



## Global views

# Trends of gonorrhoea and early syphilis in Belgrade, 1985-99

### Introduction

Sexually transmitted diseases represent a major public health problem and the advent of HIV infection during the past decade has highlighted the importance of infections spread by the sexual route.

The purpose of this study was to report trends of gonorrhoea and early syphilis in the Belgrade population (about two million inhabitants) during the period 1985-99, and to discuss the data in the light of changes in gonorrhoea and syphilis rates in other countries of eastern Europe.

### Material and methods

Primary, secondary, and early latent syphilis (referred to as early syphilis) were defined using generally accepted criteria. For diagnosis of early syphilis the Venereal Disease Research Laboratory (VDRL) and *Treponema pallidum* haemagglutination (TPHA) tests were used. For diagnosis of gonorrhoea standard

laboratory examination was used—that is, microscopy and inoculation on culture media. Reporting on syphilis and gonorrhoea is compulsory in Yugoslavia. In Belgrade all reports are sent to the municipal department for skin and venereal diseases. These reports were used as the source of data for incidence cases.

The incidence rates for syphilis and gonorrhoea were calculated using data from the 1991 Yugoslav census for the Belgrade population. Age adjustment of yearly incidence was carried out by a direct method using the "World population" as the standard.

Data about possible source of infection, provided on the official form for notification of syphilis and gonorrhoea, were also analysed.

### Results

The early syphilis incidence rates in men showed a decreasing trend during the first half of the period observed, followed by an increase beginning from the year 1993 ( $y = 4.74 - 0.84x + 0.06x^2$ ,  $p = 0.018$ )

(table 1 and fig 1). In women these variations in incidence were less pronounced. During the period observed, only mild increase of syphilis incidence was recorded among them ( $y = 0.69 + 0.05x$ ,  $p = 0.032$ ). The disease was more common in men, the male/female ratio ranging from 0.8 to 6.6.

Gonorrhoea incidence had significant decreasing trend in both men and women ( $y = 112.73 - 7.73x$ ,  $p = 0.000$ , and  $y = 39.54 - 2.86x$ ,  $p = 0.000$  respectively) (table 1). During the period 1985-99, gonorrhoea incidence decreased by 90.8% among men, from 140.08 per 100 000 in 1985 to 12.94 per 100 000 in 1999, and by 93.9% among women, from 48.39 to 2.96 per 100 000. Between 1992 and 1993 gonorrhoea incidence increased by 14.8% in men and by 51.7% in women. In all years observed the disease was more common in men. The male/female ratio ranged from 2.5 to 4.8.

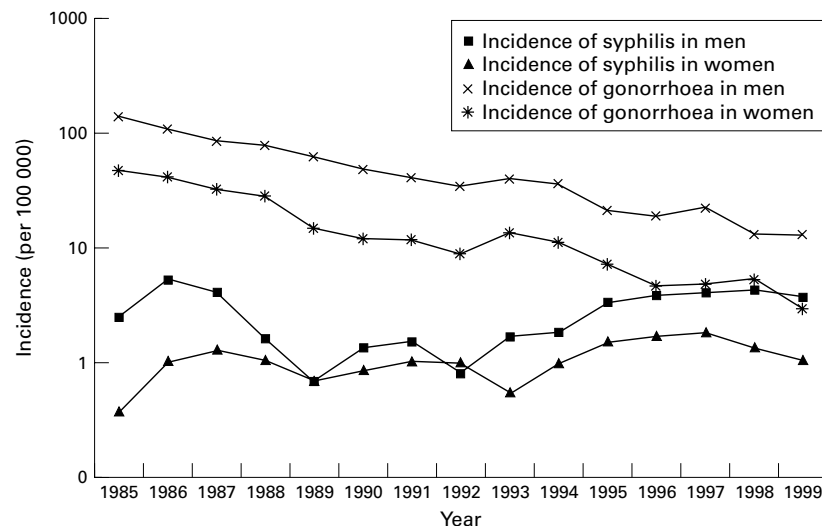
The incidence of syphilis in Belgrade was highest in men aged 30-39 and 40-49 and in women 30-39 and 20-29 years old. The incidence of gonorrhoea was highest in men and women 20-29 years old. In both sexes the lowest incidence rates for syphilis and gonorrhoea were in children below 15 years of age and in people aged 50 years or more. Incidence rates were higher among males than among females, and the male/female ratio increased with age, up to 50 years of age.

Most frequently, male gonorrhoea cases did not indicate possible source of infection, but for most of the female cases the source of infection was their regular sexual partner. However, over 80% of male syphilis cases reported sexual intercourse in Russia or Ukraine as the probable source of infection, where they had found temporary employment after suspension of UN sanctions in 1995. Later they transmitted syphilis to their sexual partners in Belgrade (all women were infected by their regular sexual partners). The remaining of male syphilis cases most frequently indicated sexual intercourse with a casual acquaintance in Belgrade as the possible source of infection.

