Original Article

The Uptake of Cervical Cancer Control Services at a Cancer Information Service Center in Lagos, Nigeria

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Abstract

Background: There is currently an increase in the incidence of cervical cancer in Nigeria and cancer information service (CIS) is now assuming an emerging role in cervical cancer control. **Objectives:** The objective of this study is to assess the uptake of the CIS program and also determine the rate of positive screening using visual inspection with acetic acid (VIA) as a screening modality among the female CIS users in Lagos. **Materials and Methods:** This was a cross-sectional study carried out over a period of 1 year (January to December 2015), using a health communications program (mHealth). An initial period of public awareness was carried out over a 3-month period after which members of the public were encouraged to call the cervical cancer helplines. Cervical cancer information was provided by the callers and data were recorded by information specialists during the study. Data analyses were carried out using Epi info version 7.2 and descriptive statistics were computed for all data. Association between outcome of VIA screening and previous cervical screening were tested using the Fisher's exact test. Statistically significant result was reported at $P < 0.05$. **Results:** An average of 33 calls per month, equivalent to 4.4 per 100,000 population in Lagos state, was received during the study. Of the callers referred for screening, only 16 out of the 301 (5.3%) that presented had positive VIA test. There was about 1.9 fold risk of testing positive to VIA screening among the previously unscreened women compared to those with previous cervical screenings (crude odd ratio – 1.87, 95% confidence interval – 0.99–3.05, $P = 0.116$). **Conclusion:** There is a significantly low uptake of the CIS in Lagos, and there is an even lower practice of cervical cancer screenings among the CIS callers. However, the rapid growth of mobile phone use in Nigeria still presents a unique opportunity that can be explored to improve cancer care.

Keywords: Cancer information service, cervical cancer, Lagos University Teaching Hospital, mHealth, visual inspection with acetic acid

Introduction

Cervical cancer is the most common gynecological malignancy and a leading cause of cancer death in women in Nigeria.[1] It was ranked third among the most common cancers affecting women worldwide with an estimated 529,000 new cases in 2008, 85% of which were recorded in the developing countries.[2] Cervical cancer contributes to 20%–25% of all cancers among women in sub-Saharan Africa, about twice the percentage in women worldwide. In spite of the fact that cervical cancer is preventable, the prevalence is expected to increase to almost double the current rate by 2025.[3] Cervical cancer continues to cause the deaths of more than 270,000 women worldwide each year. About 80% of these occurred in developing countries, particularly in the rural areas. This is because in many developing countries, cervical cancer screenings are unavailable or are poorly accessible and the public still has limited knowledge about cervical cancer, and thus, women are less willing to undergo screenings. Low educational levels and misconceptions also contribute significantly to the low screening attendance.[4] Its prevalence in the Sub-Saharan African countries ranges from 30 to 40 per 100,000 women.[3,5] In Nigeria, cervical cancer kills one woman every hour and over 9000 women every year.[2] More than three-fourths of cervical cancer patients are diagnosed at advanced stages leading to poor prospects of long-term survival and cure. This is due to lack of public awareness, nonexistence

Access this article online

Quick Response Code:

Website: www.njgp.org

DOI: 10.4103/NJGP.NJGP_21_17

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How to cite this article: Okunade KS, Salako O, Adenekan M, Sunmonu O, Salawu K, Sekumade A, *et al*. The uptake of cervical cancer control services at a cancer information service center in Lagos, Nigeria. Niger J Gen Pract 2018;16:20-4.

of a national screening program, lack of infrastructure, and adequately trained health staff. It evidently constitutes a huge public health burden as the attendant loss of lives is needless due to its preventable nature.[6] Screening is currently viewed as the most effective approach for cervical cancer control, and it is associated with reduced incidence and mortality from the disease.[7]

Health-care systems are gradually moving toward new models of care based on integrated care processes shared by different caregivers and on an empowered role of the patient.[8] Mobile technologies are assuming an emerging role in this scenario. This is particularly true in care processes where the patient has a particularly enhanced role, as is the case of cancer supportive care.[9]

A cancer information service (CIS) is a service created to meet the cancer information needs of the public. It provides patient education, emotional support, and counseling services to people affected by cancer; a CIS is primarily about giving good quality, one to one information about cancer in response to people's questions.[10] A CIS can be provided by phone (mobile health), E-mail, short message service text, online chat or through social media (e.g., Facebook).

