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## The Influence of Occupation on Genital Tract Infections

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# The Influence of Occupation on Genital Tract Infections

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## Abstract

**Background:** Genital tract infections such as Gardnerella vaginalis vaginosis, trichomoniasis and candidiasis have continued to assume importance because of the particular unique features of their main causative organisms- Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans, and myriads of clinical and pathological changes in affected persons.

**Aim:** To study the association between occupation and genital tract infections

**Methods:** The subjects were 450 randomly selected sexually active women attending antenatal, postnatal, gynecology and family planning clinics in the Department of Obstetrics and Gynecology of the University of Maiduguri Teaching Hospital from April 2001 to May 2002. The Pap smear of these patients were examined microscopically for the evidence of Candida albicans, Gardnerella vaginalis and Trichomonas vaginalis. A questionnaire assessing the occupations of the patients was administered.

**Results:** Sixty-six (66) of the 459 patients studied had specific infections giving a prevalence rate of 14.7%. Candida albicans, Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans in conjunction with Gardnerella vaginalis contributed 7.1%, 5.15%, 2.4% and 1.8% respectively to this overall prevalence. Their ages ranged between 15 and 64 years, with a mean of 26± 3 years.

**Conclusion:** Students and those not currently employed are at increased risk of acquiring genital tract infections and should be the target in sporadic or organized sexually transmitted infections screening without discriminating other sexually active women.

## Introduction

Genital tract infections such as Gardnerella vaginalis vaginosis, trichomoniasis and candidiasis have continued to assume immense importance not only because of the particular unique features of their main

causative organisms- Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans, but also the fact that the organisms can elicit myriads of clinical and pathological changes in different body tissues, organs and systems. [1] They have been implicated in neonatal meningitis, urinary tract infections, pyogenic liver abscess and following prostatectomy. [2-5] Cervical cytology has not only served the purpose of screening for cervical intra-epithelial (CIN) lesions but has been useful in the diagnosis of genital tract infections such as Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans. The Papanicolaou smear for cervical cytology is cost effective, acceptable to most patients and adaptable to wide spread screenings. [7] In low resource areas where facilities might not be easily available to detect the above mentioned genital tract infections, cervical cytology has been found to very helpful. [6] It is also specific enough to detect cytological changes pathognomonic of human papilloma virus, which ordinarily is difficult to isolate under normal laboratory conditions, except by the use of special techniques like DNA Hybridization, PCR amplification or viral culture. [7-9]

Many studies have tried to show some kind of association between occupation and the risk of developing genital tract infections. [6, 10] Such socio-demographic factors may be useful in risk scoring systems. This is important because risk scoring systems have the potential for assisting the targeting of screening resources as broad risk targeting of all sexually active women is not a viable option for developing countries due to paucity of both human and financial resources. Even in the industrialized nations Of the West, the need for more precise targeting of high risk groups in order to improve the efficiency of sexually transmitted infections screening and conserve funds has become a major issue. [11]

This study looks at the association between occupation and genital tract infections.

## Methods

The subjects were 450 randomly selected sexually

active women attending various clinics in the department of Obstetrics and Gynaecology of the University of Maiduguri Teaching Hospital.

These included the antenatal, postnatal, gynaecology and family planning clinics. They were recruited after consenting to participate and a formal approval had been given by the institution's ethics and research committee. The recruitment continued until a sample size of 450 was reached. This was calculated using the Epi Info version 6 programme for population or descriptive study using simple random sampling. It was based on a population of 4,342 patients/ clients attending the recruiting clinics from April 2001 to May 2002. The purpose, value and nature of the procedure was explained to each prospective patient and her consent obtained. All the consenting patients had their pap smears taken using a moistened unlubricated Cusco's bivalve speculum and an Ayre's wooden spatula after a questionnaire containing occupation of the woman had been filled. The smears were immediately transported to the histopathology laboratory immersed in 95% ethanol for preparation, staining and reading. The smears were examined microscopically by a pathologist at the magnifications of 4, 10 and 100.

The WHO Epi Info statistical programme was used to compute and analyze the results. These included frequency distribution and tests of significance using chi-square (?). A P value of

Inclusion criteria: All sexually active women attending the above clinics and who consented to participate in the programme were included until a sample size was reached.

Exclusion criteria: Women who declined to consent were exempted, so were those whom had never been sexually exposed. In addition, those with obvious cervical lesions, vaginal discharge and those whom were menstruating were excluded from the study.

