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STI Epidemiology among Teenagers of Urban and Rural Areas of the Republic Of Kazakhstan.

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ABSTRACT

Features of the development of epidemic process of STI among teenagers depending on the residence of this category of the population in the urban and in rural areas are considered in this article. In spite of a favorable tendency of decrease in an incidence of the main clinical entities of STI, nevertheless rather adverse epidemiological situation with STI among this category of the population still remains. The objective of the research is to carry out the analysis of incidence of the STI by the main clinical entities among teenagers on the basis of data of the official state statistical reporting in the Republic of Kazakhstan. The republican incidence of syphilis among teenagers of 15-17 years is, on average, 13.6 per 100 thousand of population, gonorrhea - 16.8, chlamydiosis - 4.2, trichomoniasis – 2.5 per 100 thousand of population. The tendency of decrease in the incidence of STI, especially among the infections of a "new generation" among city teenagers in relation to rural teenagers occurs more intensively which indicates the necessity of additional organizational and methodical actions for the control of an epidemiological situation of STI among the teenagers living in rural areas.

Keywords: sexually transmitted infections, epidemic process, teenagers, urban and country population, organizational and methodical actions.

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INTRODUCTION

Epidemic process is a continuous influence at the level of species and populations of heterogeneous by evolutionary interfaced signs relations of a pathogen-parasite and a human body in necessary and sufficient social and natural conditions, expressed in manifest and asymptomatic forms of an infection which are distributed among the population of the territory, time and infection risk groups and (or) disease [1,2]. Manifestations of epidemic process can be described as from the point of view of the origin (the incidence which is constantly registered in the population studied), and taking into account its quantitative characteristics, including dynamic characteristics. At the same time authors [3-7] in most cases give the priority to social factors, in particular, to features of manifestation of epidemic process in urban and rural settlements. Sexually Transmitted Infections (STI) belong to the group of diseases of social trouble or socially caused diseases. The social importance of a problem of STI increases because STI adversely influence reproductive health of the younger generation, leading to decrease in birth rate, deterioration in a demographic situation that even more aggravates processes of depopulation [8-14]. The carried-out content analysis of the dissertation researches is available in Kazakhstan with regard to the problem of STI and HIV infection among teenagers and adults [15-20] showed that the majority of them considered clinical-epidemiological features of STI/HIV among adults for the subsequent development of diagnostic complexes, methods of treatment, anti-epidemic and preventive actions.

In a number of dissertation researches teenagers and youth [18,19,21,22] have became the objects of studying, however, the sufficient attention was not paid to the research of epidemiology of STI among teenagers of rural and urban regions of Kazakhstan.

Objective of the research

To carry out the analysis of incidence of the STI by the main clinical entities among teenagers on the basis of data of the official state statistical reporting in the Republic of Kazakhstan.

MATERIALS AND METHODS

Research materials

We carried out a complex research; the detailed analysis of incidence of STI for 10 years, in a section of separate nozology was carried out.

Studied materials are data of official statistics and reporting for the period from 2004 to 2013: form #3 and 9.

The retrospective 10-year (2004 – 2013) analysis of incidence of STI in the RoK was carried out. Data on the incidence of some STI were expressed in an absolute value and per 100 thousand of population, in some series of observance the incidence of STI was expressed per 100 thousand of a corresponding population.

The analysis of results of incidence of teenagers among urban population is carried out on the example of Almaty - the large megalopolis of Kazakhstan with the population numbering 1,5 million people. By its infrastructure and economic and social situation Almaty corresponds to the city status.

The incidence among teenagers of a rural population was studied on the basis of data from the medical institutions of Almaty region - the typical rural region with the developed agricultural sector of production. Besides, by the level of economic and social status Almaty region takes the median place in republican indicators of a development of regions of Kazakhstan that makes it convenient for the analysis of incidence of STI in rural conditions taking into account their features and use in the subsequent of the developed recommendations for other regions of Kazakhstan.

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Research methods

According to the program of a research the epidemiological and mathematical-statistical techniques were used.

