



High-grade squamous intraepithelial lesions in pregnant and non-pregnant women



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ABSTRACT

Objectives: To evaluate if the prevalence of cervical smear results varies between pregnant and non-pregnant women stratified by age group.

Study design: Observational analytical study with a total sample of 1,336,180 pregnant and non-pregnant women, aged between 20 and 34 years, who underwent cervical cancer screening in the Primary Health Care of the national health system in the area of Campinas in Brazil during the period of 2005–2009. The source is the information system for cervical cancer screening. Data collected on abnormal cervical smears were analyzed using the Chi-square test and Fisher's exact test and the magnitude of the association between pregnancy and high-grade squamous epithelial lesions was analyzed by odds ratio (OR) and estimated values with confidence intervals (CI) of 95%.

Results: 15,190 pregnant women and 395,961 non-pregnant women were analyzed and fulfilled the inclusion criteria. Regardless of age, no statistical differences were observed for high-grade squamous intraepithelial lesion prevalence (OR 0.90; CI 0.66–1.23). Taking into account the five-year age groups, however, low-grade squamous intraepithelial lesion was less prevalent in pregnant women aged 20–24 (OR 0.71; 0.54–0.95) and 25–29 years (OR 0.56; 0.35–0.89); also, atypical squamous cells of undetermined significance was more prevalent in non-pregnant women aged 25–29 years (OR 0.72; 0.54–0.97).

Conclusion: The study showed that the cytological prevalence of high-grade squamous intraepithelial lesion was similar in pregnant and non-pregnant women, regardless of age. The results indicate that there are no reasons for specific approaches to cervical cancer screening for pregnant women. The examination should be carried out only on pregnant women who have not been tested according to current recommendations.

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1. Introduction

Cervical cancer is the most preventable neoplasia and the cervical smear test continues to be the tool for early detection of precursor lesions [1,2]. High parity and young age at first full-term pregnancy have been described as risk factors for cervical cancer [3,4]. It is estimated that cervical cancer occurs at rates ranging from one to twelve cases per ten thousand pregnancies, setting it as the most frequently diagnosed malignancy in pregnancy [5–10].

The prevalence of abnormal precursor lesions is not uniform in all populations and may vary due to particularities of the studied groups [4–6,10–12].

Moreover, the incidence of HPV infection is higher in women aged 20–25 years, and the development of precursor lesions is associated with persistence of the infection [11–14]. Most pregnancies occur when women are aged between 18 and 35 years, which is the same age group that has the highest rates of the precursor lesions of cervical cancer [6]. Besides, there are recommendations in current literature that cervical smears are a component of routine pregnancy care, especially for women who had not been tested before becoming pregnant; establishing it as the only method for cancer screening performed during pregnancy [5–10].

Despite campaigns and the work of health teams, there is a high frequency of women who do not perform routine gynecological

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Table 1
Frequency of cervical smear results in pregnant and non-pregnant women aged 20–34 years old.

Cervical smear diagnostic	Pregnant (n = 15 190)	Non-pregnant (n = 395 961)	OR ^f (CI ^g 95%)
ASCUS ^a	172 (1.1%)	5181 (1.3%)	0.86 (0.74–1.00)
LSIL ^b	80 (0.5%)	2655 (0.7%)	0.78 (0.62–0.98)
HSIL ^c + ISC ^d	42 + 0 (0.3%)	1198 + 13 (0.3%)	0.90 (0.66–1.23)
Negative ^e	14 896 (98.1%)	386,914 (97.7%)	1

$p > 0.060$ Fisher test.

^a ASCUS: atypical squamous cells of undetermined significance.

^b LSIL: low-grade squamous intraepithelial lesion.

^c HSIL: high-grade squamous intraepithelial lesion.

^d ISC: invasive squamous carcinomas.

^e Negative: negative for intraepithelial lesion or malignancy.

^f OR: odds ratio

^g CI: Confidence interval.

examinations. In this context, many women have their first gynecological examination when they are pregnant [5,6,10], and therefore more advanced lesions could be diagnosed than expected for their age. Moreover, It is known that during pregnancy the analysis of a cervical smear can present diagnostic difficulties, for example the presence of inflammatory and decidual cells that may be confused with atypical changes of undetermined significance [2,8–10].

