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COOPESIBA BARVA CLINIC

WEISS CORNELL SCHOOL OF MEDICINE

Cervical Cancer Prevention in Latin America:

Are Pap Tests enough?

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Background

Cervical cancer is an important public health problem worldwide. Cervical cancer is the seventh most common cancer, and the third most common in women, in whom it comprises 9.8% of all cancers. In the industrial world, the incidence and mortality of cervical cancer has decreased over the past 30 years. Moreover, the mortality of cervical cancer in the industrial world is even lower than the incidence¹. This decrease in incidence and mortality in industrialized countries is thought to be due to the implementation of widespread prevention efforts through routine screening with the Papinicolau test (the PAP test)². Unfortunately, these trends have not followed such a positive trajectory in much of the developing world. In much of Latin America, mortality has not shown any significant downward trend in the past two decades.³ In parts of Central America and the Caribbean, the incidence of cervical cancer has actually increased.⁴ In fact, it has been estimated that 70-80% of the current global incidence of cervical cancer occurs in the developing world.^{1,55}As such, cancer remains the main cancer of women in Central and South America.

¹ Parkin, DM, Pisani, P, Ferlay, J. *Global Cancer Statistics*. CA Cancer Journal for Clinicians 49:33-64, 1999.

² Ibid.

³ Robles, SC, White, F, Peruga. *Trends in cervical cancer mortality in the Americas*. Bulletin of the Pan American Health Organization 30:290-301, 1996.

⁴ Parkin et al., 1999. See reference #1.

^{1,5} Parkin et al., 1999. See reference #1.

World Health Organization. *Cervical cancer control in developing countries: memorandum from a WHO meeting*. Bulletin of the World Health Organization. 74:345-51, 1996.

It is well known that the Pap test is a cancer screening test demonstrating substantial benefits in the detection and prevention of cancer⁶. The global decrease in cervical cancer mortality since the advent of its widespread use is a testament to the success of this screening method in industrialized nations. However, the elevated rates still seen in developing countries point to a disparity in the impact of this effective screening method. Though prevention efforts have been undertaken in many developing countries, cervical screening coverage and widespread efficacy is doubtful. For the developing world, many sources have suggested that a main objective and obligation of prevention programs should be the implementation of high coverage screening programs.⁷ In achieving this objective, it is important first to understand the issues and limitations that women in developing nations face in promoting their own health.

It is the obligation of health organizations serving the developing world to assess the effectiveness of their prevention programs and make appropriate changes when necessary. There are many factors that contribute to the success or failure of a screening program. Such programs must be well organized and work in a defined, well-coordinated manner. Austoker et al.'s 1994 study of prevention programs gives an evidence-based list of factors necessary for an effective cervical screening program. He proposes that such programs should target women at highest risk for development of cervical lesions, make screening technically effective and accessible to the community, ensure adequate follow-up and treatment procedures, and implement accountability and flexibility within the program.⁸

With this notion of what is needed for an effective screening program, as well as an understanding of the issues and needs that impede women in developing areas, the effectiveness of a given region's screening program can be evaluated and ultimately improved.

⁶ Otis W. Brawley, Barnett S. Kramer. Harrison's Online, Chapter 80: *Prevention and Early Detection of Cancer*, Part 6: Oncology and Hematology. www.harrisonsonline.com

⁶ Eluf-Neto, J, and C Nascimento. *Cervical cancer in Latin America*. Seminars in Oncology 28:188-197, 2001.

⁸ Austoker, T. *Cancer prevention in primary care: screening for cervical cancer*. British Medical Journal 309:241-248, 1994.

A desire to understand the programs in place in a Central American community led us to conduct a pilot study of the mechanisms and effectiveness of the program in the clinic serving the province of Barva De Heredia, Costa Rica.

