

Prevalence of vaginitis, syphilis and HIV infection in women in the Orange Free State

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Objective. To determine the prevalence of vaginitis, syphilis and HIV infection in women in the Orange Free State.

Method. By cluster sampling, 120 rural (farm) and 120 urban (local authority) clusters, each containing 4 women, were selected. Women aged 18 - 49 years who were included in the study had a cervical smear taken for cytological evaluation and blood specimens drawn for syphilis and HIV testing; they were questioned on their knowledge of AIDS.

Results. *Trichomonas vaginalis* vaginitis was present in 27,4% of the rural women and 29,6% of the urban women, *Gardnerella vaginalis* in 7,2% and 8,4% and *Candida* spp. in 2,6% and 6,7% respectively. Syphilis serology was positive in 12% of rural and 16% of urban women. HIV was present in 0,4% of rural and 1,5% of urban women. Ninety per cent of urban women and 74% of rural women knew AIDS was a sexually transmitted disease.

Conclusions. The prevalences of trichomonas vaginitis and syphilis were unusually high, while HIV positivity was similar to that in other reports in South Africa.

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Sexually transmitted diseases are a worldwide problem and have a significant impact on infected people's health as well as on health care services. In women of the Orange Free State, vaginitis, cervicitis and syphilis are common while the incidence of HIV infection is rising significantly.

Approximately 7% of all patient visits to specialists in obstetrics and gynaecology are for treatment of vaginitis.¹

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The three most common causes of vaginitis are *Trichomonas vaginalis*, *Gardnerella vaginalis* and *Candida* spp. *T. vaginalis*, a protozoan, is a well-known and established cause of vaginitis, responsible for 20 - 30% of cases. *G. vaginalis* is a marker for a variety of infections caused by different bacteria including aerobic and anaerobic streptococci and staphylococci. Stained smears have demonstrated that *G. vaginalis* usually outnumbers all other organisms by one hundred to one.² Previously, this complex infection was known as nonspecific vaginitis, but the preferred term is now bacterial vaginosis.^{1,3} *Candida* spp. that cause vaginitis most often are *C. albicans*, *C. glabrata* and *C. tropicalis*. *Candida* spp. that rarely cause infection include *C. parapsilosis*, *C. pseudotropicalis*, *C. krusei*, *C. guilliermondi* and *C. stellatoidea*.³ The common causes of vaginitis (*trichomonas*, *gardnerella* and *candida*) occur in a ratio of 25:50:25.³

In contrast to developed countries, syphilis is common in the developing world. For example, in the USA the incidence of the disease is 0,02%,⁴ while prevalences of 0,4% for Mozambique, 1,6 - 15% for Zambia and 5,5 - 11% for South Africa have been reported.⁵⁻⁹ Accurate population-based data for South Africa are lacking and in view of the morbidity associated with this disease, it is important to gather such information.

HIV infection is currently receiving considerable attention. A prevalence of 1,6% has been reported at Baragwanath Hospital, Johannesburg.¹⁰ According to estimates 123 000 people in South Africa carry HIV, of whom 70% live in urban areas.¹¹

This study was undertaken to provide population-based information on the prevalences both of common sexually transmitted diseases and HIV infection in women in the Orange Free State.

Patients and methods

Multi-stage random cluster sampling was used to select 120 rural (farm) and 120 urban (local authority) clusters after the different magisterial districts of the Orange Free State were weighted according to population size. The 1985 census data were used as an estimate of the rural population. In urban areas, the population estimates of the local health authorities were used. Millimetres along vertical and horizontal axes on magisterial district maps (in the rural study) and on township maps (in the urban study) were used to select a random starting point for each cluster. The study was approved by the Ethics Review Board of the Faculty of Medicine, University of the Orange Free State.

