Use of the Pap Test
by a Population Group in Buenos Aires

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The study reported here sought to assess Pap test coverage of a group of asymptomatic Argentine women from the poor urban district of La Matanza in the Buenos Aires metropolitan area. Initially, all 2495 women who voluntarily enrolled in a program for early detection of breast cancer between January 1991 and June 1993 were included. After removing those who did not meet various study criteria, there remained 779 study subjects with no gynecologic or mammary symptomatology. Two subgroups of these 779 were established—women who had received a Pap test at any time and those who had received such a test within the previous three years. Using these subgroups, the influence of certain sociodemographic and other variables upon the likelihood of Pap testing was assessed. The results indicated significant associations between past Pap testing and age, formal education, parity, and a family history of cancer. Likewise, significant associations were found between Pap testing within the preceding three years and age, formal education, and parity. The study findings affirm the idea that it would be advisable to seek Pap testing for all study population women once every three years instead of every year. Since the study population was not necessarily representative of Buenos Aires' population, however, and the findings could have been affected by self-selection and other biases, additional studies are needed to determine actual Pap test coverage among women of the metropolitan area.

For many years the fight against cancer has focused mainly on early prevention and timely diagnosis, particularly in the case of cancer of the uterine cervix. This pathologic process is one of the few for which there exists a sensitive, relatively specific, inexpensive, and safe screening test—namely, exfoliative cytology employing the Papanicolaou stain. Through use of this technique, it has been possible to noticeably reduce cervical cancer mortality (1). However, the technique itself is not consistently applied throughout the population at risk; and it has been shown that if the technique is to produce the desired effect, it must be performed within the context of well-organized programs—since spontaneous screening outside the framework of such programs tends to reach women who are too young, is discontinued after age 55 or 60, and does not provide good coverage (2, 3). This is because demand depends on numerous factors that sometimes promote and sometimes obstruct application of the test. Such factors include a woman's age, education, and cancer risk, as well as lack of communication on the subject between the patient and the health professional, fear of the disease, and ignorance of the disease (4).

In Argentina, cancer of the cervix is a major public health problem, constituting the primary cause of death from cancer among the female population in eight provinces. In an additional 13 provinces, as well as in the country as a whole, the only ma-

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lignancy that exceeds it as a cause of death is breast cancer (5, 6). However, deaths from cervical cancer tend to occur at much earlier ages than those from breast cancer (7).

Another point worth noting is that cervical cancer mortality has varied little in Argentina over the past 50 years, with only a slight decrease being observed among those over 55 years old (7). The problem is more acute in provinces where relatively high percentages of the population have unsatisfied basic needs (8).

The Pap test has been available in Argentina for over 30 years. As of 1962, more than 100 000 Pap tests had already been performed in the country, and the official theme of the XII Annual National Meeting of the Argentine Federation of Gynecology and Obstetrics Societies was "Organization of Prophylaxis for Cervical Cancer" (9, 10). Despite this, however, there are few organized, centralized programs to motivate, encourage, and invite the female population to undergo screening tests. As a matter of daily routine, such tests are conducted on the basis of spontaneous demand or on the advice of a health professional consulting the patient, based on personal criteria. Hence, no reliable information is available on the subject of Pap test coverage of the Argentine population. Only one study, performed on 919 female teachers and nurses, revealed that 60.0% of these women had undergone testing, but the study specified neither frequency nor periodicity (11). No subsequent information on the subject is available.

The objectives of the study reported here were to determine Pap test coverage in a group of asymptomatic women who enrolled voluntarily in a breast cancer screening program and to evaluate certain variables that might influence the propensity of such women to undergo this test.

MATERIALS AND METHODS

La Matanza, with a population of 1 120 000, is the largest urban district of Greater Buenos Aires. Some 21% of its households are considered to have unsatisfied basic needs, a percentage higher than the national average, and it is believed to be the city district containing the largest number of poor people (12).

