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Characteristics of gonorrhea and syphilis cases among the Roma ethnic group in Belgrade, Serbia

Milan Bjekić[a], *Hristina Vlajinac*[b,*], *Sandra Šipetić-Grujičić*[b]

[a] *City Institute for Skin and Venereal Diseases, Belgrade, Serbia*
[b] *University of Belgrade, Faculty of Medicine, Institute of Epidemiology, Belgrade, Serbia*

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ABSTRACT

Background: The Roma ethnic group is the largest and most marginalized minority in Europe, believed to be vulnerable to sexually transmitted infections.
Aim: The purpose of the study was to investigate frequency and characteristics of gonorrhea and syphilis among the Roma population in Belgrade.
Methods: Data from the City Institute for Skin and Venereal Diseases to which all gonorrhea and syphilis cases are referred were analyzed.
Results: During the period of 2010–2014 sexually transmitted infections were more frequent among Roma than in rest of Belgrade population. Average percentages of Roma among all reported subjects with syphilis and those with gonorrhea were 9.6% and 13.5%, respectively, while the percentage of Roma in the total Belgrade population was about 1.6%. Roma with syphilis and gonorrhea were more frequently men (75%), most frequently aged 20–29 years (43.4%), never married (64.5%), with elementary school or less (59.2%), unemployed (80.3%), and heterosexual (89.5%). Among Roma 10.5% were sex workers and 68.4% did not know the source of their infection. Significant differences between Roma cases and other cases in Belgrade in all characteristics observed were in agreement with differences between Roma population and the total population of Serbia.
Conclusion: The present study confirmed the vulnerability of the Roma population to sexually transmitted infections.

Introduction

The Roma are Europe's largest and most vulnerable minority. In total, about 7–9 million Roma live in Europe and approximately 70% of them live in countries of Central and Eastern Europe and those of the former Soviet Union.[1]

According to the population census in 2011 the total number of declared Roma in Serbia was 147,604 which accounts for 2.05% of the population in Serbia. The highest concentration of declared Roma in Serbia is in Belgrade, the capital and the largest city, where there are 27,325 or 18.5% of their total number, and 1.6% of the total population of Belgrade.[2] The Roma minority is the most vulnerable and marginalized in the field

* *Corresponding author.*
E-mail address: kristiv@eunet.rs (H. Vlajinac).
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of health because of extreme poverty, improper hygiene, bad nutrition, undignified living conditions, high unemployment rate and lack of education.[2,3] Discrimination in accessing health care services have an additional negative impact on their health.

Roma may be at high risk for sexually transmitted infections (STIs) because of their risky sexual behavior. According to an investigation conducted among Roma youth (aged 15–24 years) in Serbia during the year 2010, risky sexual behaviors were highly prevalent, especially among male subjects.[4] In Belgrade, out of male Roma youth, 36.2% had sexual debut before the age of 15 years, 53.9% had more than one sexual partner in the past year, 11.5% had engaged in commercial sex, and 4.0% reported having anal sex with other men.[4]

STIs are a major global cause of acute illness, infertility, long-term disability and death with serious medical and psychological consequences among people. Gonorrhea and syphilis are common bacterial venereal diseases and their reporting is compulsory in Serbia. During the period 2010–2014 in Belgrade syphilis incidence increased 182.2% from 2.25 per 100,000 in 2010 to 4.4 per 100,000 in 2014, and gonorrhea incidence increased 226.2% from 2.56 per 100,000 in 2010 to 5.79 per 100,000 in 2014.[5]

The purpose of this study was to present gonorrhea and syphilis cases among Roma who sought treatment at the City Institute for Skin and Venereal Diseases in Belgrade during the period of 2010–2014, and to describe their demographic characteristics. Reporting on gonorrhea and syphilis is compulsory in Serbia, and in Belgrade all reported cases were treated in the aforementioned Institute which is an exclusive treatment center. There is possibility that some patients are referred to private physicians, but these cases are usually not reported.

We also compared gonorrhea and syphilis cases in order to identify any distinct need for prevention, diagnosis, screening, or for other public health measures for these diseases of the Roma population.