Table 1 and Figure 1 Incidence of early syphilis (per 100 000)\* and incidence of gonorrhoea (per 100 000)\* by sex in Belgrade 1985-99

Year	Incidence of syphilis in men	Incidence of syphilis in women	Incidence of gonorrhoea in men	Incidence of gonorrhoea in women
1985	2.53	0.38	140.08	48.39
1986	5.24	1.04	108.53	42.29
1987	4.13	1.30	85.68	32.38
1988	1.64	1.06	78.80	28.80
1989	0.68	0.70	62.00	15.30
1990	1.36	0.86	48.20	12.70
1991	1.53	1.04	40.32	11.93
1992	0.80	1.00	34.51	8.92
1993	1.67	0.54	39.64	13.51
1994	1.83	0.98	36.71	11.20
1995	3.34	1.51	21.50	7.16
1996	3.81	1.70	18.74	4.70
1997	4.01	1.82	22.29	4.84
1998	4.22	1.35	13.06	5.34
1999	3.65	1.05	12.94	2.96
Total	2.63	1.10	42.62	13.42

\*Standardised according to age distribution of "World population."



### Discussion

The most plausible explanation for the gradually decreasing trend of early syphilis and gonorrhoea incidence rates in men during the period 1985-92 lies in the changes in sexual behaviour in response to the AIDS epidemic. According to the literature data the common factor underlying the falling incidence of syphilis, gonorrhoea, and other sexually transmitted diseases, especially among homosexuals, has been concern over AIDS through its deterrent effect on high risk sexual behaviour.

The increase of gonorrhoea incidence in the Belgrade population in the years 1993 and 1994 could be explained by adverse changes in the country caused by the war, the break up of the former Yugoslavia, economic sanctions imposed on Serbia and Montenegro by the United Nations, and the resulting socio-economic difficulties which culminated in 1993. However, the importation of syphilis from

countries of the former Soviet Union played a major part in the increase of syphilis incidence.

An alarming increase in syphilis incidence has been recently observed in many eastern European countries. For example, in Romania<sup>1</sup> syphilis incidence has risen steadily from 7.1 cases per 100 000 people in 1986 to 19.8 cases per 100 000 in 1989, and to 34.7 cases per 100 000 in 1998. In Bulgaria syphilis incidence also increased from 14.4 per 100 000 in 1994 to 27.3 per 100 000 in 1996. In Burgas and Vidin (Bulgaria), in the year 1996, the syphilis incidence was 52.8 and 59.8 per 100 000.<sup>2</sup> This trend was explained by economic crisis and migration. A similar increase was observed in Estonia.<sup>3</sup> In Nizhni Novgorod (the city in central Russia with 1.4 million inhabitants), the incidence of syphilis increased from 3.2 cases per 100 000 people in 1990 to 300 cases per 100 000 people in 1997.<sup>4</sup> According to Karieva and Umanov<sup>5</sup> low education, poor socioeconomic conditions, and migration were the main causes of increased syphilis incidence in Uzbekistan.

A higher frequency of syphilis and gonorrhoea in men than in women in Belgrade can be explained by differences in their sexual behaviour and by sex differences in the clinical manifestation of the disease (especially gonorrhoea). Men have a more pronounced tendency to change their sexual partners and consequently their exposure to disease is increased.<sup>6</sup>

In the present study the highest incidence of syphilis among men was established in the age group 30–49, and among women in the age group 20–39. Saluvere and Konno<sup>3</sup> reported that women aged 20–29 and men aged 30–39 were most commonly infected, because they are sexually more active and more promiscuous than other age groups. The association of young age (in Belgrade population 20–29 years old) with higher gonorrhoea rates is probably due both to age related sexual behaviour and the biological characteristics of the host-pathogen interaction. The higher age of men with the highest incidence of syphilis in our population in comparison with the age of men with the highest incidence of gonorrhoea can be explained by the fact that experienced people went to work in the countries of the former Soviet Union and that the vast majority of syphilis cases were contracted in those countries. Consequently women, their partners in Belgrade, who contracted the disease from them, were on average also older than women who contracted gonorrhoea.

The critical feature of this analysis is the accuracy of data. It is reasonable to assume that the incidence of both diseases, especially gonorrhoea, is underestimated. Some of the patients do not visit physicians, and some physicians do not report all of the cases.