Each cluster contained 4 women from different households. The total sample thus consisted of 480 rural and 480 urban subjects. Women aged 18 - 49 years were selected and all underwent the following: a cervical smear for cytological evaluation, blood samples taken for syphilis serology and the determination of HIV infection, and a questionnaire covering aspects of their knowledge of AIDS. Informed written consent was obtained. No pressure was brought to bear on women who did not want blood taken for

HIV testing. An unknown percentage of women did not consent to have blood taken and were therefore not included in the study.

The fieldworkers who took the specimens and interviewed the women were nurses employed in primary health care. Before the project started they were all thoroughly informed about the objectives of the project and were trained in the methods of taking specimens and interviewing patients.

The cervical smears were analysed by the Department of Cytology, University of the Orange Free State. In addition to evaluating cervical epithelial cells for neoplastic changes, the background of each smear was evaluated for the presence of *Trichomonas vaginalis*, *Gardnerella vaginalis*, and *Candida* spp.

Syphilis serology was performed by the Department of Medical Microbiology, University of the Orange Free State. Screening was done by means of the rapid plasma reagin (RPR) test and if the results were positive, the diagnosis was confirmed by means of the *Treponema pallidum* haemagglutination (TPHA) test.

Specimens for HIV testing were initially tested by the Department of Virology, University of the Orange Free State, by means of enzyme-linked immunosorbent assays (ELISAs) for both HIV-1 and HIV-2 antibodies using HIV 1/2 EIA (Abbott Laboratories, Wiesbaden). Positive specimens were sent to the National Institute of Virology, Johannesburg, for confirmative testing by means of the Western blot method using HIV-1 viral lysate (Organon Technika, Durban).

The names of subjects who tested positive for syphilis were submitted to their local health authorities; those who were HIV-positive were referred to professionals responsible for the counselling of such patients.

Results

Information was gathered from 483 rural women of whom 470 underwent cervical smears (98% of the target). Blood specimens were taken from 465 women for syphilis serology (97% of the target) and from 468 women for HIV testing (98% of the target). In addition, 472 women were questioned about their knowledge of AIDS (98% of the target). A total of 449 women participated in all aspects of the rural study (94% of the target).

In urban areas, information was gathered from 475 women. The number of women examined were as follows: cervical smears were done on 431 (91%), blood taken for syphilis serology from 445 (94%) and for HIV testing from 424 women (89%). Interviews were conducted with 436 women (92%), and 391 women (82%) participated in all aspects of the study.

An extremely high proportion of urban respondents was unemployed (86%). This was indicated by the fact that interviews took place at home during work hours.

Closer inspection of the results revealed that Mangaung, Bloemfontein, was grossly under-represented. In Mangaung, 14 clusters had been selected with a target of 56 women. Less than 50% of the target number were interviewed, had cervical smears done or blood taken for HIV testing.

Because of this under-representation, Mangaung was excluded from the study. The urban results thus reflect urban Orange Free State excluding Mangaung.

Furthermore, it was clear from the addresses of the women included in the survey from Welkom that only one of the fieldworkers had interviewed women at the addresses provided for each cluster. The other interviewers admitted that they had recruited women who came to the clinic. Only 3 of the 12 clusters in Welkom were thus selected and evaluated in the specified way, and women included in the other 9 clusters may not be representative of all the women in the area. Nevertheless, these data were included in the analysis.

In both the rural and urban study groups the greatest proportion of women were between 20 and 29 years of age (42%; 52%) with a median parity of 3 and 2 respectively. In the rural group 78% of the women had less than 6 years of schooling while in the urban group the corresponding figure was 34%. The prevalences of the different forms of vaginitis are shown in Table I, and the results of the syphilis serology and HIV testing in Table II. Table III shows the findings of the AIDS questionnaire.

Table I. Vaginal infections

Infection	Region			
	Rural (470)		Urban* (405)	
	No.	95% CI†	No.	95% CI†
<i>Trichomonas vaginalis</i>	27,4	23,3; 31,6	29,6	24,8; 34,5
<i>Candida</i> spp.	2,6	1,1; 4,0	6,7	4,3; 9,0
<i>Gardnerella vaginalis</i>	7,2	4,6; 9,8	8,4	5,7; 11,1
Mixed bacteria	94,7	92,7; 96,6	91,1	88,6; 93,6

* Excluding Mangaung, Bloemfontein.