The benefits of a CIS are immense especially in developing countries were resource allocation is a constraint. Most successful CIS is dependent on volunteers; information by phone is cheaper than traveling to rural settings, easy to start up and not financially tasking. However, quality-assurance must be maintained to ensure the accuracy of information disseminated.[11] Mobile health (mHealth) is the most important component of CIS and it describes the use of portable electronic devices with software applications to provide health services and manage patient information. With approximately 5 billion mobile phone users globally, opportunities for mobile technologies to play a formal role in health services, particularly in low- and middle-income countries, are increasingly being recognized. Although still limited, there is growing evidence of success in using mobile phones for health (mHealth) to support the performance of health-care workers by the dissemination of clinical updates, learning materials, and reminders, particularly in underserved rural locations in low- and middle-income countries where community health workers deliver integrated community case management.[12,13]

In developed countries, CIS is integral components of the National Cancer Control Programme run by the Government and charities.[14] In 1996, the National Cancer Institute's CIS in the United States set up the first CIS and has encouraged the development of similar CIS programs globally, as evidenced by the formation of the international CIS group (ICISG) in 1996.[15] The ICISG is a worldwide network made up of over 50 organizations that provide free, high-quality CIS and resources on all aspects of cancer to those concerned or affected by cancer throughout the world. The website[16] features, a CIS and social media toolbox among other resources that support the start-up and or maintenance of a CIS. Up till date, our organization (Sebeccly Cancer Care and Support Centre) remains the only Nigerian full member of the ICISG since 2015 and have carried out a pilot study to assess the utilization of CIS for breast cancer control in Lagos in 2015.[8] This current study will thus build on the knowledge of the pilot study to assess the uptake of the CIS program among the Lagos populace and also determine the rate of positive screening using visual inspection with acetic acid (VIA) as a screening modality among the female CIS users in Lagos.

Materials and Methods

This is a descriptive cross-sectional study carried out at the Sebeccly Cancer Care and Support Center (Sebeccly) in Lagos state over a period of 1 year (January to December 2015). Lagos state is located in the South-western geopolitical zone of Nigeria. It is the smallest in the area of the 36 states of the federation. It is bounded on the North and East by Ogun State and in the West, it shares boundaries with the Republic of Benin. Behind its southern borders lies the Atlantic Ocean.[17] It has a population of 9,113,605 with 4,394,480 of these being of the female gender.[18] Sebeccly is a not for profit nongovernmental organization with headquarters in Lagos, Nigeria.[19] The Sebeccly CIS is a health communications program that promotes accurate information to the public, cancer patients and their loved ones through our mobile lines (mHealth).[19]

An initial period of awareness and sensitization to cover the entire Lagos State was carried out in the print and electronic media over a period of 3 months by the center to intimate the public on the scourge of cervical cancer and the availability of the mobile helplines and means of access. During and after this period, members of the public were given access to our information specialists through the helplines which were accessible on weekdays between 10 am and 4 pm daily except on public holidays. The information specialists who responded to these calls were trained to answer questions, give talks on cervical cancer screenings, counsel and invite callers to center for free cervical cancer screening, cancer navigation services, and treatment supports. The information specialists also recorded information on the sociodemographic characteristics and other relevant data of the callers. Information specialists also recorded information on the sociodemographic characteristics and other relevant data of the callers.

Descriptive statistics were computed for all data and presented as tables and chart. Data analyses were carried out using Epi Info version 7.2 statistical packages for windows manufactured by the US Centers for Diseases Control and Prevention, 1600 Clifton Road Atlanta, GA 30329-4027 USA. Association between cervical cancer screening and cervical cancer occurrence was tested using the Chi-square test. Ethical approval for this study was obtained from the Lagos University Teaching Hospital's Health Research and Ethics Committee.

Results

A total of 404 people were reached through the 3 designated help lines manned by the trained cancer information specialists during the study giving an average of 33 calls per month (equivalent to 4.4 per 100,000 population in Lagos state). A major proportion (95.0%) of the inquirers were based in Lagos state with about 94% being female and 52.7% belonging to the Yoruba ethnic group. The age range of the callers was 22–61 years with majority (45.0%) being in the 40–49 years age group [Table 1]. Most of the callers (81.7%) were married and had at least tertiary level of education (77.0%). A large majority (95.0%) of the callers owned a mobile phone.