For an assessment of intensity of epidemic process of STI among teenagers the scientific variable was used - the indicator of incidence (i) recommended by the Committee of WHO experts, which was calculated as the relation of quantity of cases of STI (n) emerged for a certain time point (T) to the number of population (N) in the same span [23].

$$I = \frac{n}{Nx(10n)}$$

where:

I - incidence indicator,
n - number of all revealed STI cases at the given time,
N - population.

Definition and assessment of a tendency of long-term incidence of STI among teenagers and adults were carried out through calculation of epidemiological parameter - Rate of increase (R_{inc} ±). Rate of increase is the relation of absolute increase (or decrease) to the previous level taken for 100%. This indicator shows percent of change in relation to the previous year (or the year taken for a reference point) and characterizes the relative speed of dynamics of incidence of STI, or intensity of epidemic process [24]. The average level of incidence was calculated according to the following formula:

$$y = \sum \frac{y}{n}$$

where:

y - separate levels,
n - number of members of a row.

RESULTS AND DISCUSSION

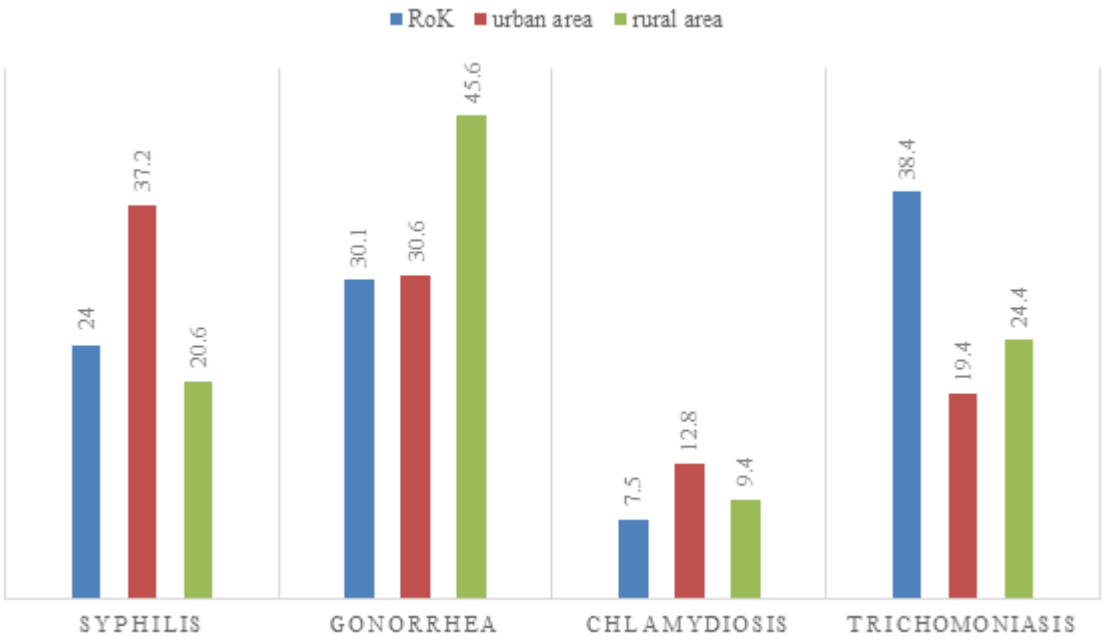

Figure 1. Structure of the distribution of basic nosological STIs forms among adolescents aged 15-17 years in 2004-2013