The Breast Cancer Early Detection Program is carried out at eight health centers and health units providing primary care within La Matanza's municipal health system. A survey was directed at all of the women who enrolled voluntarily in this program between January 1991 and June 1993. This survey was conducted in the eight health centers and units by two volunteers and two nurses who had received 12 hours of prior training. All of the completed survey forms were reviewed by the authors to affirm their consistency. Responses whose reliability was suspect were corroborated by re-asking the appropriate questions. The responses obtained were not compared with information contained in the women's clinical records.

The women considered for the survey, 2495 in all, were asked questions about prior Pap testing, as well as about their age, formal education, social security coverage, parity, age at the birth of their first child, family history of any type of cancer (especially breast cancer), and personal history of breast problems of a clinical or surgical nature. A total of 124 women were eliminated from the study because they were less than 20 years old, over 70 years old, or said they had never had sexual relations. Another 1506 were eliminated because they had symptoms, either at the time of the test or during the preceding two years, or because they had sought medical advice for a breast problem without having been encouraged to do so by the screening program. An additional 86 were eliminated because they did not provide sufficient information for the survey. Thus, the final sample consisted of 779 women who submitted to testing voluntarily and who had no gynecologic or mammary symptomatology at the time of the test.

The Statistical Package for the Social Sciences (SPSS) PC+ statistical program was used to calculate frequencies and percentages. Women who had undergone Pap testing were divided into two groups: (1) those who had undergone Pap testing at some point in their lives and (2) those who had undergone such testing during the course of the three preceding years. These two groups were subjected to a univariate analysis in order to calculate the odds ratios associated with each variable studied. Subsequently, an unconditional logistical regression multivariate analysis incorporating the various study variables was performed with a view toward identifying those variables that were independently predictive with regard to the risk or probability of having a Pap test at some time or during the three preceding years. For this analysis, the EGRET and BMDP statistical programs were used.

RESULTS

Table 1 shows the survey population's sociodemographic characteristics and gyneco-obstetric background. Most of the 779 women (66%) were 30 to 49 years old, 71% had no secondary education, 67% had no social security coverage, 93% had children (of these, 94% were less than 30 years old when their first child was born), and 87% had no personal history of pathologic breast problems.

A total of 262 (33.6%) had undergone Pap testing during the year preceding the survey; 279 (35.8%) had undergone such testing during the two years before this preceding year; 135 (17.4%) had had the test more than three years earlier; and the remaining 103 (13.2%) had never had the test.

The univariate analysis showed that predictive variables ($P < 0.05$) for having had the Pap test at some time were age, education, parity, and a family history of cancer other than breast cancer. All except the last of these factors were also predictive in the

Table 1. Selected sociodemographic and health data on the 779 survey subjects—including data on prior pathologic breast disorders and a history of cancer in the family. La Matanza, Buenos Aires Province, Argentina, 1991–1993.

Characteristic	No.	%
Age (in years):		
20–29	99	12.7
30–49	514	66.0
50–69	166	21.3
Total	779	100.0
Formal education:		
None or incomplete primary	174	22.4
Complete primary	379	48.8
Secondary (complete or incomplete)	199	25.6
University (complete or incomplete)	25	3.2
Total	777*	100.0
Social security coverage:		
Absent	522	67.0
Present	257	33.0
Total	779	100.0
Parity:		
Nulliparous	55	7.1
1–3 children	493	63.3
>3 children	231	29.6
Total	779	100.0
Age (in years) when first child was born:		
<30	680	93.9
≥30	44	6.1
Total	724†	100.0
Personal history of breast disorders of a clinical nature:		
Absent	677	86.9
Present	102	13.1
Total	779	100.0
Personal history of breast disorders of a surgical nature:		
Absent	718	92.2
Present	61	7.8
Total	779	100.0
Family history of all cancers except breast cancer:		
Absent	551	70.7
Present	227	29.3
Total	778‡	100.0
Family history of breast cancer:		
Absent	720	92.4
Present	59	7.6
Total	779	100.0

*Data missing for two women.
† The 55 nulliparous women were excluded.
‡ Data missing for one woman.

group that had undergone testing during the course of the three preceding years (Table 2). It is evident that the older the woman, the greater the likelihood of her having ever undergone Pap testing. However, women in the oldest (50–69 year) age group showed less likelihood of having been tested within the preceding three years than did women in the 30–49 year group. Overall, although 89.2% of the women 50–69 had been given the Pap test at some time, only 65.1% had received it during the three preceding years.