Prevention Efforts: The Ministry of Health

Costa Rica's Social Security Bureau (Caja Costarricense de Seguro Social) in association with other national social service and conducted by the Ministry of Health that conducts the National health policies definitions and monitors the entire actions in health, . provide a national health service which ensures complete medical and medication coverage to all Costa Ricans. Like many national healthcare systems, Costa Rica's health care system focuses on preventative care, and boasts a favorable immunization record and life expectancies.⁹

Cervical smears are recommended by the Costa Rican national health authorities, every two years for women at low risk, and yearly for women at increased risk for cytological abnormalities. Despite these guidelines, death from cervical cancer remains a somber reality in Costa Rica. As such, "La Oficina de la Primera Dama", a health prevention agency headed by Costa Rica's First Lady, developed an outreach program named "National Program for the Awareness and Prevention of Cervical Cancer" in 1997. The program implemented nationwide educational initiatives, mobile screening units, and the establishment of treatment facilities within regional hospitals. Since 1997, the program boasts a significant decline in rates of cervical cancer and reports surpassing its goal of Pap coverage of 85%.¹⁰

Methods

⁹ Ministry of Health, Costa Rica website -- <http://www.netsalud.sa.cr/ms/ministe/historia.html>, 2001.

¹⁰ Oficina de la Primera Dama website, <http://primeradama.racsa.co.cr/cancer.html>, 2001.

We sought to investigate the realities of coverage and incidence of detected cervical dysplasias in the Canton de Barva de Heredia province and compare these with the goals set forth nationally. We calculated these averages using the clinics records of routine Pap tests administered during the 12 month period between June 1999 and 2000.

Following our record based investigations, we sought to understand the reasons for lower than ideal coverage rates. That is, we sought to understand some of the reasons why some women were not seeking Pap-screening at the indicated frequency. To this end, we recruited a group of sexually active young women for a discussion group during which we could listen to their concerns and impedances in seeking care. We randomly invited a group of 10 high school women, between the ages of 14 and 19, all of whom were sexually active, and led an anonymous discussion group, asking questions about their knowledge of sexual health, informational/treatment resources they use and persons in whom they confide. Part of the reason for selecting a young group of women was based on our observations and calculations of ages of women screened at the clinic (see results and discussion).

Our goal was to interview a group of at risk women who have classically not received adequate PAP and reproductive health coverage, in order to investigate some of their reasoning as to why they do not receive the care indicated for them. As Pap smears are indicated for women after the age of 18 or after onset of sexual relations (whichever comes first), this group of women was adequate.¹¹ Further, the group was relatively simple to assemble as the clinic had a nurse who visited the local high school on a weekly basis to provide immunizations and physical exams to students. Lastly, our hope was that targeting a group of young women and providing them with sexual health information at the end of the discussion group, might influence them to seek adequate screening at an early age.

¹¹ Smith, R et al. *American Cancer Society Guidelines for the Early Detection of Cancer*. CA Cancer Journal for Clinicians. 52:8-22, 2002.

Results and Discussion

Prevention Efforts: The Barva Clinic

In evaluating the prevention efforts at the Barva Clinic, quality of the program must be investigated. Observations made in the Barva Clinic by the investigators indicate that the clinic succeeds in implementing a systematic call and recall system and appropriate collections, and analysis and follow –up procedures.¹² Within the clinic, health care providers, 5 physicians and a nurse practitioner, encouraged women to undergo routine Papanicolaou screening and use contraception. Observations of visits with the nurse practitioner, who provided a majority of the routine screening, demonstrated thoroughness and openness in answering women’s questions and providing thorough answers. Additionally there existed a systematic method by which the nurse practitioner received, logged, and contacted all women requiring follow-up when results showed cytologic abnormalities. All women whose records were reviewed were contacted within 2 days for discussion of abnormal results and follow-up. Women were then referred to the local medical center for further evaluation and treatment. Following referrals, the Clinic called the patients an average of 2 times over the next 12 months, to monitor their progress and treatment. Women not reachable by telephone were visited at their homes by ATAP (outreach technicians) personnel. It is clear therefore, that the Barva Clinic has taken measures to provide preventative screening and follow-up to women who come for reproductive screens. We believe that as seen in previous studies, the problem lies not in the services provided to existing patients, but in the women who do not come to the clinic for reproductive screening. Still, coverage with routine cervical and GYN screening is inadequate. It can be inferred that some of the women not “covered” with appropriate screening are at risk of developing cervical pathology.

