

## SHORT REPORT

# Syphilis prevalence has rapidly decreased in South Korea

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**Objectives:** To determine the current prevalence of syphilis in the general population of South Korea and its trend over the past 20 years.

**Methods:** 15 402 adults, who all were aged over 20 (6888 blood donors, 4951 physical examinees, and 3563 pregnant women) were examined from January 1999 to December 2000. All subjects were screened using a VDRL test, and positive results were confirmed by a FTA-ABS test. The prevalence was compared with the results of previous surveys in similar population groups performed by same authors.

**Results:** The prevalence of syphilis in South Korea was found to be 0.2%. Although has been consistent decreasing trend since 1977 ( $p < 0.0001$ ), there is no statistical difference between 1995 and 2000 ( $p = 0.6992$ ).

**Conclusions:** The prevalence of syphilis has decreased significantly since 1977. However, it has not reduced much since 1995, and it seems that the prevalence has reached a plateau. Until now, not all syphilis patients were registered and followed up by the public health centres because there were so many syphilis patients. However, as this survey shows, the number of syphilis patients has reduced a great deal and it is believed that a more thorough management strategy including all newly diagnosed patients is necessary in order to further reduce the prevalence of syphilis in South Korea.

consistently at 4 or 5 year intervals since 1977 in the same hospital with similar population groups of the same characteristics in order to make a closer observation of the changes in the prevalence of syphilis in South Korea.<sup>1</sup> As there are no nationwide statistical data on the prevalence of syphilis in South Korea, this study was undertaken to determine the current prevalence of syphilis and the extent of its reduction using similar population groups in the same hospital. In addition, the current management of syphilis was given careful consideration in order to reduce the present rate.

## METHODS

The Venereal Disease Research Laboratory (VDRL) test was used to screen a total of 15 402 subjects (all were aged over 20) who were grouped according to their age: 20s (20–29), 30s (30–39), and over 40. Among them, 4951 subjects (2349 male, 2602 female) were from either the general population or visa applicants who had a health check up in the Severance Hospital, Seoul, South Korea, from January 1999 to December 2000; 6888 were blood donors (6067 male, 821 female) and 3563 were women who had given birth at the same hospital during the same period. Positive results were confirmed by the fluorescent treponemal antibody absorption (FTA-ABS) test. A  $\chi^2$  test was used for the comparison among different age and population groups of this survey, and to compare the prevalence from this survey with that of 1995. A Cochrane-Armitage trend test (SAS system for Windows 8.1) was used to analyse the trend of the prevalence of syphilis since 1977.

## RESULTS

There were 29 patients (0.2%) among the 15 402 subjects who showed a true positive—that is, positive for both VDRL and FTA-ABS. There were significant differences in the prevalence among the different age groups ( $p < 0.0001$ ). However, there were no statistical differences in the prevalence among different population groups ( $p = 0.073$ ) and between sexes ( $p = 0.288$ , data not shown) (table 1). In a comparison with the data<sup>2–6</sup> obtained from previous studies undertaken at 4 or 5 year intervals with similar healthy population groups of the same characteristics since 1977, the prevalence has consistently decreased since 1977 ( $p < 0.0001$ ), but the prevalence

The worldwide prevalence of syphilis has rapidly decreased since the 1950s with the use of penicillin. However, there is a remarkable difference between different nations because the economic status and environment of each country, and their sanitary procedures have a large influence on the prevalence rate of any disease, particularly contagious diseases.

The prevalence of syphilis in South Korea has rapidly decreased since the 1970s along with the rapid economic growth and improved management of contagious diseases. In addition, the prevalence of syphilis has been examined

**Table 1** Prevalence of syphilis (VDRL/FTA-ABS positive) in Korean adults in the year 2000

Age	No reactive/No tested (%)*			Total (%)
	Blood donors	Physical examinees	Pregnant women	
20–29	4/4464 (0.1)	4/2973 (0.1)	1/1628 (0.1)	9/9065 (0.1)
30–39	3/1762 (0.2)	2/1186 (0.2)	2/1859 (0.1)	7/4807 (0.2)
40+	3/662 (0.5)	9/792 (1.1)	1/76 (1.3)	13/1530 (0.9)
Total	10/6888 (0.2)	15/4951 (0.3)	4/3563 (0.1)	29/15 402 (0.2)

\*There was significant difference in prevalence among different age groups ( $p < 0.0001$ ), but no statistical difference was found among different population groups ( $p = 0.073$ ).

