

Cervical Cancer Screening: Awareness and Knowledge in Brazil

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Abstract:

Cervical cancer is one of the deadliest forms of cancer killing an estimated 260,000 women worldwide. Most deaths are in developing countries, where screening and treatment for precancerous lesions are unavailable or women have limited access to healthcare. This holds true for Brazil, as cervical cancer is the second leading cancer amongst Brazilian women killing an estimated of 8,400 women annually. Yet cervical cancer is

one of the easiest preventable cancers by routine human papillomavirus (HPV) and cytological tests. These have been proven to significantly decrease cervical cancer deaths and rising incidence rates. The state of Brazil has aimed to increase knowledge and awareness of cervical cancer screening and prevention through initiatives throughout the country. Other Latin American countries have implemented initiatives that found success in increasing awareness of cervical cancer screening in low resource settings. However, there are still challenges and barriers that women face in cervical cancer screening such as social economic factors. Nevertheless, the future of cervical cancer prevention is promising by increasing the availability of cytological tests, promoting screening efforts, and using evidence-based recommendations.

Introduction

Cervical cancer is a type of cancer that starts at the cells lining the cervix at the lower part of the uterus, which connects to the vagina (Mayo Clinic 2015). These cells do not become cancerous instantaneously, but gradually develop into pre-cancerous cells in an area called the transformation zone. Some women with pre-cancerous cells in the cervix will develop into cancer, while many women's pre-cancerous cells will go away on its own without any form treatment (American Cancer Society, 2015).

The World Health Organization (WHO) estimated that over 520,000 women are diagnosed with cervical cancer annually and over 260,000 deaths are due to this disease (Bruni, Barrionuevo-Rosas, Albero *et al* 2015) (**Figure 1**). Cervical cancer ranks as the 4th cause of female cancer in the world and the 2nd most common cause of cancer in women ages 15 to 44 years old (Bruni, Barrionuevo-Rosas, Albero *et al* 2015). Many deaths are from developing countries, where detection and treatment for pre-cancerous lesions and cells

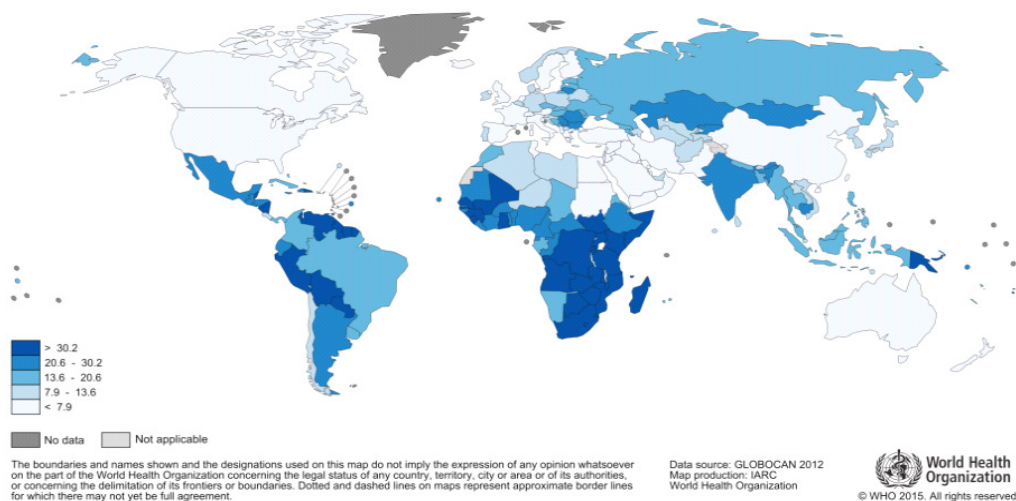


Figure 1 Source: Estimated Cervical Cancer Incidence Worldwide in 2012. Reprinted from Cervical Cancer Estimated Incidence, Mortality, and Prevalence Worldwide in 2012 by Globocan (2012) and the World Health Organization (WHO 2015) Retrieved from <http://libguides.gwumc.edu/c.php?g=27779&p=170358>

are unavailable or women have limited access to healthcare services. By 2030, the Pan American Health Organization (PAHO) estimates a 45% increase of mortality rates in countries such as Latin America and the Caribbean due to the inequitable health service distribution (PAHO 2014). This holds true for Brazil, as cervical cancer is the 2nd cause of cancer amongst Brazilian women, where there is an estimated annual incidence rate of 18,503 and 8,414 deaths due to cervical cancer. In comparison, Latin American countries have an incidence rate of 45,008 and 19,374 deaths (Bruni, Barrionuevo-Rosas, Albero, & *et al.*, 2015).

Risk Factors

The human papillomavirus (HPV), is a sexually transmitted disease and is one of the most common risk factors that cause most cervical cancers. Since HPV is so common, a majority of sexually active men and women will be infected at some point in their lives (CDC 2014). There are over 100 strains of HPV and many do not cause any problems or show any symptoms, while some strains of HPV can cause genital or skin warts (CDC 2014). According to the World Health Organization (WHO), HPV types 16 and 18 are responsible for 70% of cervical cancer cases worldwide (Bruni, Barrionuevo-Rosas, Albero *et al* 2015).