Methods

Patients with symptoms of sexually transmitted infections were referred to the City Institute for Skin and Venereal Diseases in Belgrade, by their primary care providers between January 2010 and December 2014. Their diagnoses (gonorrhea and early syphilis) at the initial visit were noted. All diagnoses were based on patient history and physical examination and were confirmed by laboratory analyses. Case definitions of gonorrhea and syphilis were in line with STD Surveillance case definitions,[6] and updated definitions for gonorrhea and syphilis.[7] For gonorrhea it was required isolation of Gram-negative intracellular diplococci by culture from a clinical specimen (a urethral smear obtained from a male or an endocervical smear obtained from a female). Requirements for syphilis were as follows: for primary syphilis (PS), ulcers and reactive treponemal (*Treponema pallidum* hemagglutination assay – TPHA) and nontreponemal (Venereal Disease Research Laboratory – VDRL) serologic tests; for secondary syphilis (SS), clinical manifestations of this stage with both reactive treponemal test and a nontreponemal titer ≥4; for early latent syphilis both reactive treponemal and nontreponemal tests and any of the following criteria within the past 12 months: documented seroconversion or fourfold or greater increase in titer of nontreponemal test, documented seroconversion on a treponemal test, a history of symptoms consistent with a diagnosis of PS or SS, sexual exposure to a person with PS, SS or early latent syphilis, and sexual debut within the last 12 months.

The data on basic demographic characteristics of Roma patients (age, sex, marital status, education, working status) were retrospectively abstracted from their charts. Data about possible source of infection as well as sexual orientation, provided on the official form for notification of syphilis and gonorrhea, were also analyzed.

In the analysis of data, proportions were compared using χ^2 test and Fisher's exact test. All p-values were based on two-tailed tests, and $p < 0.05$ was considered as significant.

The manuscript was reviewed and approved by the responsible authorities of City Institute for Skin and Venereal disease in Belgrade.

Results

The frequency of syphilis and gonorrhea among Roma and other ethnic groups of Belgrade population taken together are presented in Table 1. During the period of 2010–2014 the Roma accounted for 3.4% to 17.1% (an average of 9.6%) out of all subjects registered with syphilis and for 11.7% to 18.8% (an average of 13.5%) out of all registered patients with gonorrhea. Considering that the percentage of Roma in the total Belgrade population was about 1.6%, both syphilis and gonorrhea were more frequent among Roma comparing with the rest of Belgrade population.

Roma with syphilis and gonorrhea were more frequently men (75%), the majority aged 20–29 years (43.4%), never married (64.5%), with elementary school or less (59.2%), unemployed (80.3%), and heterosexual (89.5%). Among them 10.5% were sex workers and 68.4% did not know the source of their

Table 1 – Number of syphilis and gonorrhea cases in Roma and all other ethnic groups of Belgrade population registered at City Institute for Skin and Venereal Diseases, Belgrade, 2010–2014.

Year	Roma Number (%)	Other ethnic groups Number (%)	Total Number
Syphilis cases			
2010	3 (9.7)	28 (90.3)	31
2011	1 (3.4)	28 (96.6)	29
2012	6 (17.1)	29 (82.9)	35
2013	3 (10.3)	26 (89.7)	29
2014	4 (7.4)	50 (92.6)	54
Total	17 (9.6)	161 (90.4)	178
Gonorrhea cases			
2010	5 (12.5)	35 (87.5)	40
2011	9 (18.8)	39 (81.2)	48
2012	14 (14.9)	89 (85.1)	94
2013	16 (11.7)	121 (88.3)	137
2014	15 (12.6)	104 (87.4)	119
Total	59 (13.5)	379 (86.5)	438

Table 2 – Characteristics of syphilis and gonorrhea cases in Roma and all other ethnic groups of Belgrade population registered at City Institute for Skin and Venereal Diseases, Belgrade, 2010–2014.

Characteristics	Syphilis and gonorrhea cases, number (%)		p value[a]
	Roma	Other ethnic groups	
Sex			0.030
Male	57 (75.0)	458 (84.8)	
Female	19 (25.0)	82 (15.2)	
Age, years			<0.001
≤15	5 (6.6)	1 (0.2)	
16–19	14 (18.4)	16 (3.0)	
20–29	33 (43.4)	168 (31.1)	
30–39	14 (18.4)	249 (46.1)	
40–49	10 (13.2)	60 (11.1)	
50–59	0 (0.0)	29 (5.4)	
60+	0 (0.0)	17 (3.1)	
Marital status			<0.001
Never married	49 (64.5)	444 (82.2)	
Married	27 (35.5)	81 (15.0)	
Divorced	0 (0.0)	15 (2.8)	
Education			<0.001
≤Elementary	45 (59.2)	44 (8.1)	
Secondary	31 (40.8)	432 (80.0)	
High	0 (0.0)	64 (11.8)	
Working status			<0.001
Employed	15 (19.7)	279 (51.7)	
Unemployed	61 (80.3)	149 (27.6)	
Pupil/student	0 (0.0)	94 (17.4)	
Retired	0 (0.0)	18 (3.3)	
Sexual orientation			<0.001
Heterosexual	68 (89.5)	344 (63.7)	
Homosexual	8 (10.5)	196 (36.3)	
Being sexworker			<0.001
Yes[b]	8 (10.5)	1 (0.2)	
No	68 (89.5)	539 (99.8)	
Source of infection			<0.001
Known	24 (21.6)	314 (58.1)	
Unknown	52 (68.4)	226 (41.9)	

[a] According to chi square test or Fisher's exact test.
[b] All patients who declared to be sex workers were women.

