sources, though they were rated comparatively low, at 8, 10 and 12 out of 15.

Table 4: Sources of reproductive health information (n = 335)

Rank	Information sources	SA	A	D	SD	Mean
1	Personal contact with friends and relations	198 (59%)	97 (29%)	39 (12%)	1 (0.2%)	3.5
2	Hospitals/health centres	201 (60%)	95 (29%)	21 (6%)	18 (5%)	3.4
3	Churches	188 (56%)	107 (32%)	30 (9%)	10 (3%)	3.4
4	Women' organisations	109 (33%)	167 (50%)	43 (13%)	16 (5%)	3.1

5	Radio and television	111 (33%)	153 (46%)	67 (20%)	4 (1%)	3.1
6	Town criers	74 (22%)	163 (49%)	82 (24%)	16 (5%)	2.9
7	Schools	87 (26%)	90 (27%)	118 (35%)	40 (12%)	2.7
8	Mobile phones (text messages/ calls)	73 (22%)	81 (24%)	132 (39%)	49 (15%)	2.5
9	Community-based organisations (CBOs)	45 (13%)	78 (23%)	186 (56%)	26 (8%)	2.4
10	Internet (via cybercafés, libraries, personal computers)	47 (14%)	86 (26%)	102 (30%)	100 (30%)	2.2
11	Newspapers, news magazines	31 (9%)	57 (17%)	174 (52%)	73 (22%)	2.1
12	Social media (e.g., Facebook, WhatsApp, Twitter)	21 (6%)	34 (10%)	230 (69%)	50 (15%)	2.1
13	Libraries and information centres	44 (13%)	42 (13%)	107 (32%)	142 (42%)	2.0
14	Workshops/seminars	12 (4%)	37 (11%)	208 (62%)	78 (23%)	1.9
15	Posters/handbills	25 (8%)	31 (9%)	154 (46%)	125 (37%)	1.9

Table 5 below shows that, when asked about challenges to access to reproductive health information, the respondents ranked lack of power supply to access electronic information from radio, TV and Internet very strongly (90% agreement), giving that challenge the same mean score (3.4) as lack of information access structures (89% agreement) and the high rate of illiteracy (88% agreement). The only challenge ranked higher was the challenge of health workers failing to organise workshops and seminars for discussion of reproductive health issues (95% agreeement, and a mean score of 3.6). Also in the top six challenges were rural women's reticence towards discussing reproductive health issues (71% agreement) and the provision of information in formats unfamiliar to rural people (67% agreement).

Table 5: Challenges of accessing reproductive health information (n = 335)

Rank	Challenges	SA	A	D	SD	Mean
1	Health workers hardly organise seminars or workshops on reproductive health	225 (67%)	95 (28%)	10 (3%)	5 (2%)	3.6
2	Lack of adequate information access structures such as libraries, hospitals, schools, etc.	193 (58%)	103 (31%)	28 (8%)	11 (3%)	3.4
3	High illiteracy rate	188 (56%)	109 (32%)	34 (11%)	4 (1%)	3.4

4	Lack of power supply to access electronic information from radio, TV and Internet	178 (53%)	124 (37%)	21 (6%)	12 (4%)	3.4
5	Much of the information appears in format strange to rural dwellers	121 (36%)	104 (31%)	67 (20%)	43 (13%)	2.9
6	Rural women shy away from discussing reproductive health issues	75 (22%)	164 (49%)	67 (20%)	29 (9%)	2.9
7	Secrecy about reproductive health information	86 (25%)	117 (35%)	73 (22%)	59 (18%)	2.7
8	Health workers shy away from discussing sexual information	41 (12%)	123 (37%)	78 (23%)	93 (28%)	2.3
9	Health workers lack the training to provide reproductive health information	12 (4%)	42 (12%)	127 (38%)	154 (46)	1.7

Table 6 below presents the respondents' ranking of various possible strategies for more efficient access to reproductive health information, indicating what rural women see to be desirable, with the highest-ranked strategies being the establishment of good information access structures in the rural areas (almost 100% agreement) and reduction of the illiteracy rate through the provision of adult education facilities (98% agreement). Provision of electricity power supply for the purpose of information access through mobile communications and the Internet (82% agreement) was also ranked in the top five strategies.