The association between having ever had the Pap test and level of education achieved statistical significance ($P < 0.008$) in the group of women who had completed primary school (relative to those with no formal education or incomplete primary schooling). Higher percentages of women with high school and university training had also received Pap testing; but in these cases the differences were not statistically significant ($P = 0.215$ and 0.421, respectively). When the analysis was applied to women who had undergone Pap testing in the three preceding years, however, direct and statistically significant associations with Pap testing were found for both the group that had completed primary school ($P = 0.031$) and the group that had attended secondary school ($P = 0.005$).

Relative to nulliparous women, who exhibited the lowest frequency of Pap testing (see Table 2), the odds ratio (OR) associated with ever having undergone Pap testing was 4.7 among women who had between one and three children and 3.1 among those who had more than three. The ORs for having undergone testing in the three most recent years among women included in these two groups were 2.6 and 1.4, respectively.

Table 3, which presents the results of the multivariate analysis, shows the factors associated independently with Pap testing after considering the simultaneous influence of other variables. In the case of women who had received Pap testing at some time, these factors were age, education, parity, and a family history of cancer. Only the first three were associated with Pap testing during the three preceding years.

The multivariate analysis revealed a strong direct association between age and Pap testing at some time, indicating a high OR for women in the oldest (50–69) group relative to the youngest (20–29) group. More specifically, the OR for women 30–49 was about three times that for younger women, while the OR for women 50–69 was almost four times higher. However, relative to the youngest women, a statistically significant association between age and Pap testing within the three preceding years was found only for women in the 30–49 year group, not for those in the older (50–69) group.

As in the univariate analysis, a statistically significant direct association was found between complete primary school education and Pap testing at some time. This same tendency was also observed for women with more formal schooling, but the ORs were not statistically significant. However, with regard to Pap testing within the preceding three years the same tendency was observed and the ORs were significant. In both cases, the group of women with at least some university education had an OR at least three times greater than the group of women who had never gone to school or had not completed primary school (Table 3).

For the group of women who had received Pap testing at some time, the multivariate analysis found ORs associated with parity (1–3 or >3 children) as compared to nulliparity to be slightly lower than those indicated by the univariate analysis, since the former did not take the influence of other variables into consideration. Nevertheless, these ORs were still statistically significant.

DISCUSSION

One limiting factor in our study is that, as a result of the voluntary nature of the

Table 2. Odds ratio (OR) of having undergone Pap testing at some time or during the three years preceding the survey, for survey subjects with various sociodemographic and medical characteristics.

	Pap test							
	At some past time				During the three years preceding the survey			
Characteristic	No.	% of women in group*	OR	P	No.	% of women in group*	OR	P
Age (in years):								
20–29[†]	71	71.7	1.0	—	60	60.6	1.0	—
30–49	457	88.9	3.1	< 0.001	373	72.6	1.7	0.016
50–69	148	89.2	3.3	< 0.001	108	65.1	1.2	0.460
Formal education:[‡]								
None or incomplete primary[†]	142	81.6	1.0	—	106	60.9	1.0	—
Complete primary	339	89.4	2.0	0.008	266	70.2	1.5	0.031
Secondary (complete or incomplete)	173	86.1	1.4	0.215	148	74.4	1.9	0.005
University (complete or incomplete)	22	88.0	1.7	0.421	21	77.8	2.3	0.090
Social security coverage:								
Absent[†]	451	86.4	1.0	—	358	68.6	1.0	—
Present	225	87.6	1.1	0.660	183	71.2	1.1	0.450
Parity:								
Nulliparous[†]	36	65.5	1.0	—	28	50.1	1.0	—
1–3 children	443	89.9	4.7	< 0.001	361	73.2	2.6	0.005
>3 children	197	85.3	3.1	< 0.001	152	65.8	1.4	0.040
Age (in years) when first child was born:[¶]								
<30[†]	597	87.8	1.0	—	480	70.5	1.0	—
≥30	43	97.7	1.6	0.080	33	75.0	1.3	0.530
Personal history of breast disorders of a clinical nature:								
Absent[†]	585	86.3	1.0	—	467	69.0	1.0	—
Present	91	89.2	1.3	0.438	74	72.5	1.2	0.460
Personal history of breast disorders of a surgical nature:								
Absent[†]	620	86.4	1.0	—	496	69.1	1.0	—
Present	56	91.8	1.8	0.234	45	73.8	1.3	0.440
Family history of cancer other than breast cancer:[§]								
Absent[†]	465	84.4	1.0	—	372	67.5	1.0	—
Present	210	92.5	2.2	0.005	168	74.0	1.4	0.070
Family history of breast cancer:								
Absent[†]	622	86.4	1.0	—	496	68.9	1.0	—
Present	54	91.5	1.7	0.269	45	76.3	1.5	0.230