¹² According to screening objectives proposed by: Austoker, T. *Cancer prevention in primary care: screening for cervical cancer*. British Medical Journal 309:241-248, 1994.

As fortunately, there was only one case of carcinoma in situ and one of invasive cervical carcinoma diagnosed by Pap smear, cervical dysplasias (CIN 1-3) were used in calculations. Cervical dysplasias are the treatable cervical lesions that may lead to cancer.¹³ Table 1 shows the calculations outlining the number of Pap tests performed by the Barva clinic, and calculations for abnormal Pap smears detected. Of 1417 Pap smears done at the Barva clinic, there were a total 29 abnormal Paps (2.0%). However, when these numbers were age adjusted, women under 35 (upon whom Paps were performed) showed an abnormal Pap incidence of 3.5%. This percentage was markedly less for women over the age of 35 (0.92%).

Table 1 – Abnormal Pap tests performed at clinic Barva.

	Age < 35	Ages \geq 35	Total
Total Pap's performed	657	760	1417
Total Abnormal Pap's	22	7	29
% Abnormal Pap's	3.35%	0.92%	2.04%

For a total population 10,491, there were 1417 Pap smears done. Table 2 reflects a coverage of 13.5% for the 12 month period examined. When the fact that Costa Rica's Ministry of Health indicates routine Pap screens performed on women once every two years, the estimated coverage for the Barva region is 27%. This is approximately 32% of the target coverage put forth by the National Program for the Awareness and Prevention of Cervical Cancer (85%).¹⁴

¹³ Otis W. Brawley, Barnett S. Kramer. Harrison's Online (see reference #6).

¹⁴ Oficina de la Primera Dama (see reference #10)

Table 2 – Coverage – Sector Barva

Total Population Barva (female)	10491
Total # Pap's Performed	1417
% Coverage	13.5%
Estimated % Coverage	27.0%

The low coverage rates calculated indicate that a significant number of cervical lesions are not being detected due to low coverage rates. When the fact that there is a higher incidence of cervical lesions diagnosed in women under the age of 35 (3.35%) than over the age of 35 (.92%), it can be inferred that young women are at a higher risk of developing undetected cervical lesions that can proceed to malignancy. Screening efforts should be targeted to young women in order to attenuate the burden of undiagnosed/untreated cervical lesions.

Prevention Efforts: Educational Outreach

Past investigations report that women from lower socioeconomic classes and with lower levels of education have a higher incidence of cervical dysplasias.¹⁵ These differences in education and socioeconomic status are especially marked in the developing countries of Latin America, and it can be inferred that these factors contribute to the high rates of cervical cancer in these regions. In developing countries such as Mexico, rates of cervical cancer remain high, particularly in poor and rural regions where educational and health resources are limited.¹⁶ Limited resources and education act by preventing women from accessing the jargon of

¹⁵ De Sanjose, S. et al. *Socioeconomic differences in cervical cancer: two case-control studies in Colombia and Spain*. American Journal of Public Health 86:1532-1538, 1996.

¹⁶ Hernandez-Avila M, Lazcano-Ponce EC, de Ruiz PA, Romieu I. *Evaluation of the cervical cancer screening programme in Mexico: a population-based case-control study*. International Journal of Epidemiology Jun;27(3):370-6, 1998.

traditional outreach tactics, the factors that influence sexual health, and ultimately adequate medical care. Such was seen in our discussion group, where none of the participants had received formal outreach education on sexual health and prevention. The majority of the participants understood barrier contraceptives in terms of their effectiveness in preventing pregnancy, but not as a method to prevent sexually transmitted infections. The women demonstrated very limited knowledge of the symptoms of vaginal infection and pregnancy, and many had never heard or been offered the possibility of preventative screening.

