

Cervical Smears at Public Health Centres in Eastern Trinidad: Coverage and Follow-up, 2009–2010

G Lynch-George¹, RG Maharaj²

ABSTRACT

Background: The objective was to examine the cervical screening programme at selected health centres in the Eastern Regional Health Authority (ERHA), Trinidad and Tobago, specifically regarding Pap smear coverage, frequency distribution of abnormal smears and the adequacy of follow-up of abnormal smears, according to the Caribbean Frameworks for Developing National Screening and Clinical Guidelines for Cervical Cancer Prevention and Control.

Methods: A retrospective analysis of secondary data from five health centres in the ERHA over the two-year period 2009–2010 was conducted. Data were entered into Microsoft Excel, cleaned and imported into SPSS (v 12) for analysis. Descriptive and Chi-squared analyses were carried out.

Results: The cumulative cervical screening coverage for the years 2009 and 2010 was 2600 Pap smears for a population of 28 811 women (9% coverage). The proportion of cervical smears done per age group ranged from 1.6% to 8.6% in 2009 and from 1.9% to 12.9% in 2010. The proportion of Pap smears for the target population, 25–49 years, stood at 11% in 2009 and 13.2% in 2010. The distribution of abnormal Pap smears ($n = 155$) was: atypical squamous cell of undetermined significance (ASCUS), 68.4%; low-grade squamous intra-epithelial lesion (LSIL), 14.2%; atypical squamous cells – high-grade squamous intra-epithelial lesion cannot be excluded (ASC-H), 4.5%; atypical glandular cells of undetermined significance (AGUS), 1.3% and invasive squamous cervical carcinoma, 0.6%. Human papillomavirus was detected in 7.7% of the study population. More than half of the women with abnormal smears did not follow-up on recommendations for further care and there was a significant loss to follow-up especially among the women who were referred for repeat Pap smear. The significant predictor to whether follow-up care occurred or not was age ($p < 0.05$).

Conclusion: The cervical screening services in the ERHA in Trinidad did not provide adequate coverage to the target population or adequate follow-up care for women with abnormal smears in 2009 and 2010.

Keywords: Abnormal smears, cervical screening coverage, cervical screening guidelines, cervical smear, Eastern Regional Health Authority, follow-up care, health centres, Nariva/Mayaro, Pap smear, St Andrew/St David

Citologías Cervicales en los Centros de Salud Pública en Trinidad Oriental: Cobertura y Seguimiento, 2009 – 2010

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RESUMEN

Antecedentes: El objetivo fue examinar el programa de tamizaje cervical en centros de salud seleccionados de la Autoridad Regional Este de Salud (ERHA, siglas en inglés) de Trinidad y Tobago, específicamente con respecto a la cobertura de pruebas de Papanicolaou, la distribución de frecuencias de citologías anormales, y la adecuación del seguimiento de citologías anormales, de conformidad con los Marcos del Caribe para el Desarrollo del Tamizaje Nacional, y las Normas Clínicas para la Prevención y Control del Cáncer Cervical.

Métodos: Se realizó un análisis retrospectivo de datos secundarios de cinco centros de salud en el ERHA durante el período de dos años, 2009 – 2010. Los datos fueron introducidos en Microsoft Excel,

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depurados, e importados a SPSS (v 12) para su análisis. Se realizaron análisis descriptivos y de Chi-cuadrado.

Resultados: La cobertura acumulativa del tamizaje cervical durante los años 2009 y 2010 fue 2600 citologías cervicales o pruebas de Papanicolaou para una población de 28 811 mujeres (9% de cobertura). La proporción de citologías cervicales por grupo etario osciló de 1.6% a 8.6% en 2009, y de 1.9% a 12.9% en 2010. La proporción de citologías cervicales para la población objetivo de 25 a 49 años, alcanzó un 11% en 2009, y 13.2% en 2010. La distribución de citologías cervicales anormales ($n = 155$) fue como sigue: células escamosas atípicas de significado indeterminado (ASCUS), 68.4%; lesión intraepitelial escamosa de bajo grado (LSIL), 14.2%; células escamosas atípicas – la lesión intraepitelial escamosa de alto grado no puede ser excluida (ASC-H), 4.5%; células glandulares atípicas de significado indeterminado (AGUS), 1.3%; y carcinoma escamoso cervical invasivo, 0.6%. El virus del papiloma humano se detectó en el 7.7% de la población bajo estudio. Más de la mitad de las mujeres con citologías anormales no siguió las recomendaciones para el cuidado posterior, y hubo una pérdida considerable de seguimiento, especialmente entre las mujeres que fueron remitidas para repetir la citología cervical. La edad ($p < 0.05$) fue el predictor significativo para determinar si hubo o no cuidados de seguimiento.