Table 6: Strategies for efficient access to reproductive health information (n = 335)

Rank	Strategies	SA	A	D	SD	Mean
1	Provision of good information access structures in the rural areas	182 (54%)	150 (45%)	2 (0.6%)	1 (0.3%)	3.5
2	Provision of adult education facilities to reduce illiteracy rate	149 (45%)	177 (53%)	8 (2%)	1 (0.3%)	3.4
3	Posting of health information extension workers in the rural areas	156 (47%)	134 (40%)	31 (9%)	14 (4%)	3.3
4	Creating greater awareness of reproductive health education	104 (31%)	194 (58%)	30 (9%)	7 (2%)	3.2
5	Provision of electric power supply in rural areas	112 (33%)	198 (59%)	18 (6%)	7 (2%)	3.2
6	Translation of existing information into local languages	66 (20%)	243 (73%)	24 (7%)	2 (0.6%)	3.1
7	Organisation of reproductive health workshops in rural area.	112 (33%)	168 (50%)	43 (13%)	12 (4%)	3.1

6. Discussion: Crossing the digital divide in rural Nsukka Zone

The five main reproductive health information subject areas prioritised by the surveyed women -- fertility, contraception, abortion, sexually-transmitted diseases, managing unintended pregnancy -- indicate key major health challenges for Nigerian women in rural Nsukka Zone in Enugu State. (The reasons for the finding of limited interest in information on rape-related issues are unclear, but the finding may have to some extent been due to the stigma associated with rape (Goutier, 1995; UN, 1996). Also unclear are the reasons why the majority of the respondents did not express a need for information on female genital mutilation.)

Two key findings were that: libraries and information centres were not ranked in the top five information access structures (Table 3) available in rural Nsukka Zone; and that among ICT platorms and ICT-delivered content, only the radio and TV category (and not the mobile telephony, Internet, or social media categories) was ranked in the top five information sources (Table 4).

The findings reveal that, in the year of study (2015), a number of issues were combining to limit the surveyed women's access to reproductive health information. The dearth of libraries and information centres; the limited availability of mobile phones, Internet and social media; and the limitations of power supply to access information from radio, TV and the Internet on an ongoing basis, mitigate against the empowerment of women with respect to access to reproductive health information -- at a time when information and electricity are available as basic infrastructures and services in almost all cities and towns across Nigeria, but not in rural villages.

At the same time, it is notable that, despite the limitations of mobile and Internet communications and of power supply, nearly half (46%) of the respondents agtreed that mobile phones, via texts and calls, were a source of reproductive health information. This finding corresponds with the findings of earlier studies (Akinfaderin-Agarau et al., 2012; Egbula, Agwu, & Uzokwe, 2013; Lester et al., 2010), representing an emergent dynamic in health information delivery in Nigerian rural communities. The finding, coupled with the available litrature, suggests that health workers and information extension officers in the rural areas of Nigeria should seek to exploit mobile communications more extensively for reproductive health purposes.

Another significant finding was that many of the surveyed women saw unfamiliar information formats for health information as an access challenge. This finding, coupled with findings in the extant literature (Amadi, 1981; Ezema, 2011), suggests the need for content repackaging in local languages and in non-textual oral and visual forms such as videos, radio and television in order to achieve wider access. While the preferred strategy of respondents for efficient access to reproductive health information (Table 6) was information access structures (e.g., libraries and information centres), just as important, in my analysis, will be the empowerment

of rural women through a combination of: education for advanced literacy (as highlighted by the studies of Ransome-Kuti (1991) and Tinker et al. (1994)); and information provision through mobile communications, including a mix of textual, audio and visual content formats and using the local languages of targetted rural dwellers.

7. Conclusion: Slow move towards mobile, investment needed in Internet

A history of reliance on oral sources of reproductive health information is slowly changing in rural Nsukka Zone. As the use of mobile telephony in accessing reproductive health information is evolving, as reflected in the findings, this evolution requires further investigation. Simultaneously, ICT infrastructure investment and basic mobile government communications are required in rural villages. Government should train health information extension workers, posted in rural communities, in the provision of health information to rural dwellers, via mobile phone communications. Since power supply is critical to effective information dissemination, particularly through electronic media, government and communities should also puruse rural electrification, which can use simple, low-cost solar infrastructure.

In addition, government should embark on providing basic information access structures, such as libraries with Internet hubs, that will improve access to reproductive health information. Such development can be based on counterpart funding, where the rural communities provide some small proportion of the funds. The aim should be to introduce library and information centres in every community. Library associations and other information professionals should mount advocacy campaigns in the communities and in government circles, and should sponsor bills in the states and in the National Assembly for provision of modern library and Internet facilities in rural communities.