† 95% confidence intervals.

Table II. Syphilis and HIV serology

Infection	Region			
	Rural (465)		Urban* (403)	
	No.	95% CI†	No.	95% CI†
Syphilis				
RPR-positive	13,1	9,8; 16,4	15,9	11,9; 19,9†
RPR +				
TPHA-positive	12,3	9,0; 15,6	15,6	11,6; 19,6
Slightly haemolysed	4,3		4,0	
Haemolysed	1,1		3,2	
Could not be analysed	0		0,1	
HIV				
Positive	0,4	0; 1,0	1,5	0,1; 2,8

* Excluding Mangaung, Bloemfontein.

† 95% confidence intervals.

Table III. Knowledge of AIDS (%)

Question	Region	
	Rural	Urban*
Have you heard of AIDS?	(N = 463)	(N = 399)
Yes	90,9	97,7
For those who had heard of AIDS: is there a cure?	(N = 417)	(N = 382)
Yes	9,6	14,1
No	73,9	81,7
Unsure	16,5	4,2
For those who had heard of AIDS: methods of transmission mentioned	(N = 421)	(N = 390)
Sex	73,6	90,0
Kissing	10,0	16,4
Touching	4,3	7,9
Sharing eating utensils	6,7	8,2
Blood products	8,5	4,9
Pregnancy	8,8	4,1
Other correct answers	1,4	6,2
Other incorrect answers	4,3	4,6

*Excluding Mangaung, Bloemfontein.

Discussion

Vaginitis is usually diagnosed by the taking of wet smears from the vaginal wall. This method was not possible in this study because of a lack of resources. Vaginal culture was an alternative, but was also not possible in our circumstances. Vaginal wall smears for cytology could have been used, but the prevalence of cervical neoplasia was also investigated. Therefore, although less sensitive than wet smears, cervical smears stained by the Papanicolaou method were used to diagnose vaginitis.

The ratio of *T. vaginalis* to *G. vaginalis* to candida infection was 74:19:7/100 women overall. This is in contrast to the reported ratio of 25:50:25.³ Although the method used (Papanicolaou stained cervical smears) was not ideal, these results show a striking predominance of trichomonas vaginitis in the study population.

Syphilis was confirmed in 12% of the rural and 16% of the urban population. These are among the highest reported prevalences. Clearly syphilis should be given priority in future health policy planning.

The prevalences of HIV positivity of 0,4% in rural women and 1,5% in urban women are on a par with the findings of other surveys in South Africa.¹⁰⁻¹² According to one of these reports, the prevalence in antenatal clinic attenders in the Orange Free State was 1,6%.¹² This was the third highest prevalence in South Africa, following Natal and KaNgwane. The degree of knowledge of AIDS did not differ from that found in a study in Johannesburg.¹³ In another local study it was found that the media, particularly radio broadcasts, were the main source of information (unpublished data). A subsequent survey, the third annual national unlinked anonymous serological survey of women attending antenatal clinics at the end of 1992, found a prevalence of 2,87 (95% confidence interval 1,94 - 3,80) in pregnant women of

the Orange Free State.¹⁴ Although the prevalence of HIV positivity is rising, the lower prevalence found in our study in 1991 might also be attributed to some degree to the study population comprising women in their reproductive years (18 - 49 years), all of whom might not have been as sexually active as the pregnant population.

In conclusion, extremely high prevalences of *Trichomonas vaginalis* vaginitis and syphilis were documented. The high rate of unemployment in this population is probably a contributing factor. Although the prevalence of HIV infection was high, it was similar to that found in other parts of South Africa. Among rural women the knowledge of AIDS was inadequate, particularly with regard to the methods of transmission and the lack of a cure. Earnest attention needs to be given to the combating of these sexually transmitted diseases, particularly syphilis and HIV infection.

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