Conclusión: Los servicios de tamizaje cervical en el ERHA en Trinidad no proporcionaron cobertura adecuada a la población objetivo o cuidados de seguimiento adecuados para las mujeres con citologías anormales en 2009 y 2010.

Palabras claves: Citologías anormales, cobertura de tamizaje cervical, normas para el tamizaje cervical, citología cervical, Autoridad Regional Este de Salud, cuidados de seguimiento, centros de salud, Nariva/Mayaro, prueba de Papanicolaou, San Andrew/San David

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INTRODUCTION

Cervical cancer is one of the preventable cancers, yet globally it is the third most common cancer in women and the seventh overall (1). Between 2000 and 2008, the global incidence of cervical cancer increased from 493 000 to 529 800 and the mortality from 273 000 to 275 000 (1). In North America, there has been a steady decline in the incidence of cervical cancer with rates as low as 10 cases per 100 000, compared to Latin America and the Caribbean with estimated rates of more than 20 cases per 100 000 (2).

In Trinidad and Tobago, between 1997 and 2006, there were 678 deaths due to cervical cancer (3) and the cervical cancer incidence and mortality rates (for 2012) stood at 13.5% and 12.9%, respectively of all cancers in women (4). For the Eastern Regional Health Authority (ERHA), Trinidad and Tobago, there were 95 cases and 17 deaths from cervical cancer for the period January 1997 to December 2006 (3).

Cervical screening guidelines for the Caribbean region recommend that at a minimum, 80% of women aged 25–50 years who have ever engaged in sexual intercourse should be screened for precancerous cervical lesions. Additionally, women with an abnormal cervical smear result should have repeat cervical screening at consecutive intervals or gynaecological evaluation (5).

Studies have drawn attention to several challenges with cervical screening programmes. The major concerns are inadequate coverage of the target population and poor follow-up of women with abnormal cervical smears (6, 7). In light of this situation, technical experts have recommended

regular monitoring of core indicators such as coverage of target population and follow-up of women with positive screening results in order to implement effective programmes to achieve the goal of cervical screening (8).

The aim of this study was to evaluate whether the current cervical screening programme in the ERHA in Trinidad and Tobago was achieving the international benchmarks (8–10).

The objectives of the study were:

- To identify the number and proportion of women in each age category, with emphasis on the 25–49-year age group, who are accessing cervical screening services at selected health centres.
- To describe the frequency distribution of abnormal smears detected in each Pap smear abnormality category.
- To determine the outcome of women with abnormal smears who were recommended for either repeat Pap smear or gynaecological evaluation.

SUBJECTS AND METHODS

The study was a retrospective analysis of data from the cervical screening programme at five health centres in eastern Trinidad for the period January 2009 to December 2010 and was conducted during the period June 1 to June 30, 2011.

A purposive sampling of one health centre within each of the five clusters in the ERHA was carried out. Each chosen health centre represented the largest population

catchment area. The subjects of this study were women, aged 15–69 years, who had a Pap test in 2009 and 2010. In addition, the clients whose cervical smears were abnormal, within the same period, were selected to determine whether outcome of care was based on established guidelines.

A data collection form, adapted from the National Cervical Screening Services Evaluation Monthly Report, was used to extract data for the first objective from the cervical screening registers. The data collected were the number of Pap smears carried out in each age category: 15–24, 25–29, 30–39, 40–49, 50–59 and 60–69 years, the cumulative total of Pap smears carried out, and the types and numbers of abnormal smears detected in each Pap smear abnormality category.

For the second objective, data from clients whose cervical smears were abnormal were collated on a separate extraction form. The form was created based on information from the literature review and was validated by an independent medical officer from another health facility. It was pretested by independent healthcare providers from other health centres and modified as necessary. The Principal Investigator collected all data so standardization was ensured throughout data collection. The information recorded at this stage was clients' identifiers and type of abnormal lesions detected.