Table 3 – Characteristics of syphilis and gonorrhea cases among Roma of Belgrade population registered at City Institute for Skin and Venereal Diseases, Belgrade, 2010–2014.

Characteristics	Syphilis cases (n = 17) Number (%)	Gonorrhea cases (n = 59) Number (%)	p value[a]
Sex			0.080
Male	10 (58.8)	47 (79.7)	
Female	7 (41.2)	12 (20.3)	
Age, years			0.054
≤15	0 (0.0)	5 (8.5)	
16–19	5 (29.4)	9 (15.2)	
20–29	4 (23.5)	29 (49.2)	
30–39	3 (17.7)	11 (18.6)	
40–49	5 (29.4)	5 (8.5)	
Marital status			0.550
Never married	12 (70.6)	37 (62.7)	
Married	5 (29.4)	22 (37.3)	
Education			0.601
≤Elementary	11 (64.7)	34 (57.6)	
Secondary	6 (35.3)	25 (42.4)	
Working status			0.348
Employed	2 (11.8)	13 (22.0)	
Unemployed	15 (88.2)	46 (78.0)	
Sexual orientation			0.047
Heterosexual	13 (76.5)	55 (93.2)	
Homosexual	4 (23.5)	4 (6.4)	
Being sexworker			<0.001
Yes	6 (35.3)	2 (3.4)	
No	11 (64.7)	57 (96.6)	
Source of infection			0.046
Known	2 (11.8)	22 (37.3)	
Unknown	15 (88.2)	37 (62.7)	

[a] According to chi square test or Fisher's exact test.

infection (Table 2). There were significant differences between Roma cases and other cases in all characteristics observed (Table 2). Roma cases were younger, less educated, more frequently married, and unemployed. Among Roma cases there were more sex workers and greater percentage did not know the source of infection. Although women were minority among all cases, among Roma there were significantly more women in comparison with other cases. Roma less frequently declared themselves as homosexual.

Some characteristics of syphilis and gonorrhea cases among the Roma population are presented in Table 3. In comparison with gonorrhea patients, those with syphilis were significantly more likely to be homosexual (23.5% vs. 6.4%, $p < 0.05$) and sex workers (35.3% vs. 3.4%, $p < 0.001$), and more frequently did not know the source of their infection (88.2% vs. 62.7%, $p < 0.05$). Patients with syphilis were also older than patients with gonorrhea, but this difference was at borderline of significance ($p = 0.054$) – Table 3. Primary syphilis was diagnosed in four cases, secondary syphilis in other four cases, and nine cases were classified as early latent syphilis.

Discussion

The World Health Organization estimated that in 2008 there were 10.6 million cases of syphilis and 106.1 million cases of gonorrhea among adults globally.[8] Syphilis and gonorrhea are commonly transmitted through sexual contact (i.e. genital-genital, genital-anorectal, oro-genital or oro-anal contact). Moreover, syphilis has a higher transmission rate than gonorrhea and can be also transmitted by blood or through vertical transmission from an infected mother to her baby.[9] Both diseases can be followed by serious complications. Untreated cervical gonorrhea in women can lead to pelvic inflammatory disease, ectopic pregnancy and infertility.[10] Syphilis is a systemic infection and may lead to devastating cardiovascular and neurological complications. If left untreated during

pregnancy, syphilis may contribute to stillbirth or preterm labor and cause congenital child infection.[11] Syphilis may also increase the risk of HIV transmission and acquisition by causing genital ulcers.[12]

As already mentioned the incidence of syphilis and gonorrhea increased in Belgrade during the period 2010–2014. Both syphilis and gonorrhea were more frequent among Roma compared to the rest of Belgrade population. There is no previous data about the frequency of gonorrhea among the Roma population in Belgrade, but in a study conducted in this city in 2012 among 207 Roma youth aged 15–24 years the prevalence of syphilis was 1%.[13] According to Gyarmathy et al. the prevalence of syphilis among Roma in Budapest was 2%.[14] Among 286 Roma tested for sexually transmitted diseases in Sofia, 21.7% had at least one disease; 4.5% had gonorrhea and 3.5% had syphilis.[15] Other study in Bulgaria revealed that 3.7% of the Roma had gonorrhea and no syphilis was detected.[16] According to the results of a retrospective cohort study in a Roma group performed in Camp de la Bota, Barcelona, the incidence of AIDS was 104 cases per 100,000 person-years of follow-up.[17]

