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A TWIN PHENOMENON IN THE WORLD

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Summary: A major reason for the increase of dizygotic twins rates in the world can be associated with the rise of medically assisted reproduction, ovarian stimulation and in vitro fertilization. In same time, the amount of monozygotic twins essentially does not change with time.

Key words: multiply pregnancy, identical twins, non-identical twins, prevalence of twins

Actuality of topic. The problem of twins studying at the present stage has not lost its relevance. A special place is occupied by a complex of studies related to the study of the influence of heredity and the environment on the development of certain diseases. To solve these issues, the most expedient scientific object is considered to be twins, which is a peculiar model of genetic identity of different individuals [1].

The main aim was to analyze literary sources on the factors influencing the occurrence of multiple pregnancy and to determine the prevalence of twins in the world and in Ukraine.

Results and discussion. Multiply is pregnancy, during which women uterus develops two or more babies. Twins are children born as a result of multiple pregnancy. According to statistical research over the past decade, the average multi-fertility rate in the world has increased from 1% to 2.5% [9]. On average, multiple pregnancy occurs in 2-2.5% of cases [10, 12, 16].

Genetics claim that pregnancy begins as a multiple pregnancy with a frequency of 1: 8, but prenatally monitored pregnant women - multiple pregnancy is diagnosed with a frequency of 1:35 - 1:40. However, the frequency of twin childbirth is at an average of 1: 80 [2, 5, 7] .

At the end of the nineteenth century it was proved that the embryonic mantle of the twins' embryos may have a different structure, indicating the presence of two biological phenomena - monozygotic and dizygotic twins [3]. Non-identical (dizygotic) twins develop from two eggs formed in one or several follicles, each of which is fertilized with a separate spermatozoon. The fertilized eggs develop in the usual way, saparate from each other, forming two amnion and two chorion.

From the genetic point of view, the dizygotic twins are similar as brothers and sisters, and they have about 50% of the common genes. Identical (monozygotic) twins develop from one egg fertilized by one male sex cell. In the first two weeks after fertilization, the zygotes are divided into two symmetrical, genetically identical halves, but develop as two separate, similar to each other individual. Theoretically, monozygotic twins should be exactly the same. It is important to emphasize that the genetic identity of monozygotic pairs is used in the “twin analysis method” to assess the relative role of genetic and environmental factors in the development of various human characteristics [6].

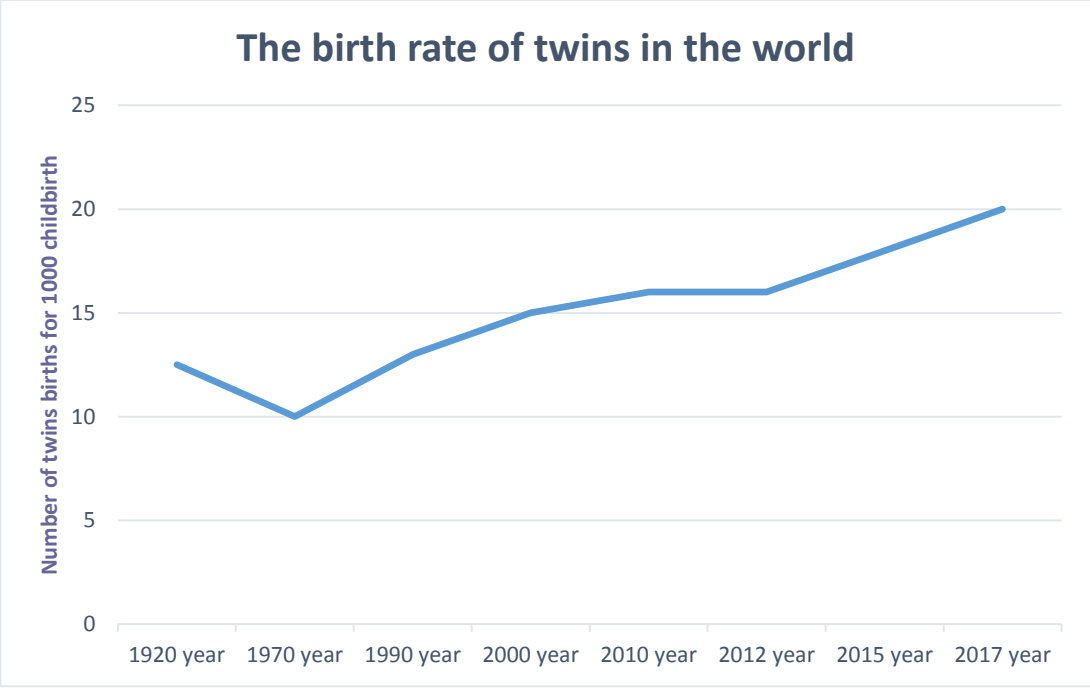
The frequency of monozygotic twins, or identical, developing from one fertilized egg, is relatively stable around the world and reaches 3.5-5.0 per 1000 pregnancies. The frequency of the dizygotic twins varies widely from 1: 20 to 1: 500 births [13,14,15].