Using the same data collection form, data for the third objective were collected from each client's record which was filed at the health centres. The data collected were:

- Whether the client returned for the results of the cervical screening
- Whether the client was recommended for a repeat Pap smear
- Whether the client followed-up on the request for a repeat Pap smear
- Whether the client was recommended for a gynaecological evaluation
- Whether the client followed-up on the recommendation for gynaecological evaluation
- Description of the client's follow-up care, *ie* optimal, suboptimal or poor [defined below (6)]
- Details of client's demographic data, age, ethnicity, union status, educational level and household income

The definition of optimal care is care based on the recommended schedule for an abnormal smear, *ie* for low-grade lesions or human papillomavirus (HPV), repeat Pap smear within six to eight months; for high-grade lesions, referral for gynaecological evaluation within six weeks of receipt of abnormal results (6). Suboptimal care means that the woman had follow-up care but not according to the recommended schedule as stated above. Poor care means that the woman did not follow-up on the recommended schedule for care (6).

Additional data collection

In the instance where there was no documentation concerning follow-up care on the client's record, the woman was contacted *via* telephone. A request was made for her recruitment in the study, following which she was asked about the outcome of her cervical screening test. Where efforts to contact the woman were ineffective, it was recorded as lost to follow-up.

The total number of women in each age category per catchment area was provided by the Central Statistical Office. We used the local government boundaries which is similar to the Regional Health Authority boundaries.

Data analysis and ethical considerations

Data were entered into Microsoft Excel, cleaned and imported into SPSS v 12 for analysis. Descriptive and Chi-squared analyses were carried out.

Approval for this study was granted by the Ethics Committee of the Faculty of Medical Sciences, The University of the West Indies, St Augustine. The Eastern Regional Health Authority and the County Medical Officers of Health of the county of Nariva/Mayaro and St Andrew/St David granted approval for the research project to be conducted within the healthcare facilities. Informed consent was obtained verbally from study participants who had to be followed-up where there was no documentation concerning outcome of care. Confidentiality was maintained at all stages.

RESULTS

Cervical screening coverage

The cumulative cervical screening coverage for the years 2009 and 2010 was 2600 Pap smears for a population of 28 811 women (9% coverage). Table 1 demonstrates the proportion of cervical smears done in each age group in the county of Nariva/Mayaro. In 2009, 517 cervical smears were done, with proportion ranging from 2.3%–8.6% among the various age groups. The cumulative coverage in the 25–49-year age group stood at 6.8% ($n = 346$). For 2010, the number of cervical smears done totalled 708, with the proportion of smears per age group ranging from 2.3%–12.9%. The cumulative coverage achieved for the 25–49-year age group was 8.3% ($n = 422$). If any woman had two Pap smears in the two-year period, it was based on the recommended schedules and was not counted in the total.

Table 2 demonstrates the number of cervical smears done for the years 2009 and 2010 in the county of St Andrew/St David. The coverage ranged from 1.6%–5.4% and 1.9%–5.4% for the respective years. The cumulative coverage for the 25–49-year age group for the respective years were 4.2% ($n = 411$) and 4.9% ($n = 478$).

Table 1: Proportion of smears done in each age group: Nariva/Mayaro, 2009 and 2010

2009 Age group (years)	Number screened	Age group population	% screened	2010 Age group (years)	Number screened	Age group population	% screened
15–24	67	2903	2.3%	15–24	67	2903	2.3%
25–29	61	1105	5.5%	25–29	92	1105	8.3%
30–39	148	2377	6.2%	30–39	169	2377	7.1%
40–49	137	1598	8.6%	40–49	161	1598	10.0%
50–59	70	1064	6.6%	50–59	137	1064	12.9%
60–69	34	747	4.5%	60–69	80	747	10.7%
Total	517	9794	5.3%		706*	9794	7.2%

Data on age groups population – Central Statistical Office; 2000; *Ages of two subjects were not obtained

Table 2: Proportion of smears done in each age group: St Andrew/St David, 2009 and 2010

2009 Age group (years)	Number screened	Age group population	% screened	2010 Age group (years)	Number screened	Age group population	% screened
15–24	91	5681	1.6%	15–24	107	5681	1.9%
25–29	91	2132	4.3%	25–29	116	2132	5.4%
30–39	136	4293	3.2%	30–39	203	4293	4.7%
40–49	184	3384	5.4%	40–49	159	3384	4.6%
50–59	103	2131	4.8%	50–59	116	2131	5.4%
60–69	35	1396	2.5%	60–69	31	1396	2.2%
Total	640	19017	3.4%		735	19017	3.9%