The women expressed further barriers to both information and care. They confirmed that the suspected stigma attached to pre-marital sex prevented them from talking to their parents about sexual health issues. All but one of the participants affirmed that they did not have an adult in their lives or other route of information with whom to discuss sexual health issues and sexuality. Most depended on friends of the same age/level for information, many claimed that they did not even feel comfortable talking to the school nurse regarding these issues, for fear of disclosure. They elaborated by stating that outreach and information was currently directed to parents, who would chastise them for their behaviors. All but two of the women were unaware that the local clinic provided information, contraceptives and medical care free-of –charge, non-judgmentally, confidentially, and free of parental consent.

This lack of knowledge may reflect a general lack of understanding due to the age of the participants who are not yet emancipated adults, responsible for their own healthcare. It also reflects however, a lack of educational outreach to a needy and at risk segment of the community. Though these women are having sexual relations, they are not offered the information with which to make healthy reproductive choices. All of the women stated that they would have sought preventative care had they known it was free of charge, confidential and had important health implications.

The young women interviewed all expressed an interest in knowing more about sexual health and preventative care. When asked their suggestions for providing more widespread

information and coverage to young women, the women universally answered “education”. They expressed that an informational campaign directed to students, perhaps via school, would be effective and bypass the stigma instilled by older generations. The role of education in cervical cancer prevention echoes the call of previous studies that investigate cervical cancer rates in developing nations.^{17,18,19,20}

Prevention Efforts: What else should be done?

In addition to lack of education and inadequate screening coverage, it has been shown that certain sexually transmitted infections contribute significantly to the prevalence of cervical cancer worldwide. It is well established that certain strains of the Human Papillomavirus are the chief causative agents in cervical cancer. It is estimated that up to 99.7% of cervical carcinomas demonstrate infection with HPV.²¹ Studies have shown that HPV infection is shown to be a major factor in cervical cancer prevalence in Latin America.^{22,23} Other risk factors that have been shown to correlate with cervical neoplasia include: young age of first intercourse, number of partners, infection with HPV, infection with other sexually transmissible infections, smoking, promiscuity of male sexual partner and multiparity.²⁴ Investigations examining the roles of these and other risk factors in rates of cervical neoplasia in the province of Barva should be carried out to further understand the incidence and further tailor prevention endeavors.

¹⁷ Hernandez-Avila, et al. 1998 (see reference #16).

¹⁸ De Sanjose et al. 1996 (see reference #15)

¹⁹ Melnikow, J. *Prevencion del cancer cervicouterino: la importancia de formular las preguntas adecuadas*. Biblioteca de Salud Reproductiva de la OMS, Costa Rica, 2000.

²⁰ Tones K and S Tilford. *Health Education: effectiveness, efficiency and equity*. London: Chapman and Hall, 1994.

²¹ Walboomers, JMM et al. *Human papillomavirus is a necessary cause of invasive cervical cancer worldwide*. Journal of Pathology 189(1):12-19, 1999.

²² Munoz, N, Bosch, FX, de Sanjose, S. *The causal link between human papillomavirus and invasive cervical cancer: A population –based case control study in Colombia and Spain*. International Journal of Cancer 52:743-749, 1992.

²³ Bosch FX, Manos MM, Munoz N, Sherman M, Jansen AM, Peto J, Schiffman MH, Moreno V, Kurman R, Shah KV. *Prevalence of human papillomavirus in cervical cancer: a worldwide perspective. International biological study on cervical cancer (IBSCC) Study Group*. Journal of the National Cancer Institute 87(11):779-80, 1995.

²⁴ Eluf-Neto, J, and C Nacimiento, 2001 (see reference #6).



Educational programs should emphasize prevention of sexually transmitted diseases (and not just prevention of pregnancy), and routine STD screening.