M BJEKIĆ

City Department for Skin and Venereal Disease, Belgrade

H VLAJINAC  
S ŠIPETIĆ

Institute of Epidemiology, School of Medicine, Belgrade University

N KOCEV

Institute of Social Medicine, Statistics and Health Research, School of Medicine, Belgrade University

Correspondence to: Professor Dr Hristina Vlainjac, Institute of Epidemiology, School of Medicine, Belgrade University, Višegradska 26, 11000 Belgrade, Yugoslavia

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## Study of risk factors associated with HIV seropositivity in STD patients at Mumbai, India

### Introduction

Sexually transmitted diseases (STDs) and HIV infection have major demographic, economic, social, and political impact particularly in Asia and Africa. Heterosexual promiscuity, homosexuality, multiple sex partners, and lack of condom use are some of the high risk behaviours.

Despite the extent of the STD problem and its contribution to the rapid spread of the

HIV epidemic relatively few studies have been performed on HIV risk factors among men and women in India.

### Methods

In all, 260 patients (210 males and 50 females) attending the STD clinic (J J Hospital) with genital lesions and/or history of exposure were interviewed and subjected to clinical examination and microbiological investigations.

### Results

The overall HIV prevalence in STD patients was 31.18%, with 29.5% in males and 38% in females. It was 44% in 31–40 years age group.

Table 1 shows the prevalence of HIV infection to be higher in non-Muslims (34.5%) than in Muslims (20.6%).

Patients with more than five sexual partners, with past history of STDs, and condom users showed 41.5%, 42.1%, and 30% HIV prevalence, respectively.

Factors associated with a high prevalence of HIV infection in the univariate analysis included high risk occupational groups (CSWS, drivers, and unemployed patients) (51.61%), past history of STDs (42.1%), multiple sexual partners (41.5%), and uncircumcised status (34.62%). Patients with secondary syphilis, herpes genitalis, and condyloma acuminata showed 64.71%, 33.3%, and 41.46% HIV seropositivity, respectively.

### Discussion

HIV seropositivity was high in the sexually and economically active group as documented by other authors.<sup>1,2</sup> There were fewer females because of the social stigma attached to STDs that forbid them from seeking medical treatment and lack of clinical features of STDs.

High risk groups (commercial sex workers (CSWs), drivers, waiters) showed high HIV seropositivity as is well reported by other studies.<sup>3,4</sup> With their high risk behaviours they pose a major threat to the spread of HIV. The majority (86%) had heterosexual behaviour and this type is the most important mode of HIV transmission in Mumbai, India. Low

Table 1 Univariate analysis of prevalence of HIV infection in STD patients

S No	Characteristic	No of subjects n=260	Prevalence of HIV infection	Odds ratio (95% CI)	p Value
1	Occupation*				
	Group I	198	24.75	1.00	
	Group II	62	51.61	3.24 (1.79–5.87)	0.00
2	Religion				
	Muslims	63	20.6	1.00	
	Non-Muslims	197	34.5	2.05 (0.99–4.23)	0.038*
3	Partners in 1 year				
	Less than 5	96	13.5	1.00	
	More than 5	164	41.5	4.52 (2.24–9.28)	0.000*
4	Sexual behaviour				
	Other	36	25.0	1.00	
	Heterosexual	224	32.1	1.42 (0.6–3.45)	0.39
5	Condom use				
	Yes	88	30.7	1.00	
	No	172	31.4	1.03 (0.57–1.87)	0.91
6	Past history of STD				
	No	108	17.0	1.00	
	Yes	152	42.1	3.89 (2.12–7.16)	0.000*
7	Circumcision status				
	Yes	51	19.61	1.00	
	No	159	34.62	2.17 (1.009–4.656)	0.03*
8	Present STD				
	Secondary syphilis	—	64.71%	—	—
	Herpes genitalis	—	32.06%	—	—
	Condyloma acuminata	—	41.46%	—	—

\*Group II = commercial sex workers, drivers, and waiters—ie, high risk group; group I = others.

prevalence of HIV infection in circumcised patients has been documented by other authors.<sup>5,6</sup> It could be that circumcision had a protective effect against HIV transmission.

Patients with secondary syphilis showed high prevalence as a result of the long duration of disease. High prevalence was seen in those with herpes genitalis and condyloma accuminata, suggesting that multiple viral infections occur simultaneously.

Repeated exposures and inadequate treatment make these patients susceptible to HIV infection. Early diagnosis and treatment facilities at the primary healthcare level should be made available through the syndromic approach.

Information education and communication (IEC) activities on sexual relationships

and condom use should be strengthened. For CSWs successful intervention programmes of longer duration that target "madams" and clients are needed at multiple sites in Mumbai.

R B PEDHAMBKAR  
B S PEDHAMBKAR

*Department of Preventive and Social Medicine,  
Grant Medical College and Sir JJ Group of  
Hospitals, Mumbai, India*

M M KURA

*Department of Skin and STD*

Correspondence to: Dr Mahendra M Kura, MD,  
Department of Skin and STD, GT Hospital, Grant  
Medical College, Mumbai, 400 001, India  
mkura@vsnl.net

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