References

Akinfaderin-Agarau, F., Chirtau, M., Ekponimo, S., & Power, S. (2012). Opportunities and limitations for using new media and mobile phones to expand access to sexual and reproductive health information and services for adolescent girls and young women in six Nigerian states. *African Journal of Reproductive Health*, *16*(2), 219-230. Available at https://www.ncbi.nlm.nih.gov/pubmed/22916554

Cohen, S. (2012). Access to safe abortion in the developing world: Saving lives while advancing rights. *Guttmacher Policy Review*, *15*(3). Retrieved from https://www.guttmacher.org/about/gpr/2012/10/access-safe-abortion-developing-world-saving-lives-while-advancing-rights

Daley, E., & Pallas, S. (2014). Women and land deals in Africa and Asia: Weighing the implications and changing the game. *Feminist Economics*, *20*(1), 178-201. http://dx.doi.org/10.1080/13545701.2013.860232

Dipeolu, S. (1992). Proposal for a structured national management health information system and its *modus operandi*. Paper presented at the National Conference on Health Management Information Systems, Abuja, 5-8 September.

Doctor, H. V., Findley, S. E., Ager, A., Cometto, G., Afenyadu, G. Y., Adamu, F., & Green, C. (2012). Using community-based research to shape the design and delivery of maternal health services in Northern Nigeria. *Reproductive Health Matters, 20*(39), 104-112. doi: 10.1016/S0968-8080(12)39615-8

Egbule, C., Agwu, A., & Uzokwe, U. (2013). Availability and use of mobile phones for information dissemination by public extension agents in Delta State, Nigeria. *Journal of Agricultural Extension*, *17*(2), 23-30. http://dx.doi.org/10.4314/jae.v17i2.4

Ezema, I. J. (2011). Information repackaging for the prevention and control of human trafficking in Nigeria. *Tin City Journal of Library, Archival and Information Science, 1*(2), 58-64. Available at https://www.researchgate.net/publication/281837081_Information_Repackaging_for_the_Prevention_and_Control_of_Human_Trafficking_in_Nigeria

Ezema, I. J., & Ugwuanyi, R. N. (2014). Access to information and implications for healthy ageing in Africa: Challenges and strategies for public libraries. *Library Philosophy and Practice, (e-journal).* Paper 1157. Available at http://digitalcommons.unl.edu/libphilprac/1157

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, *33*(4), 499-508. doi: 10.1016/j.adolescence.2010.05.019

Folayan, M., Harrison, A., Odetoyinbo, M., & Brown, B. (2014). Tackling the sexual and reproductive health and rights of adolescents living with HIV/AIDS: A priority need in Nigeria. *African Journal of Reproductive Health*, *18*(3), 102-108. Available at https://www.ncbi.nlm.nih.gov/pubmed/26050382

Geleto, A., & Markos, J. (2015). Awareness of female students attending higher educational institutions toward legalization of safe abortion and associated factors, Harari Region, Eastern Ethiopia: A cross sectional study. *Reproductive Health*, *12*(19). doi: 10.1186/s12978-015-0006-y

Goutier, H. (1995). The scales of justice are out of balance. *The Courier*, *154*, 54-57. Available at http://aei.pitt.edu/39199/1/Courier.154.pdf

Källander, K., Tibenderana, J. K., Akpogheneta, O. J., Strachan, D. L., Hill, Z., ten Asbroek, A. H., Conteh, L., Kirkwood, B. R., & Meek, S. R. (2013). Mobile health (mHealth) approaches and lessons for increased performance and retention of community health workers in low- and middle-income countries: A review. *Journal of Medical Internet Research 15*(1), 1-13. doi: 10.2196/jmir.2130

Kongolo, M., & Bamgose, O. (2002). Participation of rural women in development: A case study of Tsheseng, Thintwa and Makhalaneng villages, South Africa. *Journal of International Women Studies, 4*(1), 79-91. Available at http://vc.bridgew.edu/jiws/vol4/iss1/6

Kreps, G. L. (2005). Disseminating relevant health information to underserved audiences: Implications of the Digital Divide Pilot Projects. *Journal of the Medical Library Association*, *93*(4), S68-S73. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1255755/

Lester, R. T., Ritvo, P., Mills, E. J., Kariri, A., Karanja, S., Chung, M. H., Jack, W., Habyarimana, J., Sadatsafavi, M., Najafzadeh, M., Marra, C. A., Estambale, B., Ngugi, E., Ball, T. B., Thabane, L., Gelmon, L. J., Kimani, J., Ackers, M., & Plummer, F. A. (2010). Effects of a mobile phone short message service on antiretroviral treatment adherence in Kenya (WelTel Kenya1): A randomised trial. *Lancet*, *376*(9755), 1838-

1845. doi: 10.1016/S0140-6736(10)61997-6

Lince-Deroche, N., Hargey, A., Holt, K., & Shocket, T. (2015). Accessing sexual and reproductive health information and services: A mixed methods study of young women's needs and experiences in Soweto, South Africa. *African Journal of Reproductive Health, 19*(1), 73-81. Available at https://www.ncbi.nlm.nih.gov/pubmed/26103697

Martin, G. (1996). Women and children's health: Programme needs and priorities for the 1990s. In *Population and women: Proceedings of United Nations expert group meeting on population and women, Gaborone, Botswana, 2-26 June 1992* (pp. 180-188). New York: United Nations.