Our investigations show that despite significant efforts at enhancing access to care and cervical health screening in Costa Rica, the Barva de Heredia province seems to demonstrate sub-optimal Pap test coverage. This inadequate coverage seems to put young women at highest risk for undiagnosed cervical neoplasia. Qualitative investigations show that young women in the Barva sector are not offered the outreach and information they need to understand and access reproductive health services. These inadequacies can begin to be addressed by targeting young women, particularly sexually active adolescents with outreach efforts. Further, educational efforts should include targeting cultural stigmas associated with adolescent sexual activity, so that young people feel less stigmatized in seeking out information and care.

Cervical cancer, though one of the most preventable malignancies known, remains a deadly burden for women of the developing world. Women in these areas are faced with limited resources, education, and reproductive voice. It is the obligation of international health organizations to understand these issues and implement protocol changes accordingly. The incidence and risk of cervical cancer worldwide can be reduced by the increasing the use of preventative medical services and focusing of screening programs to the needs and lifestyles of women of the developing world.

References

- Austoker, T. *Cancer prevention in primary care: screening for cervical cancer*. British Medical Journal 309:241-248, 1994.
- Bosch FX, Manos MM, Munoz N, Sherman M, Jansen AM, Peto J, Schiffman MH, Moreno V, Kurman R, Shah KV. *Prevalence of human papillomavirus in cervical cancer: a worldwide perspective*. International biological study on cervical cancer (IBSCC) Study Group. Journal of the National Cancer Institute 87(11):779-80, 1995.
- De Sanjose, S. et al. *Socioeconomic differences in cervical cancer: two case-control studies in Colombia and Spain*. American Journal of Public Health 86:1532-1538, 1996.
- Eluf-Neto, J, and C Nascimento. *Cervical cancer in Latin America*. Seminars in Oncology 28:188-197, 2001.
- Hernandez-Avila M, Lazcano-Ponce EC, de Ruiz PA, Romieu I. *Evaluation of the cervical cancer screening programme in Mexico: a population-based case-control study*. International Journal of Epidemiology Jun;27(3):370-6, 1998.
- Melnikow, J. *Prevencion del cancer cervicouterino: la importancia de formular las preguntas adecuadas*. Biblioteca de Salud Reproductiva de la OMS, Costa Rica, 2000.
- Ministry of Health, Costa Rica website -- <http://www.netsalud.sa.cr/ms/ministe/historia.html>, 2001.
- Munoz, N, Bosch, FX, de Sanjose, S. *The causal link between human papillomavirus and invasive cervical cancer: A population –based case control study in Colombia and Spain*. International Journal of Cancer 52:743-749, 1992.
- Oficina de la Primera Dama website, <http://primeradama.racsa.co.cr/cancer.html>, 2001.
- Otis W. Brawley, Barnett S. Kramer. Harrison's Online, Chapter 80: *Prevention and Early Detection of Cancer*, Part 6: Oncology and Hematology. www.harrisonsonline.com
- Parkin, DM, Pisani, P, Ferlay, J. *Global Cancer Statistics*. CA Cancer Journal for Clinicians 49:33-64, 1999.
- Robles, SC, White, F, Peruga. *Trends in cervical cancer mortality in the Americas*. Bulletin of the Pan American Health Organization 30:290-301, 1996.
- Smith, R et al. *American Cancer Society Guidelines for the Early Detection of Cancer*. CA Cancer Journal for Clinicians. 52:8-22, 2002.
- Tones K and S Tilford. *Health Education: effectiveness, efficiency and equity*. London: Chapman and Hall, 1994.



Walboomers, JMM et al. *Human papillomavirus is a necessary cause of invasive cervical cancer worldwide*. Journal of Pathology 189(1):12-19, 1999.

World Health Organization. *Cervical cancer control in developing countries: memorandum from a WHO meeting*. Bulletin of the World Health Organization. 74:345-51, 1996.