

General Characteristics of Newborn from the Area of Tuzla Canton, Born in the Course of 2007

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ABSTRACT

The paper examined the basic anthropometric characteristics, birth weight and birth length of newborns, from the Tuzla Canton (TC) born during 2007. The study is a retrospective study in which data from the book of protocol of the Obstetrics and Gynecology Clinic – University Clinical Center Tuzla (OGC UCC). There were 4057 births in which 4125 babies were born in the OGC UCC Tuzla between 01 January and 31 December 2007. Of the total number, there were 29 stillborn (0.7%), of which 16 boys and 13 girls. There was 4,096 (99.3%) live born, of which 2,123 (51.83%) boys and 1973 (48.17%) girls. On every 100 girls 108 boys were born. Average values of the observed parameters in the total sample of infants were the following: birth weight 3387.17g; birth length 52.83cm; age of the mother was $\bar{X}_{sr} = 26.49$ years, and the average order of birth is 1.61. Birth weight in the total sample of male infants ranged from minimal 1130g to 5150g maximum. The average value of birth weight of male newborns was 3443.47 g and female 3326.38g. The birth length of male infants in the total sample ranged from minimal 35 cm to 62 cm maximum and average value of the birth length reached 53.16 cm. Infants with low birth weight, hypotrophic newborns, born 123 or 6.24%. There were 1659 or 84.22% eutrophic infants born. There were 188 or 9.54% of high birth weight infants, hypertrophic infants, born. Male infants were more likely hypertrophic than female.

Key words: newborn/infant, birth weight, birth length, hypotrophic, eutrophic and hypertrophic newborns.

Introduction

Birth weight is a good indicator of intrauterine growth and development of a newborn with far-reaching impact on the health and life of humans¹.

It is known that somatic status of a newborn depends on a whole range of factors, as confirmed by numerous studies. Thus birth weight, birth length and head circumference of infants in relation to different endogenous and exogenous factors such as the duration of pregnancy, gender, genetic factors, the impact of villages and towns, socio-economic status, climatic and geographical factors, the impact of polluted environment, body height and weight of both parents, the physical activity of pregnant women, pregnancy and birth order, maternal smoking, taking drugs and narcotics, age of both parents, nutrition during pregnancy, etc. have been investigated^{2–4}. Many of these factors, with their intensity, adversely affect birth weight and may lead to the occurrence of intrauterine stunted growth and procreation of hypotrophic newborns as well as fetal hypertrophy and procreation of hypertrophic new-

borns. Both groups, hypotrophic and hypertrophic infants, are risk group of newborns.

Intrauterine stunted growth may lead to the emergence of hyperlipoproteinemia, chronic hypertension, cardiovascular disease and diabetes^{5–9}. It is also believed that the intrauterine hypertrophy is associated with the obesity of adults, and these newborns present a risk group for the development of diabetes in adulthood⁷, the changes of the beginning and duration of puberty¹⁰. A consistent association between low birth weight and constriction of arterioles of the retina in twins was proven in a study conducted by Cong Sun et al.¹¹ on twins in Tasmania. A study conducted by Cora et al.¹² in a population of adolescents in Rio Grande do Sul (Brazil) as well as Haeffner et al.¹³ shows that the impact of birth length is much greater than the effect of birth weight on subsequent body height. This is to be expected, especially if it is known that the body height is the parameter that has a much higher heritability than body weight^{14–17}.

In Bosnia and Herzegovina (BiH) anthropological characteristics of newborns have a low degree of exploration. The researching area is Tuzla Canton (TC), which is the administrative territorial unit of the Federation of Bosnia and Herzegovina (FBiH) and which emerged during the war in BiH. TC takes up 5.7% of the territory of BiH.

The main objectives of this study were:

- To determine the average value of birth weight and birth length of newborns from TC during 2007 and compare the results with the relevant data from other countries.
- Identify the prevalence percentage of eutrophic, hypotrophic and hypertrophic newborns as well as the average value of birth weight and birth length of newborns in these groups.
- To determine the average age of mother and order of birth of newborns in the examined sample.

Subjects and Methods

In 1994 The World Health Organization (WHO) gave both the standardization and the definition of perinatal concepts. In this paper we used the definition of the WHO for the following terms: a live born infant, stillborn, newborn, gestational age (duration of gestation), full-term infant, premature infant (prematurity), post-term infant (postmaturitet), birth length and birth weight, low birth weight infant, children of very low birth weight, children of extremely low birth weight, hypotrophic newborns (low birth weight infant) and hypertrophic newborns¹⁸.

In order for the results of concurrent bioanthropological studies in different populations (and in the same populations and at different periods) to be comparable, general principles of construction and methods of use of special instruments from identical materials (International Biological Program) have been internationally agreed. Acceptable units and categories used to express the results of measuring and the corresponding observations¹⁹ have been standardized.

In addition to anthropometric parameters (birth weight and length of a newborn, gender), the data of the place of residence, maternal age and birth order have been collected for this study.

There were 4125 newborns in the sample. In relation to birth weight three sub-samples were made as follows:

1. subsample of low birth weight newborns – hypotrophic newborns (up to and including 2499 g);
2. subsample of newborns of normal birth weight – eutrophic newborns (from 2,500 grams up to and including 3999 g);
3. Subsample of high birth weight newborns – hypertrophic newborns (4,000 grams).

Statistical analysis was performed in a computer program STATISTICS-4.5 for Windows Copyright Stat Soft,

Inc.1993. Descriptive statistics was performed and statistical significance of differences was tested by t-test.