In this context, this study presents a large sample size (total sample of 1,336,180) of pregnant and non-pregnant women attending the same clinics. There are few studies, as far as we know, that aim to report the rates of abnormal cervical smears in pregnant and non-pregnant women categorized into specific age groups.

2. Material and methods

This was an observational analytical study for assessment of the prevalence of cervical lesions in pregnant and non-pregnant women aged between 20 and 34 years from a population living in the Campinas metropolitan region, a densely populated urban area in south-east Brazil (State of São Paulo). The sample consisted of tests obtained from the Cytopathology Laboratory database of Dr. José Aristodemos Pinotti Women's Hospital, Universidade Estadual de Campinas (Unicamp), from January 2005 to December 2009 (5 years). This laboratory receives tests collected for cervical cancer screening purposes from patients in 70 municipalities of the Campinas region. This database did not include any tests conducted in private clinics. The vast majority of women managed by the public health system had no access to private medicine.

Therefore, patients included in this database had only a very slight chance of being screened by the private health system.

Physicians or nurse practitioners in primary health care collected material for cytology testing. The screening is opportunistic, so women were not invited for screening. No changes in delivery of the cervical cytology local services were observed over the five years of the study. The database contained patient identification, age and time since last cervical screening test. At the cytopathology laboratory, cytotechnologists performed routine evaluation and reading of the cervical smear tests. Cytopathologists reviewed suspicious cases. Thirty per cent of negative tests were randomly selected for quality control, carried out by senior cytotechnologists and cytopathologists.

The study excluded women who had had a previous cervical smear test within the last year, had a history of cervical cancer, or those that had been submitted to radiotherapy or chemotherapy. Incorrectly labeled tests and those classified as unsatisfactory or for purposes other than screening were also excluded. The results of cervical smears were reported by pathologists according to Solomon et al. [15], and were categorized as: negative for intraepithelial lesion or malignancy, atypical squamous cells of undetermined significance (ASCUS), low-grade squamous intraepithelial lesion (LSIL), high-grade squamous intraepithelial lesion (HSIL), atypical glandular cells (AGC), atypical glandular cells suspicious for neoplasia and adenocarcinoma in situ, invasive squamous carcinomas (ISC) and invasive adenocarcinomas. Since the categories were based on the classification from the beginning of the 90s, a category of atypical squamous cells that cannot exclude HSIL (ASC-H) [16] was not considered. Therefore the following results were included in this study: negative for

Table 2
Cervical smear results in pregnant and non-pregnant women stratified by age-group.

Age-groups (years)		Cervical smear results				
		Negative ^a	ASCUS ^b	LSIL ^c	HSIL ^d	ISC ^e
20–24	Pregnant	6999 (97.7%)	99 (1.4%)	50 (0.7%)	17 (0.2%)	0 (0.0%)
	Non-pregnant	127,967 (97.2%)	2077 (1.5%)	1275 (1.0%)	389 (0.3%)	1 (0.0%)
	OR ^f (CI ^g 95%)	1	0.87 (0.70–1.06)	0.71 (0.54–0.95)	0.80 (0.49–1.29)	
25–29	Pregnant	4912 (98.4%)	48 (0.9%)	18 (0.4%)	16 (0.3%)	0 (0.0%)
	Non-pregnant	131,909 (97.7%)	1769 (1.4%)	862 (0.6%)	455 (0.3%)	4 (0.0%)
	OR ^f (CI ^g 95%)	1	0.72 (0.54–0.97)	0.56 (0.35–0.89)	0.93 (0.56–1.53)	
30–34	Pregnant	2985 (98.5%)	25 (0.8%)	12 (0.4%)	9 (0.3%)	0 (0.0%)
	Non-pregnant	127,038 (98.3%)	1335 (1.0%)	518 (0.4%)	354 (0.3%)	8 (0.0%)
	OR ^f (CI ^g 95%)	1	0.79 (0.53–1.19)	0.99 (0.55–1.75)	1.05 (0.54–2.04)	

^a Negative: negative for intraepithelial lesion or malignancy.

^b ASCUS: atypical squamous cells of undetermined significance.

^c LSIL: low-grade squamous intraepithelial lesion.

^d HSIL: high-grade squamous intraepithelial lesion.

^e ISC: invasive squamous carcinomas.

^f OR: odds ratio.

^g CI: confidence interval.

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