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In the analysis of results of the epidemiological analysis of structure and long-term dynamics of incidence of the main forms of STI for the 10-year period it is established that the number of cases of syphilis among teenagers made 1200 (21.4 per 100 thousand population), 1509 cases of a gonorrhea (16,8 per 100 thousand population), 374 cases of chlamydiosis (4,1 per 100 thousand population), 1926 cases of trichomoniasis (1,7 per 100 thousand population). Total number is 5009 cases of the main studied STI forms (12,6 per 100 thousand population). The largest specific weight in structure of STI occupies trichomoniasis - 38.4 (%), on the second place there is gonorrhea (30.1%), on the third place there is syphilis (24.0%), further follows chlamydiosis - 7.5%. Among urban population the structure of STI is as follows: the leading position is held by syphilis – 37.2%, gonorrhea is on the second place – 30.6%, further - trichomoniasis (19.4%), chlamydiosis (12.8%). Among teenagers of 15-17 years living in rural areas the first place in structure is taken by gonorrhea (45.6%), then follow trichomoniasis (24.4%), syphilis (20.6%), chlamydiosis (9.4%) (figure 1). Conspicuous is the fact that in rural areas syphilis is detected more often nearly by 1.6 times, gonorrhea - by 4.4 times, chlamydiosis - by 2.2 times, trichomoniasis - by 3.7 times in comparison with urban population.
In general, the ratio of the studied nosological forms of STI among teenagers living in rural areas to city teenagers makes 3:1.

Tables 1-3 provide the results of the retrospective epidemiological analysis of long-term dynamics of STI incidence in the studied territories among teenagers in comparison with adults for 2004-2013.

Republic of Kazakhstan

It is can be seen from Table 1 that during 2004-2013 in the Republic the resistant positive tendency to decrease in indicators of incidence (i) remains among both teenagers and adults in all studied STI nosological forms, except for trichomonas infection among adults where the average value of incidence is equal to129.8 per 100 thousand of population, and the rate of increase of incidence of trichomoniasis calculated by us R_{inc} (±) makes +3.2%. Among teenagers rate of decrease in indicators of incidence is highest for gonorrhea (R_{inc} (±) – 80.8%), further follows syphilis – (68.8%), chlamydiosis – (51.6%).

As for trichomoniasis, it is interesting that the rate of decrease in incidence for this infection among teenagers is much lower in comparison with other STI forms and makes – 21.9%.

Table 1: Dynamics of incidence of the main nosological forms of STI across the Republic of Kazakhstan in indicators of incidence (i) per 100 thousand of population for 2004-2013.

	syphilis		gonorrhea		chlamydiosis		trichomoniasis	
	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults
2004	26.9	112.9	33.8	107.9	6.2	65.8	-	-
2005	17.8	86.7	29.3	95.6	4.0	67.9	-	-
2006	15.0	74.8	22.0	76.3	9.0	53.0	-	-
2007	14.3	63.8	21.7	66.2	6.3	52.7	3.2	90.1
2008	16.0	56.7	21.2	68.0	2.3	43.1	2.6	186.9
2009	8.6	55.0	9.8	65.3	3.7	43.2	7.2	161.2
2010	10.2	47.8	8.6	52.6	3.2	41.3	1.4	142.5
2011	9.7	45.1	8.4	43.6	2.0	41.3	0.9	136.7
2012	9.0	50.8	6.9	41.6	2.0	34.2	1.0	98.4
2013	8.4	50.3	6.5	39.4	3.0	38.7	0.9	93.0
∑ m	13.6	54.2	16.8	65.6	4.2	48.1	2.5	129.8
R_{inc} ±,%	- 68.8%	- 52.0%	- 80.8%	- 63.5%	- 51.6%	- 41.2%	- 21.9%	+ 3.2%

Urban area

Comparative analysis of long-term dynamics of incidence of STI among teenagers and adults for 2004-2013 (Table 2) demonstrates the clear tendency in the urban area in dynamics of decrease in incidence of STI among teenagers practically in all studied nosological forms, except for chlamydiosis where the level of average incidence of an infection makes 4.4 per 100 thousand of population, and rate of increase of incidence - +22.9%. Among teenagers the indicator of average incidence of syphilis makes - 8.5 per 100 thousand of population, gonorrhea - 10.1, chlamydiosis - 4.4, trichomoniasis - 11.9 per 100 thousand of population.