In the present study the Roma were significantly different from other cases registered in Belgrade in all characteristics observed. They were younger, less educated and more frequently unemployed, which is in agreement with differences between the Roma population and the total population of Serbia. According to data from the 2011 census, the average age of the Serbian population was 42.2 years and that of the Roma population was 27.8 years.[2] The Roma who lived in towns were even younger because of migration of young Roma to urban settlement. According to same data, 15.1% of the Roma were illiterate and about 80% had incomplete or complete elementary school vs. 2.0% and 32%, respectively, of the whole Serbian population. Unemployment among the Roma was three-fold higher than the total population of Serbia. In eastern European countries the Roma were found to be among the poorest, with very low level of education and with high rate of unemployment.[15] Knezevic stated that the Roma in Belgrade are the ethnic group that is “most vulnerable, segregated, living mostly in slams, showing no interest in improving their social position”.[18] In such a situation it is not surprising that 10.5% of the Roma cases, and only 0.2% of other cases, declared themselves as sex workers, which can partly explain why a significantly greater percentage of Roma cases did not know the source of infection. Roma cases were significantly more likely to be sex workers which can explain the higher presence of women among Roma cases (25%) compared to other cases (15.2%). According to Šipetić et al. Roma sexual workers in Serbia had the first sexual intercourse significantly more often before the age of 14, 38.5% of them never or not always used condom with their commercial sex partners and almost 20% had some STI in the past six months.[19] They had a very poor knowledge about the means of HIV transmission, too.

As it could be expected both Roma and all other syphilis and gonorrhea cases were more frequently men. Gender determines STI risk sexual behavior patterns, with men being the most frequently affected, but not only among Roma cases, at least not in Serbia. Traditionally, men have, more or less, greater sexual freedom compared to women. In the present study we have no data about risky sexual behavior, such as age of the first sexual intercourse, number of sexual partners, frequency of condom use, and so on, which could have helped to better understand the differences. As already stated, a study conducted in Serbia among the Roma youth has shown that risky sexual behaviors, such as early sexual debut, multiple sex partners and lack of consistent condom use were very frequent and they were much higher among young Roma in Serbia than in the general Serbian youth.[4] In the same study HIV-related knowledge was lower among Roma youth. Studies conducted in Bulgaria also reported high-risk sexual behaviors among Roma men.[16,20] According to their results 59% of Roma men had multiple sex partners, and over 52% of them reported unprotected intercourse with casual or with multiple partners during the last three months. In the study conducted in Budapest 82% of the Roma did not use a condom with their main partner.[14] Our findings that significantly lower percentage of the Roma cases than the other cases declared themselves as homosexual are in line with other studies. Although very few Roma men identified their sexual orientation as homosexual 51.9% and 59% of them reported lifetime same-sex activities.[16,20] Nearly two-thirds of men who had unprotected anal sex with other men received money or valuables in exchange for sex and the majority of them (94.1%) reported being the insertive partner.[16]

In the present study, in comparison with Roma cases with gonorrhea, Roma patients with syphilis were significantly more likely to be homosexual, sex workers, and more frequently did not know the source of their infection, which is in line with fact that syphilis is more frequently reported among men who have sex with men and sexual workers, worldwide.[8] Routine testing for syphilis should be encouraged and offered to Roma sex workers and MSM.

The critical feature of our analysis is the accuracy of data. It is reasonable to assume that the incidences of both diseases are underestimated, since there is a possibility that some of the patients do not visit physicians and some physicians do not report all of the cases. The fact that some patients could go to private physicians, which for being expensive may be more affordable by non-Roma patients and thus at least partly explain the overrepresentation of Roma cases at the Institute.

In summary, the present study confirmed the vulnerability of the Roma population to STIs. Syphilis and gonorrhea were much more frequent among the Roma than the rest of the population in Belgrade during the period of 2010–2014. The consequences of the government’s efforts to improve the economic status of the Roma population and to hasten their social integration cannot be expected soon. It seems that only the implementation of various models of health education could give good results in STIs prevention relatively quickly. Risk reduction messages targeting the Roma population are more important than ever. In addition, condom distribution and promotion should be an important part of their counseling.

Conflicts of interest

The authors declare no conflicts of interest.

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