Frequency of abnormal smears

Table 3 outlines the type and frequency distribution of abnormal Pap smears (n = 155) detected among women from

Table 3: Types and frequency (%) of abnormal smear: Nariva/Mayaro and St Andrew/St David, 2009 and 2010

Type of abnormal smears	n (%)
ASCUS	106 (68.4)
LSIL	22 (14.2)
HSIL	5 (3.2)
ASC-H	7 (4.5)
AGUS	2 (1.3)
InvSqCC	1 (0.6)
HPV	12 (7.7)
Total	155 (100)

ASCUS – atypical squamous cell of undetermined significance, LSIL – low-grade squamous intra-epithelial lesion, HSIL – high-grade squamous intra-epithelial lesion, ASC-H – atypical squamous cells – high-grade squamous intra-epithelial lesion cannot be excluded, AGUS – atypical glandular cells of undetermined significance, InvSqCC – invasive squamous cervical carcinoma, HPV – human papillomavirus

the five health centres. It showed that there is a high occurrence of the low-grade lesions, atypical squamous cell of undetermined significance (ASCUS), 68.4%, among the

women of the region. With respect to the high-grade lesions, atypical squamous cells – high-grade squamous intra-epithelial lesion cannot be excluded (ASC-H), 4.5%, was noted to be the most frequent. Invasive squamous cervical carcinoma was reported in 0.6% of the women. Human papillomavirus was reported in 7.7% of the study population.

Of the 155 women with abnormal smears, 136 (87.7%) were recommended for repeat Pap smear and 19 (12.3%) were referred for gynaecological evaluation.

Table 4 describes the summary of the outcome of women who were recommended for repeat Pap smear or

Table 4: Outcome of women recommended for follow-up care at health centres: Nariva/Mayaro and St Andrew/St David, 2009 and 2010

Outcome	n (%)
Optimal care	49 (31.6)
Suboptimal care	21 (13.5)
Poor follow-up	
• Contacted <i>via</i> phone re outcome	28 (18.0)
• Lost to follow-up	57 (36.8)
Total	155 (100)

gynaecological evaluation at the selected health centres. The study findings showed that of the total referrals (n = 155), 31.6% had optimal care, 13.5% suboptimal, and 54.8% poor

follow-up care. Of the women with poor follow-up care, 36.8% were lost to follow-up.

According to Table 5, Chi-squared analysis indicated a significant relationship between age and follow-up care ($p < 0.05$).

Table 5: Predictors of follow-up attendance: Nariva/Mayaro and St Andrew/St David, 2009 and 2010

Variables	Follow-up attendance		Chi-squared df	p-value
	Yes	No		
Age (years)*				
• < 20–29	14 (23%)	47 (52.8%)	2	0.000
• 30–49	36 (69%)	37 (41.6%)		
• 50–69	11 (18%)	5 (5.6%)		
Ethnicity*				
• African	23 (46%)	30 (52.6%)	2	0.418
• Indian	12 (24%)	8 (14%)		
• Mixed	15 (30%)	19 (33.3%)		
Union status*				
• None	14 (28%)	13 (21.3%)	1	0.414
• Partnership	36 (72%)	48 (78.7%)		
Educational level*				
• Primary	4 (13.8%)	10 (25%)	2	0.205
• Secondary	22 (75.9%)	22 (55%)		
• Tertiary	3 (10.3%)	8 (20%)		

*Data missing for all variables

DISCUSSION

The screening and follow-up management of cervical abnormalities in five health centres of the Eastern Regional Health Authority have been shown to be well below established recommendations. Two thousand six hundred Pap smears were done for a population of 28 811 women (9% coverage) over the two years 2009–2010. The commonest abnormalities found among all age groups were the low-grade lesions, ASCUS and low-grade squamous intra-epithelial lesion (LSIL). There was a small but significant incidence of invasive squamous cervical carcinoma detected within the 30–39-year age category. Of the 155 women who were recommended for further care, 68.3% were not followed-up according to the guidelines. In addition, there was a significant proportion of women (36.8%) who were unable to be contacted, and were described as lost to follow-up, because of inadequate demographic data. The significant predictor to the outcome of follow-up care was age, with greater proportions of older women receiving follow-up.