As shown in Figure 1, the majority of the callers (81.2%) sought for cervical cancer screening information and services while 1.7% needed information for other reasons other than cervical cancer services. In Table 2, majority (87.9%) of the female callers had never had cervical cancer screening while 17 (4.5%) had been diagnosed with cervical cancer and were currently on treatment. All the confirmed cervical cancer patients were invited to the center for counseling, navigation services, and treatment supports. All callers without cervical cancer were also invited to the cancer center for screening with visual inspection using 3%–5% acetic acid VIA.

Of the callers referred for screening, only 16 out of the 301 (5.3%) that presented had abnormal (positive) VIA test. Only 23 (7.6%) of the screened women has had previous cervical cancer screenings of any form. There was about 1.9 fold risk of testing positive to VIA screening among the previously unscreened women compared to those with previous cervical screenings (crude odd ratio – 1.87, 95% confidence interval - 0.99–3.05, $P = 0.116$) even though this was not statistically significant. All the women who tested positive were referred for colposcopic examination.

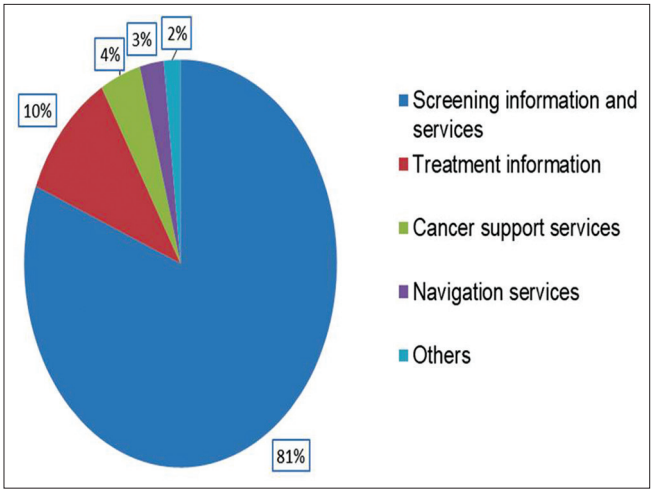

Figure 1: Reasons for calling the cancer information service helplines

Discussion

This study assessed the performance of the CIS program over a 1-year period (January to December 2015) and the study just like our pilot study[8] revealed a gross underutilization of the mobile health technology in accessing cancer information as evidenced by the significantly low number of callers recorded in this study relative to the population of about 9 million inhabitants in Lagos[18] despite of our intensive 3 months sensitization campaign. This finding was corroborated in a review article by Nasi *et al*[9] who opined

Table 1: Baseline characteristics of callers ($n = 404$)

Characteristics	Frequency (%)
Location of callers	
Within Lagos	384 (95.0)
Outside Lagos	20 (5.0)
Gender	
Female	379 (93.8)
Male	25 (6.2)
Age (years)	
20-29	60 (14.9)
30-39	91 (22.5)
40-49	182 (45.0)
50-59	67 (16.6)
60-69	4 (1.0)
Tribe	
Yoruba	213 (52.7)
Ibo	127 (31.4)
Hausa	25 (6.2)
Others	39 (9.7)
Educational status	
Uneducated	3 (0.7)
Primary	11 (2.7)
Secondary	79 (19.6)
Tertiary	211 (52.2)
Postgraduate	100 (24.8)
Marital status	
Single	47 (11.6)
Married	330 (81.7)
Widowed	27 (6.7)
Mobile phone ownership	
Yes	384 (95.0)
No	20 (5.0)
Total	404 (100.0)

Table 2: Screening history of female callers with or without cervical cancer

Previous cervical screening	Outcome of VIA screening		cOR (95% CI)	*P*
	Positive	Negative		
No	13 (4.7)	265 (95.3)	1.00 (reference)	0.116
Yes	3 (8.7)	20 (91.3)	1.87 (0.99-3.05)	
Total	16 (5.3)	285 (94.7)	301 (100.0)	

cOR: Crude odd ratio, VIA: Visual inspection with acetic acid, CI: Confidence interval

that the underutilization of mHealth in cancer control may depend on many issues, including environmental, regulatory, technological, organizational, and opportunistic questions. They also suggested that the underuse of mHealth could be due to a failure to embed it into broader information systems. This is largely true for us in Nigeria, and it may also be attributed to the level of poverty in the country which has resulted in the reduction in the health and health-seeking behavior of the populace.