There are several risk factors that can increase the chances of developing cervical cancer such as smoking, human immunodeficiency virus (HIV), taking oral contraceptives for a long period of time, early sexual activity, and having multiple sex partners.

Brazil Initiatives

One of the first population-based screening programs in Brazil for cervical cancer started in 1956 at Rio de Janeiro. The Social Pioneers Foundations (*Fundação das Pioneiras*

Sociais) was a philanthropic organization that was very active in education and health, especially in the field of chronic degenerative diseases and female cancers. In the area of female cancers, they directed two problems that were challenging Brazil for this type of cancer. The two issues were fostering engagement with lower-class women who had a difficult time in obtaining healthcare services and medical information, and increasing the quality of cytological tests (Porto & Habib, 2014). In order to improve these problems, the organization reached out their activities to 10 Brazilian states creating specialized hospitals, a research center, and a “Health on Wheels Program,” which included hospital units floating on the Amazon (Porto & Habib, 2014). In 1968, the first official cytopathology school was created to “provide suitable training for technicians who had the strategic role of taking the first readings of test slide” (Porto & Habib 2014). Another early initiative began in 1965 at the City of Campinas, São Paulo by the leadership of the University of Campinas in accordance with the Pan American Health Organization guidelines. The Cervical Cancer Control Program was considered Brazil’s first experience with a continuous on-going action of cervical cancer screening (Porto & Habib 2014). During the 10 years of the program, there were 19,195 cytological tests per year annually and during its 4th year it showed a decrease in the number of detected pre-cancerous lesions (Porto & Habib 2014). Nevertheless, another program was initiated around the same time in the Campinas region focusing on three areas: Campinas, Piracicaba, and São João. Since this program began, cervical cancer screening in the public health system ensured that diagnosis and treatment were free of charge (Zeferino, Pinotti, & Neves *et al* 2006). Overtime, the number of cervical cancer screening has been increasing as shown on **Table 1**. In 2002, over 400,000 cervical cancer tests that were performed by the public health system laboratories.

Year	University of Campinas cytopathology laboratory (Number of tests)	Other cytopathology laboratories (Number of tests)	Total
1995	139,435	81,175	220,610
1996	147,317	77,056	224,373
1997	193,249	66,503	259,752
1998	219,290	57,275	276,565
1999	221,572	57,613	279,185
2000	219,635	72,274	291,909
2001	235,212	150,238	386,450
2002	289,837	112,190	402,027

Table 1 Source: Total number of Pap smears performed annually from 1995 to 2002 in the Campinas Region, São Paulo State, Brazil. Reprinted from "Organization of cervical cancer screening in Campinas and surrounding region, São Paulo State, Brazil" by Zeferino, Pinotti, & Neves et al. *Saúde Pública*, Rio de Janeiro 22(9), 1909 - 1914. Copyright 2006.

The National Cancer Institute of Brazil (INCA) introduced a cervical cancer-screening project, *Viva Mulher* (Long Live Women) that assisted in controlling cervical cancer disease. It was established in 1997 at six localities: Belém (Pará), Curitiba (Paraná), Brasília (in the regions of Tabatinga, Ceilândia and Samambaia, as well as the Federal District), Recife (Pernambuco), the west zone of Rio de Janeiro City (Rio de Janeiro), and the state of Sergipe (Teixeira, 2015). The campaign's goals were to lower incidence and mortality rates by expanding access to cytological tests and to give the appropriate treatment to precursor lesions in 100% of all cases. Additionally, their target was to "collect samples for cytological examinations from 70% of women ages 35-49 years who had never taken the exam; guarantee that all exam results will be given back within one month or less; monitor all women with a positive cytology result until completion of treatment" (Teixeira 2015). The campaign consisted of two phases: the 1st in 1998, the 2nd in 2002.

The 1st phase had several successes such as performing over 3 million pap smears: 72.1% of women were in their target's population and 38.6% of women examined never had a pap smear; implementation of an electronic system for monitoring results; establishment of 244 Centers for high-frequency surgery was available; the formation of a regional tertiary healthcare network (Porto & Habib 2014). Brazil's Ministry of Health used the opportunity to make a pledge in Beijing, where many Health Professionals and Academics warned, "about the weak efficacy of temporary actions and the need to create an ongoing, standardized program to control cervical cancer in Brazil" (Porto & Habib 2014).

The 2nd phase began its preparation much earlier than the 1st phase. The goals of the second phase were similar to the first phase targeting the same age population who had never had a pap smear or not had one in the past three years (Porto & Habib 2014). The goal was to test 2.5 million women by sending out materials for pap smear test. It was deemed successful as over 3.8 million

women received a pap smear test (Porto & Habib 2014). With a high response rate, the campaign coordinators expanded the age group from 25 to 59 years old and decided that no women would be turned away when requesting a pap smear test.