*Percentage of all the women who appear under the same heading in Table 1.
[†] Reference group.
[‡] Data missing for two women.
[¶] The 55 nulliparous women were excluded.
[§] Data missing for one woman.

Table 3. Results of the multivariate analysis [β coefficient, odds ratio (OR), and 95% confidence interval (95% CI)] indicating the likelihood that women with various sociodemographic and medical characteristics had undergone Pap testing at some time or during the three years preceding the survey.

	β	OR	95% CI
I. Pap tested at some time:			
Age (in years):			
20–29*	0.000	1.0	—
30–49	1.167	3.2	1.8–5.7
50–69	1.323	3.8	1.7–7.9
Formal education:			
None or incomplete primary*	0.000	1.0	—
Complete primary	0.706	2.0	1.2–3.5
Secondary (complete or incomplete)	0.472	1.6	0.8–3.0
University (complete or incomplete)	1.275	3.6	0.8–16.2
Parity:			
Nulliparous*	0.000	1.0	—
1–3 children	1.457	4.3	2.2–8.4
>3 children	0.966	2.6	1.3–5.5
Family history of cancer:			
Absent*	0.000	1.0	—
Present	0.723	2.1	1.2–3.6
II. Pap tested during the 3 years preceding the survey:			
Age (in years):			
20–29*	0.000	1.0	—
30–49	0.636	1.9	1.2–3.0
50–69	0.420	1.5	0.9–2.7
Formal education:			
None or incomplete primary*	0.000	1.0	—
Complete primary	0.377	1.5	0.9–2.2
Secondary (complete or incomplete)	0.633	1.9	1.2–3.0
University (complete or incomplete)	1.104	3.0	1.1–8.4
Parity:			
Nulliparous*	0.000	1.0	—
1–3 children	0.974	2.6	1.5–4.7
>3 children	0.664	1.9	1.0–3.6

*Reference group.

screening, the women surveyed were not representative of the general population. However, this study is the first in this population to quantify Pap testing coverage in an open population group and to examine variables associated with the application of this widely used technical resource. Within this context, it should be noted that the existence of a test for early cervical cancer detection is not beneficial, in and of itself, in terms of reducing mortality or prolonging the lives of individuals afflicted with this disease. To produce a favorable effect, the test must be correctly applied to the target population; and it seems clear that such correct application depends on numerous

factors, some related to the health system and its professionals, others to the users of that system (4, 13, 14).

According to the International Agency for Research on Cancer, if the Pap test is performed every three years on women between the ages of 20 and 64, the incidence of invasive cervical cancer can be expected to decline by 91%. If the test is performed yearly, this figure increases to 93% (15). Some time ago, the International Union against Cancer held a workshop on the topic that concluded maximum effectiveness was achieved when the test was applied every three to five years to women between the ages of 25 and 60 in the context of an organized program (16). Despite the relatively good coverage in our study population—only 13.2% of the women reported never having had a Pap test—the results revealed that roughly one-third of the sample had been tested during the preceding year, an additional third during the two preceding years, and the remaining third either more than three years before or never. If these data were extrapolated to the entire population, they would suggest that the most advisable step is to attempt to have all women, particularly those who have never undergone testing, get a Pap test every three years instead of annually. That is because annual testing not only provides few benefits but also triples the cost and makes poor use of the health system's limited resources.