Mitchell, J., Bull, S., Kiwanuka, J., & Ybarra, M. (2011). Cell phone usage among adolescents in Uganda: Acceptability for relaying health information. *Health Education Research*, *26*(5), 770-781. Retrieved from https://www.researchgate.net/publication/51092750_Cell_phone_usage_among_adolescents_in_Uganda_Acceptability_for_relaying_health_information

Mongella, G. (1995). Women will bring the spirit of serving the people into politics. *The Courier, 154*, 2-3. Available at http://aei.pitt.edu/39199/1/Courier.154.pdf

Murakami, K., Turale, S., Skirton, H., Doris, F., Tsujino, K., Ito, M., & Kutsunugi, S. (2015). Experiences regarding maternal age-specific risks and prenatal testing of women of advanced maternal age in Japan. *Nursing and Health Sciences, 18*(1), 8-14. doi: 10.1111/nhs.12209

National Population Commission. (2006). *2006 Nigeria population census*. Retrieved from http://www.population.gov.ng/index.php/state-population

National Population Commission. (2009). *Nigeria demographic and health survey 2008*. Abuja: National Population Commission with ICF Macro. Retrieved from http://www.dhsprogram.com/pubs/pdf/FR222/FR222.pdf

Ngwena, C. G., Brookman-Amissah, E., & Skuster, P. (2015). Human rights advances in women's reproductive health in Africa. *International Journal of Gynecology and Obstetrics, 129*(2), 184-187. doi: 10.1016/j.ijgo.2015.02.001

Nnadi, I. (2012). An insight into violence against women as human right violation in Nigeria: A critique. *Journal of Politics and Law, 5*(3). doi: http://dx.doi.org/10.5539/jpl.v5n3p48

Nwagwu, W., & Ajama, M. (2011). Women's health information needs and information sources: A study of a rural oil palm business community in South-Western Nigeria. *Annals of Library and Information Studies*, *58*, 270-281. Retrieved from http://nopr.niscair.res.in/bitstream/123456789/12844/1/ALIS%2058(3)%20270-281.pdf

Okereke, C. I. (2010). Assessing the prevalence and determinants of adolescents' unintended pregnancy and induced abortion in Owerri, Nigeria. *Journal of Biosocial Science*, *42*, 619-632. doi:10.1017/S0021932010000179

Okojie, C. (1991). Social dimensions of the health behaviour of rural women: Findings from focus group research in Nigeria. Paper prepared for Seminar on Measurement of Maternal and Child Mortality, Morbidity and Health Care: Interdisciplinary Approaches, Cairo, 4-7 November.

Okuboyejo, S., & Eyesan, O. (2014). mHealth: Using mobile technology to support healthcare. *Online Journal of Public Health Informatics*, *5*(3). doi: 10.5210/ojphi.v5i3.4865

Olatokun, W., & Adeboyejo, O. (2009). Information and communication technology use by

reproductive health workers in Nigeria: State of the art, issues, and challenges. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments, 5*(2), 181-207. Retrieved from https://jyx.jyu.fi/dspace/bitstream/handle/123456789/22704/HT_2009_v05_n02_p181_207.pdf?sequence=1

Papworth, E., Schwartz, S., Ky-Zerbo, O., Leistman, B., Ouedraogo, G., Samadoulougou, C., Grosso, A., Drame, F., Diouf, D., Ketende, S. C., & Baral, S. (2015). Mothers who sell sex: A potential paradigm for integrated HIV, sexual, and reproductive health interventions among women at high risk of HIV in Burkina Faso. *Journal of Acquired Immune Deficiency Syndrome*, *68*, S154–S161. doi: 10.1097/QAI.0000000000000454

Piot, P., Greener, R., & Russell, S. (2007). Squaring the circle: AIDS, poverty, and human development. *PLoS Med 4*(10), 1571-1575. http://dx.doi.org/10.1371/journal.pmed.0040314