A significant proportion of the inquirers (95%) in this study were based in Lagos state as the public awareness program was designed to cover only Lagos State just like our pilot study[8] and thus those inquirers from outside Lagos could possibly have heard of the service from friends or relatives who were residing in Lagos State. This study just like other similar telephone-based CIS studies[8,10,20] revealed that women comprised of the overwhelming majority of callers (93.8%) to the CIS lines. This can be explained by the fact that women are often the "gatekeepers" for health information and healthcare decision-making for their families[21] as well as the fact that cervical cancer is a female disease and this understandably resulted in more inquiries coming from the female populace.

Our study supported the theory that health-seeking behavior of individuals usually peaks at about the beginning of the middle age as majority of the callers recorded were within the 40–49 years age group just like the previous CIS study in Lagos.[8] The study showed that more than half (53.9%) of the respondents belonged to the Yoruba ethnic group and this may be attributable to the fact that the study was done in Lagos in the South-western part of the country, which comprised predominantly of the Yoruba ethnic group.[22] The high level of education of the callers (77% with tertiary education and above) probably confirmed that education plays an important role in the health seeking behavior of the public.[8,22] The high number of participants who called the cancer center with their personal mobile phones is also a confirmation of the findings from most studies that have suggested the rapid growth of mobile phone users in the low- and middle-income countries.[8,9,12-14] Majority of the callers, just like the pilot CIS study in Lagos,[8] called primarily to understand cancer prevention and to get information on where they can have their screenings done. This clearly showed that the helplines can bridge the wide gap in cancer information and education for the public.

The rate of abnormal VIA (5.3%) seen among the screened population of callers in this study was almost similar to the rate of 6% found in Benha city, Egypt by Mohamad *et al*[23] but much lower than the rates of 10.7% recorded by Poli *et al*. In India,[24] 10.9% by Chigbu *et al*. In Enugu, Nigeria[25] and 12% by Saleh in Zagazig, Egypt.[26] These variations may, however, be due to the different levels of training and experience of personnel involved in these screenings. The screenings in this study were performed by medical doctors and midwife nurses which may be a major factor in the eliminations of most false positive results.

The occurrence of positive VIA test in some of the previously screened women could be explained by the fact that no one test in medicine has been shown to be absolutely successful in reducing disease and death rate at a nominal cost. It was also evidenced that for cervical cancer screening to be effective, repetitive screenings at regular intervals are required and that a single, isolated, apparently normal screening test has less meaning than repeatedly normal screenings, which are associated with an extremely low incidence of dysplasia or cancer.[27] However, this study did not take into account the timing and regularity of the previous screenings done by the woman in question. Another factor that can also explain why women with a history of previously normal Pap smears sometimes have a newly diagnosed invasive cancer is related to the biology of the disease process.

A major limitation of this study was the inability to ascertain the actual number of intending callers who the center may have missed their calls especially during the nonworking days of the week or those who were willing to call but did not able to have access to a telephone line. Second, our sensitization campaign might actually not have gotten to the hard to reach population of people in the state who may not have access to any form of telecommunication network that were used during the exercise.

Conclusion

There is a significantly low uptake of the CIS in Lagos despite the rapid increase in the number of mobile telephone line users in the country and there is an even lower practice of cervical cancer screenings among the CIS callers. However, the rapid growth of mobile phone use in Nigeria still presents a unique opportunity that can be explored to improve cancer care. The formation of partnerships between governments, technologists, nongovernmental organizations, academia, and industry, can provide a great potential cancer control by facilitating improved health seeking behavior among Nigerians through intensive sensitization exercise on the use of mHealth technology.

Acknowledgment

The authors appreciate the efforts of all staff of the CIS unit of Sebeccly Cancer Care and Support Center. We are also grateful to the American Cancer Society for providing a part of the funding of the cervical cancer screening project.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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