There has been no new campaign for the *Viva Mulher* since 2002, the program is currently focusing their priorities in supporting and improving the network of oncology care by providing technical assistance to Brazil's Health Departments and reviewing the indicators used for its initiatives (Teixeira 2015).

Latin American Initiatives

When compared to other Latin American countries, Brazil had similar initiatives to increase awareness and knowledge to women in low-resource settings. PAHO developed the Regional Strategy and Action Plan for Comprehensive Cervical Cancer Prevention and Control (PAHO 2011). A project was developed to support the implementation of this Regional and Action plan in selected countries. The goal of this project was to prevent cervical cancer in low resource settings in selected Latin American countries and the goals were as follows:

- To increase knowledge and awareness among women, their partners, and health providers about cervical cancer risk factors, prevention, and early detection.
- To strengthen the competencies of health providers and the capacity of the health system to deliver high quality cervical cancer screening, early detection and pre-cancer treatment.
- To increase the number of women screened.
- To ensure that at least 95% of women screened and detected with cervical abnormalities in the project are followed and treated appropriately. (PAHO, 2011)

Guatemala and Honduras participated in this project and showed success in increasing awareness for cervical cancer screening. In Guatemala, it helped “expand access to cervical cancer screening and pre-cancerous treatment services and establish Cervical Cancer Early Detection Clinics in 8 high burden health areas in the country” (PAHO 2011). In addition, the country developed standardized protocols of early detection and treatment for pre-cancerous lesions that were distributed to 29 Health Care Areas in the country. Also, a “Cervical Cancer Pathology Manual” was published, which contained the framework for clinics on the detection and treatment for cervical cancer screening and precancerous lesions (PAHO 2011). Another main strategy that Guatemala used was a “Screen and Treat Approach:” This idea was that women who had pre-cancerous lesions through visual inspection screening would receive cryotherapy treatment that same day (PAHO 2011). This strategy improved access to treatment and reduced the losses of follow up care.

In order to increase awareness and knowledge in Honduras, educational materials and over 37,500 brochures on cervical cancer prevention were distributed to women's health clinics and communities. In addition, to strengthen the competencies of healthcare providers, the Honduras National Norms and Procedures for Cervical Cancer Prevention and Control were developed (PAHO 2011). As the result of the new norm of cervical cancer, an additional 14,672 pap smears were performed in 2010 as compared to 2009 (PAHO 2011) (**Figure 2**). With that said, one of the most important developments that Honduras had was the implementation of the information system that allowed patient monitoring and ensured follow-up care (PAHO, 2011).

Challenges

There are still many challenges and barriers that many women face, especially those living in low-resource settings and poverty. Additionally, personal and community barriers hinder women from receiving health care services. For example, some women fear that their husbands will reject them if they have this disease (Goodman & Nour 2014). Another personal barrier is their religious guilt and cultural belief that women were being punished for their sexual behaviors and activities (Goodman & Nour 2014).

In Brazil, Lorenzi *et al.* stated “Brazil has not implemented an organized population based cervical cancer screening program, and not even a universal system to invite all women to realize these examinations” (Loreni, Syrjänen, Longatto-Filho 2015). However, the government has a program to control how cytopathology examinations are performed so that women who are sexually active ages 25 years and older can get a pap smear test every 3 years as long as there has been two consecutive negative smears within five years (Loreni, Syrjänen, & Longatto-Filho 2015). Yet, it is not recommend for women under the age of 25 years to get screened for cervical cancer due to the fact that many precancerous lesions clears on their own (Loreni, Syrjänen, Longatto-Filho 2015).

Future of Cervical Cancer Prevention

When looking into the future of cervical cancer in Brazil, it is important to have a strong medical infrastructure; financial stability; the community at large must promote screening efforts. Also, that primary screening with HPV testing will be expected in the future as a standard of care and Healthcare Professionals should consider educating women about HPV vaccines and

new cytology tests. Furthermore, it is recommended that Healthcare Professionals use evidence- based recommendations because if these are not followed: over-treatment of lesions that may normally clear within a few months; certain treatments may increase the risk of complications in pregnancy; unnecessary psychological distress (fear of cancer, anxiety, and being stigmatized) may result (Arrossi, Silvina, Paolino *et al* 2010).

In 2011, Brazil’s president, Dilma Rousseff, and Minister of Health, Alexandre Padilha, announced that \$2.8 billion US dollars will be invested to fight against breast and cervical cancer which would assist in strengthening the primary healthcare, increasing awareness through campaigns, and supporting an outpatient and hospital network of the Brazilian Public System (UICC 2015). With continuous strategies; new adaptations; encouragement of technical and financial support especially in quality of care; continuous monitoring and evaluation can lead to a decrease of cervical cancer incidence and mortality rates.

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