Rai, R., Singh, P. & Singh, L. (2012). Utilization of maternal health care services among married adolescent women: Insight from the Nigeria demographic and health survey. *Women's Health Issues, 22*(4), e407-e414. doi: 10.1016/j.whi.2012.05.001

Rasheed, S., Abdelmonem, A., & Amin, M. (2011). Adolescent pregnancy in Upper Egypt. *International Journal of Gynecology and Obstetrics*, *112*, 21-24. doi: 10.1016/j.ijgo.2010.08.006

Ravallion, M., Van de Walle, D., Dutta, P., & Murgai, R. (2015). Empowering poor people through public information? Lessons from a movie in rural India**.** *Journal of Public Economics, 132,* 13-22. Available at http://www.sciencedirect.com/science/article/pii/S004727271500167X

Rizo, J. (1996). Maternal mortality induced abortion and sexually transmitted diseases: impact of women's health during the production ages. In *Population and women: Proceedings of United Nations expert group meeting on population and women., Gaborone Botswana, 22-26 June 1992* (pp. 41-157). New York: United Nations.

Saleh, A., & Lasisi, F. (2010). Information needs and information seeking behavior of rural women in Borno State, Nigeria. *World Libraries*, *18*(2). Retrieved from http://worldlibraries.dom.edu/index.php/worldlib/article/view/136/91

Scanfeld, D., Scanfeld, V., & Larson, E. L. (2010). Dissemination of health information through social networks: Twitter and antibiotics. *American Journal of Infection Control*, *38*(3), 182-188. doi: 10.1016/j.ajic.2009.11.004

Shiva, V. (1993). The impoverishment of the environment: Women and children last. In M. Mies & V. Shiva (Eds.) *Eco-feminism* (pp. 70-90). London: Zed Books

Thapa, R. (1996). Women's participation and perspective in health issues: Working notes. In *Population and women: Proceedings of United Nations expert group meeting on population and women*, *Gaborone, Botswana, 22-26 June 1992* (pp. 175-180). New York: United Nations.

Tinker, A., Daly, P., Green, C., Saxenian, H., Lakshminarayanan, R., & Gill, K. (1994). *Women's health and nutrition: Making a difference:* World Bank Discussion Papers No. 256. Washington, DC. http://dx.doi.org/10.1596/0-8213-2991-X.

United Nations (UN). (1995). *United Nations and the Advancement of Women, 1945-1995*. New York: Department of Public Information.

UN. (1996). The Beijing Declaration and the Platform for Action. In *Fourth World Conference on Women, Beijing, China, 4-15 September, 1995.* New York: Department of Public Information.

UNAIDS. (2015). HIV and AIDS estimates 2015. Retrieved from http://www.unaids.org/

en/regionscountries/countries/nigeria/

UN Children's Fund (UNICEF). (2005). *Early* marriage*: A harmful traditional practice.* New York: UNICEF.

UNICEF. (2013). *Female genital mutilation/cutting: A statistical overview and exploration of the dynamics of change*. New York. Retrieved from https://www.unicef.org/publications/index_69875.html

Wathen, C. & Harris, R. (2007). "I try to take care of it myself": How rural women search for health information. *Qualitative Health Research*, *17*(5), 639-651. doi: 10.1177/1049732307301236

World Health Organisation (WHO). (2013). *Global and regional estimates of violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence*. Geneva. Retrieved from http://apps.who.int/iris/bitstream/10665/85239/1/9789241564625_eng.pdf

WHO. (2014a). *Trends in maternal mortality: 1990 to 2013 estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division.* Geneva. Retrieved from http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2013/en/

WHO. (2014b). Female genital mutilation. Fact sheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs241/en/

WHO. (2016). Preventing unsafe abortion. Fact sheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs388/en/

Yoder, P., Wang, S., & Johansen, E. (2013). Estimates of female genital mutilation/cutting in 27 African countries and Yemen. *Studies in Family Planning*, *44*(2), 18-204. Retrieved from https://www.jstor.org/stable/23408619?seq=1#page_scan_tab_contents

You, D., Hug, L., & Anthony, D. (2015). UNICEF report Generation 2030 Africa calls upon investing in and empowering girls and young women. *Reproductive Health, 12*(18), 1-4. doi: 10.1186/s12978-015-0007-x

Zurovac, D., Sudoi, R. K., Akhwale, W. S., Ndiritu, M., Hamer, D. H., Rowe, A. K., & Snow, R. W. (2011). The effect of mobile phone text-message reminders on Kenyan health workers' adherence to malaria treatment guidelines: A cluster randomised trial. *Lancet*, *378*(9793), 795-803. doi: 10.1016/S0140-6736(11)60783-6