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Table 2: Dynamics of incidence of the main nosological forms of STI among urban population in indicators of incidence (i) per 100 thousand of population for 2004-2013.

	syphilis		gonorrhea		chlamydiosis		trichomoniasis	
	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults
2004	26.3	137.6	28.0	128.3	3.5	83.4	-	-
2005	24.0	83.5	20.5	106.1	5.1	53.3	-	-
2006	3.6	84.8	12.5	72.7	5.3	50.2	-	-
2007	17.0	65.0	13.2	97.3	7.6	177.1	-	-
2008	14.0	46.6	6.0	32.7	4.3	65.6	22.0	173.6
2009	8.5	58.5	4.1	31.9	4.5	55.7	14.9	160.8
2010	9.5	50.4	1.9	17.1	5.7	46.6	11.4	117.4
2011	4.0	50.2	3.4	15.4	2.0	53.3	16.2	115.2
2012	10.8	62.4	6.5	12.7	2.2	25.8	2.2	14.9
2013	8.5	49.4	5.2	14.2	4.3	64.9	4.5	20.2
∑ m	12.6	68.8	10.1	52.8	4.4	67.6	11.9	76.2
R_{inc} ±,%	- 67.7%	- 64.1%	- 81.4%	- 88.9%	+ 25.7%	- 22.9%	- 79.5%	- 88.4%

Rural areas

The tendency of decrease in incidence of STI among teenagers in rural areas (Table 3) in general corresponds to the general tendency across Kazakhstan and among urban population. However, ambiguous dynamics of decrease in incidence of infections of "new generation" is observed. So, the process of decrease in incidence of teenagers of chlamydiosis, trichomoniasis is also slowed down in urban and rural areas. With regard to trichomonas infection among teenagers living in rural areas there is increase of an incidence almost by 3.1 times. In general, the calculated average values of incidence of some studied nosological forms of STI among urban and rural teenagers are as follows: on gonorrhea , trichomoniasis - by 1.3 times, respectively.

Table 3. Dynamics of incidence of the main nosological forms of STI among rural population in indicators of incidence (i) per 100 thousand of population for 2004-2013.

	syphilis		gonorrhea		chlamydiosis		trichomoniasis	
	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults	adolescents 15-17 years	adults
2004	20.0	85.7	27.3	43.3	-	-	-	-
2005	10.0	67.1	20.8	52.3	-	-	-	-
2006	11.4	63.9	17.2	47.0	-	-	-	-
2007	6.9	61.1	14.7	41.7	4.9	59.3	4.9	79.8
2008	10.9	52.2	22.5	37.5	4.1	69.6	18.4	68.5
2009	4.3	53.5	7.5	32.6	3.2	76.3	31.0	28.9
2010	13.4	49.7	4.1	24.5	1.0	42.7	22.0	46.4
2011	8.7	59.8	6.5	16.4	1.1	37.4	21.0	73.9
2012	22.0	64.3	3.5	18.3	2.3	57.8	7.0	39.9
2013	4.6	59.1	5.7	21.0	2.3	45.6	2.3	33.1
∑ m	11.2	61.6	13.0	33.5	2.7	55.5	15.2	52.9
R_{inc} ±,%	- 77.0%	- 28.1%	- 79.1%	- 51.5%	- 44.9%	- 6.4%	+ 3.1 %	- 33.7%

CONCLUSIONS

Results of the conducted researches demonstrate that despite the favorable tendency of decrease in an incidence of the main nosological forms of STI among teenagers in Kazakhstan, nevertheless rather adverse epidemiological situation with STI among this category of the population remains. On average, the republican incidence of syphilis among teenagers of 15-17 years makes 13.6 per 100 thousand of population, gonorrhea - 16.8, chlamydiosis - 4.2, trichomoniasis - 2.5 per 100 thousand of population. It is noted that the tendency of decrease in incidence of STI, especially infections of "new generation" among city teenagers in relation to rural teenagers occurs more intensively. It indicates the necessity of acceptances of additional organizational and methodical actions for control of an epidemiological situation of STI among the teenagers living in rural areas.

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