The significant association found between age and increased Pap testing at some time could be due simply to the fact that older women have been exposed for a greater number of years to the "risk" that at some time they will have undergone such testing. However, the fact that women 50–69 years old had undergone testing less frequently than women in the 30–49 year age group is consistent with the results of studies conducted in other countries and reaffirms what we have previously pointed out: Spontaneous screening tends to terminate at an early age (2). It is therefore necessary to ensure that older women, who make up the group at greatest risk of cervical cancer, continue to undergo periodic Pap testing.

As was to be expected, Pap testing was observed to be less widespread among women with low levels of schooling.

The direct association observed between Pap testing and parity, independent of other variables, both among women who had undergone testing sometime and those who had been tested within the past three years, could be attributable to the fact that the test is given in connection with prenatal visits. It is interesting to note, however, that the OR of ever having undergone Pap testing was greater for women who had had between one and three children than for those who had had more than three. This phenomenon might be due to the fact that high parity is indicative of less effort to prevent pregnancy, which in turn could be associated with less tendency to request screening or with the fact that women with more children have no time available to pursue gynecologic follow-up consultations.

Our results also suggest a possibility that women with a history of cancer in their family felt more vulnerable to the disease and accordingly showed a greater tendency to undergo Pap testing. However, this feeling could gradually decrease in intensity over time, which would explain its disappearance from the list of statistically significant factors associated with Pap testing during the preceding three years.

The variables examined in this study have been studied in other countries. In Costa Rica, an association was found between the number of times that Pap testing had been performed and age (in women 30–50 years old), having attended school, and having had between three and nine children (17). In the United States, a national survey conducted in 1987 revealed that 9% of the women surveyed who were over age 18 had never had a Pap test performed. In the subgroup of married, low-

income women of Latin American origin, that figure increased to 34% (4).

In both Costa Rica (in 1984) and the United States (in 1987 and 1990) household or telephone surveys were conducted on sample populations (4, 17). Other studies have surveyed population groups that were randomly selected and invited to participate in a screening program (18) or who had been voluntarily enrolled in such programs (19). Our study used the latter methodology.

Generally speaking, the relatively high Pap test coverage found among the women studied could be due to a self-selection bias. Since the women had enrolled voluntarily in an early breast cancer detection program, it is very probable that they had a greater awareness of the corresponding health benefit than the general population of women. Our results could also be biased by the fact that the responses recorded were not substantiated by clinical record verification. Accordingly, additional studies need to be conducted on sample populations in order to determine actual Pap test coverage among women in Greater Buenos Aires.

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April is National STD Awareness Month

The American Social Health Association encourages people to learn about sexually transmitted diseases during April 1997, National STD Awareness Month. Through the National STD Hotline, (800) 227-8922, callers can get free, confidential answers to their questions and free written information on STDs.

A recent report from the Institute of Medicine (IOM) called STDs an epidemic of "tremendous health and economic consequences in the U.S.," underscoring that STDs receive too little recognition by the public, medical professionals, and policymakers, especially considering that STDs infect at least 55 million Americans—one in four adults.

As the IOM report states, STDs have the greatest impact on women, infants, and adolescents. At least 15% of all infertility cases among U.S. women are caused by pelvic inflammatory disease (PID), a complication of untreated chlamydia or gonorrhea. PID can also cause chronic pelvic pain and life-threatening tubal pregnancies.

Infants who acquire STDs during their mothers' pregnancy can suffer severe damage to the central nervous system. Adolescents, who account for one-fourth of all new STD infections each year, are at high risk for STDs because they are biologically vulnerable to infection and more likely than adults to have frequent unprotected sex.

Viral STDs, for which there is currently no cure, have a lifelong impact on physical and emotional health. An estimated 40 million persons in the United States have genital herpes and 40 million have genital human papillomavirus (HPV). Of the types of HPV, some cause genital warts and others are closely linked to cancers of the cervix, vagina, anus, and penis.

Materials about herpes and HPV, including a free information packet on herpes, are available from the ASHA Resource Center, (800) 230-6039. Free brochures on sexual health are also offered through the ASHA Healthline, (800) 972-8500.