The low cervical screening coverage of the target population mirrors similar findings from international and regional studies. Significantly, these data from Trinidad and Tobago, a middle income country with a gross domestic product (GDP) of approximately 18 000 USD is comparable to statistics reported from low-income economies such as those in sub-Saharan African countries.

Chirenje *et al* conducted a situational analysis of cervical screening services at various countries in the sub-Saharan regions and found that an average of four Pap smears per month was performed in the primary health centres (11). In a municipal area of South Africa, Pillay *et al* reported similar findings with an average of 20 Pap smears monthly performed at different clinics (12).

Another upper-middle income country, Romania, has also recorded extremely low cervical screening coverage. Research in 2010 found low cervical screening rates in all its regions. These rates ranged from 3.2% to 0.6% with the contributing factors being lack of an organized cervical screening programme and adequate financing for Pap tests (13).

Regionally, Murillo *et al* reviewed secondary data concerning cervical screening programmes in Latin America and the Caribbean and found a paucity of data concerning performance indicators for cervical screening programmes (14). However, Bessler *et al* reported low screening rates in Jamaica. The study showed that in one parish, only 6.3% of the total population of women 25–54 years had cervical screening for 2004 (15).

Concerning inadequate follow-up care as reported in this study, a literature review confirms our findings with other studies. Billette-de Villemeur *et al* reported that out of 1154 women in France referred for follow-up care for ASCUS, more than 75% did not meet the guidelines (7). Dzuba *et al* also reported from Bolivia that 50% to 80% of women with abnormal cervical smears were lost to follow-up (16). A similar study by Singhal *et al* in the United States of America (USA) found that a significant proportion of women were not receiving the care as recommended (6).

Several studies have highlighted the issues with poor follow-up for cervical screening in developing countries. The contributing factors responsible for this problem in Bolivia were lack of information and tracking systems, poor coordination between screening and treatment level of service, health providers' attitude, and tardiness in communicating results to women (16). In addition, Arrossi *et al* found that problems with low coverage were associated with absence of quality control and a lack of monitoring and evaluation (17).

There were three categories of factors that influence follow-up: personal, procedure/provider/system and ecological/community factors (18). It is necessary, therefore, that cervical screening programmes which have experienced poor follow-up success conduct knowledge, attitude and practice (KAP) studies among women to determine the factors which hinder compliance. In light of the impending national HPV vaccination thrust for adolescents, it is also important to initiate discussions in order to understand barriers that will hinder participation.

Limitations

The cervical screening coverage was determined from a county perspective rather than from a health centre perspective according to the objective of the study. This was so because data for the target population were only available from a county level.

Data on coverage were collated for only two years and clients' follow-up care for repeat Pap smear was determined for only the first six months and hence a comprehensive description of coverage and follow-up of the women accessing care for cervical screening could not be provided. It is recommended that further study be conducted using an extended period in order to obtain a more comprehensive description of coverage and women with abnormal smears who require follow-up care.

Despite the fact that the sample did not include cervical screening uptake from the private healthcare providers as well as outreach programmes conducted by the local Family Planning Association, the data can be considered a fair estimate of the cervical screening uptake for the region. Key informants from these establishments revealed that estimates of cervical cancer screening coverage at non-governmental organizations are less than 2% per annum.

CONCLUSION

The findings from this research have revealed that the cervical screening services are not maximizing the available resources and as such the target population is not receiving maximum benefit from the programme. Cervical screening services, therefore, should aim at integration of the various components of the programmes, improvement in information and tracking system and an understanding of the challenges which prevent women from accessing cervical screening services. In addition, services should be made more accessible by providing daily walk-in clinics at the health centres with the largest catchment population and mobile services to rural areas. Such strategies will be excellent attempts in achieving the recommended coverage of 80% of the target population and hence the achievement of early detection and treatment of precancerous lesions and the reduction of adverse effects of cervical cancer.