**Table 2** Trend of the prevalence of syphilis (VDRL/FTA-ABS positive) in Korean adults according to age

Year	No reactive/No tested (%)			Total (%)
	20-29	30-39	40+	
1977	156/7259 (2.2)	42/1256 (3.3)	44/1098 (4.0)	242/9613 (2.5)
1981	85/10267 (0.8)	32/2191 (1.5)	33/1384 (2.4)	150/13 842 (1.1)
1986	22/7102 (0.3)	28/3617 (0.8)	34/2497 (1.4)	84/13 116 (0.6)
1990	15/8477 (0.2)	13/5682 (0.2)	47/2983 (1.6)	75/17 142 (0.4)
1995	11/10 024 (0.1)	9/2738 (0.3)	8/664 (1.2)	28/13 426 (0.2)
2000	9/9065 (0.1)	7/4807 (0.2)	13/1530 (0.9)	29/15 402 (0.2)
p Value for trend*	<0.0001	<0.0001	<0.0001	<0.0001
p Value between 1995 and 2000†	0.8236	0.0965	0.4325	0.6992

\*p Value determined by Cochran-Armitage trend test.

†p Value determined by  $\chi^2$  test.

obtained from this study and that done in 1995 is similar ( $p=0.699$ ) (table 2).

## DISCUSSION

The prevalence of syphilis has rapidly decreased through the use of effective drugs along with economic development. However, its prevalence is still considerably high in underdeveloped countries.

In South Korea, as the prevalence of syphilis has been high, not all cases have been reported, and only some of the primary and secondary syphilis cases have been investigated in a sample survey by the public health centres and university hospitals. Therefore, there are no nationwide data regarding the incidence and prevalence of syphilis in South Korea. Some researchers have investigated the prevalence of syphilis in various groups, but a comparison between the results derived from each study is unreasonable because it was based on groups with different characteristics. Under these circumstances we have consistently studied the prevalence of syphilis with subjects in similar population groups of same characteristics at 4 or 5 year intervals since 1977; physical check ups carried out in the Severance Hospital, Seoul, blood donors, and women giving birth. As a result, a more accurate positive rate could be produced from the syphilitic serological tests in healthy subjects. In situations where massive screening on an involuntary general population is not easy, the data from this study are the only data in South Korea that have been reported consistently by the same authors on similar population groups.

Since the beginning of the survey in 1977, the prevalence of syphilis in South Korea has continued to decrease and was found to be approximately 0.2% in 2000. However, this has not reduced further since 1995, and it seems to us that the prevalence has reached a plateau. Until now, in order to lower the prevalence of syphilis in South Korea, the VDRL test has been consistently carried out on pregnant women, those undergoing a health check up, and high risk groups such as barmaids and prison inmates. As a result, the rate has been reduced to a great extent. However, as there are no precise data on the incidence of syphilis and the prevalence has not decreased any

further, it appears that not only should reports and statistical data of all newly diagnosed patients be done, but a management strategy based on these reports should be drawn up.

In conclusion, the prevalence of syphilis has rapidly decreased over the past 20 years in line with economic development and public and patient education. However, it has remained constant over the past 5 years. Therefore, in order to further reduce the prevalence, a more specific and definite syphilis management plan should be considered with data from syphilis patients nationwide, while taking into account risk factors such as age, occupation, region, etc.

## CONTRIBUTORS

M-GL and J-BL have been following up the prevalence of syphilis at 4 to 5 year intervals with similar groups who were apparently normal Korean adults using the same method since 1977; HOK provided the laboratory data of the subjects in this study; Y-HC summarised and wrote this article under the supervision of J-BL and M-GL.

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