The frequency of dizygotic twins depends on the genetic predisposition (traced repeatability of twins in one family), some factors of the environment, nutrition, seasonal variations, as well as the country or region of residence. (Bulmer 1970; Smits and Monden 2011). Recently, significant influence on the level of multiple pregnancy of the extended use of hormonal drugs and

other methods that affect fertility has been established [6, 8]. The frequency of multiple pregnancy affects many factors, even such as the season of conception - the incidence of multiple pregnancy increases during impregnation in the spring-summer. There is a connection of a multiplicity with a predominance in the diet of rich natural estrogen. There is a connection between the frequency of multiple pregnancies and the blood groups (especially the blood group of the MN system). Among those who carry multiple pregnancy, women with erythrocytic antigen M (system of blood group MN) reach 69%, and erythrocytic antigen N - only 13% [4, 11].

According to various estimates, today in the world there are 70 to 80 million pairs of twins. The number of twins born in relation to the total number of newborns in different countries and on different continents is diverse, but in general, the trend is that it continues to grow. Compared to the 80s, the percentage of births of twins increased from 1.18 to 2.78, which is almost 2.5 times. In the early 80's, for every 80-90 childbirth there was one double, and for each 6400 childbirth, there was one triplex. In the late 90's, for every 40-45 childbirth there was one double, and for each of the 800-1300 childbirth, there was one triple. [13, 14, 15, 16].

Nowadays, per every 30-40 newborns have one double. The highest birth rate of twins was seen in Central Africa - more than 18 twins per 1000 births. Especially many twins are born in Benin. This may be due to the people of Yoruba, which inhabits Benin, Nigeria and Togo. In the countries of Asia and Latin America, twins are born the least - only 8 per 1000 newborns. The main exception is the Caribbean islands, where there are traditionally many immigrants from Africa, in Haiti, 14 births per 1,000 children were recorded. The dynamics of twins births in the world is presented in the chart below.



The frequency of birth of monozygotic and dizygotic twins in Europe also varies. The largest rate of dizygotic twins are born in Greece, Denmark and the Czech Republic and are respectively 22.4 and 19.2 per 1000 newborns. The fertility rates are presented in tables 1 and 2 below.

Tab.1- Birth rate of twins in 1985

Country, 1985	Birth rate of twins	
	MZ per 1000 newborns	DZ per 1000 newborns
Austria	3,5	9,0
Belgium	3,3	10,0
Czech Republic	3,4	9,6
Denmark	3,5	9,4
Finland	3,6	11,3
France	3,7	9,4
Greece	2,9	10,6
Germany	3,2	9,8
Italy	3,7	10,1
Netherland	3,7	9,9
Norway	3,5	9,8
Portugal	3,1	7,8
Russia	3,6	8,1
Spain	3,2	8,9
Sweden	3,2	8,6
Ukrain	3,7	8,5

* SOURCES: National statistical offices; authors' calculations.

Tab.2 - Birth rate of twins in 2017

Country, 2017	Birth rate of twins	
	MZ per 1000 newborns	DZ per 1000 newborns
Austria	3,4	16,2
Belgium	3,2	17,4
Czech Republic	3,6	19,2
Denmark	3,5	22,4
Finland	3,5	15,0
France	3,5	16,3
Greece	3,0	22,4
Germany	3,2	15,4
Italy	3,5	13,0
Netherlands	3,6	18,6
Norway	3,5	18,3
Portugal	3,3	12,9
Russia	3,4	12,2
Spain	3,3	17,2
Sweden	3,3	13,7
Ukraine	3,2	11,1

* SOURCES: National statistical offices; authors' calculations.

Conclusion. Acording to our research the amount of twins in the world continue increase. From the data obtained, we can conclude that the birth rate of dizygotic twins in Europe has almost doubled during last thirty years. The main cause of growth compared to 1985 may be the widespread use of oral contraceptives, artificial stimulation of ovulation, as well as auxiliary reproductive technology, since in 1985 the use of the above mentioned methods was limited or impossible. At the same time, the fertility rate of monozygotic twins remains relatively stable in terms of time and geographic region.

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