## Results

Table 1 shows the cytology results of the Papanicolaou smears. Specific infections were identified in 66 of the 450 patients studied giving an overall prevalence rate of 14.7%. The contributions each of *Candida albicans*, *Gardnerella vaginalis* and *Trichomonas vaginalis* to this overall prevalence rates is depicted in Table 2, with *Candida albicans* constituting the highest of prevalence of 7.1% of all

infections.

Table 3 shows the distribution of the patients by occupation. The prevalence of each of the infections was highest among students and was lowest among housewives and business executives. These differences were statistically significant ( $P = 0.034$ ).

SEE THE TABLES IN THE ADDITIONAL ILLUSTRATION SEGMENT

## Discussion

The prevalence of specific genital infections in this study which was 14.7% is similar to the 13.7% reported by Konje et al [6] from Ibadan and Ngokerre and Ofordile [12] from Enugu. The prevalence of *Gardnerella vaginalis* the major aetiological agent of bacterial vaginosis, in this study of 5.1% is much lower than the 40.8% reported by Adimma et al [1] from Nnewi, 42% by Oji [13] from Lagos, and 10% by Chowdry et al [14] in India. Variations in incidence are invariably related to the characteristics of the population studied, the period of study, the technique used in isolating the organisms and the presence or absence of symptoms of the infections among the patients studied. The low prevalence of genital infections in this study compared to those of Adinma et al [1], Oji [13] and Abudu [15] et al is probably due to the fact that virtually all the patients (87%) were asymptomatic. This study shows that the highest incidence of sexually transmitted genital infections (e.g. *T. vaginalis*) occurred among students and those currently not engaged in any economic activity, while those with secured means of livelihood such as housewives and business executives were at least risk of contacting *T. vaginalis*. The underlying factor might be multiple sexual partners as those who engage in sexual promiscuity do so for economic reasons. [11] Married women, probably due to marital stability with one sexual partner have less likelihood of exposure to male carriers of genital infections compared to single women who would probably have multiple sexual partners and have greater chances of encountering a male carrier of these infections. This is in keeping with the host donor agent theory [16] which states that every act of coitus has a separate and fixed probability that one or more cells will become available to the infectious agent during the act of coitus. It has been stated that religion and socio-economic orientation are the determinants of marital stability and stability of sexual relationships [17], with women from poor socio-economic backgrounds being more liable to

sexual promiscuity and early sexual exposure, hence greater predisposition to acquiring sexually transmitted infections compared to their more affluent counterparts. The effect is independent of race. These associations may allow for targeting of a high risk group in sporadic sexually transmitted infections (STI) screening programmes as is the practice in most developing countries such as ours or in an organized systematic STI screening programme without discriminating other sexually active women. There is also need for an increased use of this cost effective and acceptable diagnostic tool in the diagnosis of genital tract infections, especially in centers with organized cervical cytology screening programmes and in low resource areas where there might be shortage of manpower and facilities might not be adequate since it is essentially an office procedure.

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## Illustrations

### Illustration 1

Table 1. Result of Pap smear in 450 subjects

<b>Class of Pap smear</b>	<b>No</b>	<b>% age</b>
<b>Normal</b>	<b>20</b>	<b>45.6</b>
<b>Specific Infections</b>	<b>66</b>	<b>14.7</b>
<b>Non specific Inflammation</b>	<b>58</b>	<b>12.9</b>
<b>CIN</b>	<b>73</b>	<b>16.2</b>
<b>HPV changes</b>	<b>48</b>	<b>10.7</b>
<b>Total</b>	<b>450</b>	<b>100</b>

## Illustration 2

Table 2. Percentage distribution of the organisms

Organism	No	%
<i>Candida albicans</i>	3	7.1
<i>Gardnerella vaginalis</i>	23	5.1
<i>Trichomonas vaginalis</i>	11	2.4
<i>Candida albicans</i> + <i>Gardnerella vaginalis</i>	8	1.8
Overall prevalence	14.7%	N=450

### Illustration 3

Table 3. Prevalence of infections by occupation.

Occupation	<i>C. albicans</i> No (%) n= 32	<i>G. vaginalis</i> No (%) n=23	<i>T. vaginalis</i> No (%) n=11
Housewife	1(3.1)	0(0)	0(0)
Business executive	1(3.1)	0(0)	0(0)
Professional	1(3.1)	1(4.3)	0(0)
Civil servant	4(12.5)	3(13.0)	1(9.1)
Petty trader	5(15.6)	4(17.4)	1(9.1)
Apprentice	5(15.6)	4(17.4)	2(18.2)
None	6(18.8)	5(21.7)	3(27.3)
Student	9(28.1)	6(26.1)	4(36.4)

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