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REFERENCES

1. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer* 2010; **127**: 2893–917.
2. Lewis M. A situational analysis of cervical cancer in Latin America and the Caribbean. Washington, DC: Pan American Health Organization; 2004.
3. Roach V. National Cancer Registry, Eric Williams Medical Sciences Complex, Champ Fleur, Trinidad and Tobago. Conversation with: Glenda Lynch-George (District Health Visitor, County St Andrew/St David-Cluster 11, Eastern Regional Health Authority, Sangre Grande, Trinidad and Tobago). 2010 Nov 19.
4. International Agency for Research on Cancer. GLOBOCAN 2012. Estimated cancer incidence, mortality and prevalence worldwide 2012: Trinidad and Tobago [Internet]. Lyon, France: IARC; ©2014 [cited 2014 Jun 24]. Available from: http://globocan.iarc.fr/Pages/fact_sheets_population.aspx
5. Caribbean Epidemiology Centre. Caribbean cervical cancer prevention and control project. Caribbean framework for developing national screening and clinical guidelines for cervical cancer prevention and control. Port-of-Spain: Caribbean Epidemiology Centre; 2004.
6. Singhal R, Rubenstein LV, Wang M, Lee ML, Raza A, Holschneider CH. Variations in practice guideline adherence for abnormal cervical cytology in a county healthcare system. *J Gen Intern Med* 2008; **23**: 574–80.
7. Billette-deVillemeur A, Poncet F, Garnier A, Marron J, Le Marc'hadour F, Morens A et al. Evaluation of the follow-up of women aged 50–74 years after cervical cytological Abnormalities in cancer screening: adherence to clinical practice guidelines in Isere, France; 1991–2000. *Gynecol Obstet Fertil* 2009; **37**: 787–95.
8. Pan American Health Organization. Regional strategy and plan of action for cervical cancer prevention and control in Latin America and the Caribbean. Washington, DC: Pan American Health Organization: 2010 [cited 2011 May 25]. Available from: www.rho.org/files/PAHO_Regional_Strategy_2010.pdf
9. World Health Organization. Comprehensive cervical cancer control: a guide to essential practice. Integrating healthcare for sexual and reproductive health and chronic diseases. Geneva: World Health Organization; 2006.
10. Wilson T. Proposal for the introduction of cytology services/Pap-smears. Sangre Grande: Eastern Regional Health Authority; 2004.
11. Chirenje ZM, Rusakaniko S, Kirumbi L, Ngwalle EW, Makya-Tlebere P, Kagwa S et al. Situation analysis for cervical cancer diagnosis and treatment in east, central and southern African countries. *Bull World Health Organ* 2001; **79**: 127–32.
12. Pillay P, Knight SE, Rmaili WNS. Cervical cancer screening in urban clinics in eThekweni municipal area. *South Afr J Epidemiol Infect* [serial on the internet] 2009; **24**: 18–20 [cited 2011 Nov 4]. Available from: <http://www.sajei.co.za/index.php/SAJEI/article/viewFile/178/160>
13. Apostol I, Baban A, Nicula F, Suteu O, Coza D, Amti C et al. Cervical cancer assessment in Romania under EUROCHIP-2. *Tumori* 2009; **96**: 545–52.
14. Murillo R, Almonte M, Pereira A, Ferrer E, Gamboa OA, Jeronimo J et al. Cervical cancer screening programs in Latin America and the Caribbean. *Vaccine* [serial on the internet] 2008; **26** (Suppl 11): L37–48 [cited 2011 Apr 4]. doi: 10.1016/j.vaccine.2008.06.013. Available from: <http://www.sciencedirect.com/science/article/pii/S02644110X08007317>
15. Bessler P, Aung M, Jolly P. Factors affecting uptake of cervical cancer screening among clinic attendees in Trelawny, Jamaica. *Cancer Control* 2007; **14**: 396–404.
16. Dzuba IG, Calderon R, Bliesner S, Luciani S, Amado F, Jacob M. A participatory assessment to identify strategies for improved cervical cancer prevention and treatment in Bolivia. *Rev Panam Salud Publica/Pan Am J Public Health* 2005; **18**: 53–63.
17. Arrossi S, Paolino M, Sankaranarayanan R. Challenges faced by cervical cancer prevention programs in developing countries: a

situational analysis of program organization in Argentina. *Rev Panam Salud Publica* [serial on internet] 2010; **28**: 249–57 [cited 2011 Apr 4]. Available from: http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S1020-49892010001000003&lng=en&nrm=iso&tlng=en

18. Schoenber N, Baltisberg J, Bardach S, Dignan M. Perspectives on Pap test follow-up care among rural Appalachian women. *Women Health* [serial on the internet] 2010; **50**: 580–97. doi: 10.1080/03630242.2010.516702 [cited 2011 Nov 3]. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2967444/>