Results

General characteristics of newborns from TC born during 2007

From 01 January to 31 December 2007 according to data from the Protocol Book of OGC UCC – Tuzla there were 4057 births in which 4125 of infants were born. There were 29 stillborn (0.7%) of which 16 male and 13 female. There were 4096 live births, or 99.3%, of which 2123 (51.83%) male and 1973 (48.17%) of female of newborns (Table 1).

In 2007 there were 64 twin pregnancies in which 128 of newborns were born. Seven male and three female infants from twin pregnancies were stillborn. From a total of 121 live births 57 boys and 64 girls were born from twin pregnancies. Two births have resulted in the birth of triplets, five boys and one girl.

In 2007 births which were performed on OGC UCC-Tuzla were from municipalities: Tuzla, Živinice, Kalesija, Lukavac, Srebrenik, Gradačac, Kladanj, Gračanica, Banovići, Sapna, Doboje East and Teočak and from other municipalities in the country. The largest number of newborns was from Tuzla municipality (1095) then Živinice (695), Srebrenik (384), Kalesija (373), etc. The minimum number of newborns is from municipalities Teočak (61) and Doboje East (24; Table 1).

Average values of observed parameters in the total sample of infants born during 2007 were the following: birth weight 3387.17g; birth length 52.83cm; age of the mother was \bar{X}_{sr} =26.49 years, and the average order of births was 1.61.

General characteristics of female infants born during 2007

General characteristics of birth weight, birth length, maternal age and parity of mothers of hypotrophic, eutrophic, hypertrophic female newborns as well as in the total sample of those born between 01 January and 31 December 2007 are presented in Table 2.

In 2007, 1973 of female newborns were born. There were 123 or 6.24% of infants with low birth weight, hypotrophic newborns, were born. 1659 or 84.22% of eutrophic newborns were born. There were 188 or 9.54% of high birth weight infants, hypertrophic newborns, born. In books protocol of OGC Tuzla birth weight was not registered for three newborns.

Birth weight of female newborns in the total sample ranged from minimal which was 730g to 5200g maximum. The average value of birth weight was 3326.52g. The standard deviation of birth weight of the total sample of female newborns was ±544g, and the median for the entire sam-

TABLE 1
STILLBORN AND LIVE BORN INFANTS BY MUNICIPALITIES IN TUZLA CANTON BORN BETWEEN 01 JANUARY AND 31 DECEMBER 2007

Place of mother's residence	Births				Stillbirths				Total	
	♂♂	%	♀♀	%	♂♂	%	♀♀	%	living	dead
Tuzla	560	26.38	535	27.12	2	12.5	3	23.08	1095	5
Živinice	358	16.86	337	17.08	2	12.5	3	23.08	695	5
Kalesija	187	8.81	186	9.43	1	6.25	0	0	373	1
Lukavac	189	8.90	173	8.77	1	6.25	0	0	362	1
Srebrenik	208	9.80	176	8.92	0	0	1	7.69	384	1
Gradačac	153	7.21	138	6.99	3	18.75	2	15.38	291	5
Kladanj	77	3.63	69	3.50	0	0	0	0	146	0
Gračanica	74	3.49	64	3.24	3	18.75	2	15.38	138	5
Banovići	134	6.31	125	6.34	1	6.25	0	0	259	1
Sapna	64	3.01	53	2.69	1	6.25	2	15.38	117	3
Doboj Istok	9	0.42	15	0.76	0	0	0	0	24	0
Teočak	35	1.65	26	1.32	0	0	0	0	61	0
Other municipalities in Bosnia and Herzegovina	75	3.53	76	3.85	2	12.50	0	0	151	2
Total sample	2123	100	1973	100	16	100	13	100	4096	29

ple as well as for eutrophic female newborns was 3350g (Table 2).

The birth length of female newborns in the total sample ranged from minimal which was 30cm to 62cm maximum. The average value of the birth length was 52.47cm and the median for the entire sample and eutrophic newborns was 53cm. The standard deviation of the birth length of the total sample of female infants born during 2007 was ± 3.09 cm (Table 2).

The average age of mother in the total sample was 26.59 years, while the median for the entire sample, eutrophic and hypertrophic newborns, was 26 years.

The average number of births of mothers ranges from 1.63 to 1.74. The median birth order of eutrophic, hypotrophic newborns and the total sample was 1, while only for hypertrophic newborns, it was 2 (Table 2).

General characteristics of male infants born during 2007

General characteristics of birth weight, birth length, maternal age and parity of mothers of hypotrophic, eutrophic, hypertrophic male newborns as well as in the total sample of those born between 01 January and 31 December 2007 are presented in Table 3.

In the examined year 2123 of male infants were born. 98 or 4.62% of this number of boys were born with low birth weight. 1725 or 81.29% of eutrophic male infants were born, and 299 or 14.09% of hypertrophic.

Birth weight of male newborns in the total sample ranged from minimal which was 1130g to 5150g maximum. The average value of birth weight was 3443.47g.

The standard deviation of birth weight of the total sample of female newborns was ± 542.53 g, and the median for the entire sample as well as for eutrophic female newborns was 3500g (Table 3).

The birth length of male newborns in the total sample ranged from minimal which was 35cm to 62cm maximum. The average value of the birth length was 53.16cm, the standard deviation was ± 3.08 cm and the median for the total sample was 54 cm (Table 3 and Figure 8).

The average age of a mother in the total sample of male newborns was 26.40 years, while the median for the entire sample, eutrophic and hypertrophic male newborns, was 26 years. It has been determined that hypotrophic newborns were given births by the oldest mothers in average ($\bar{X}_{sr} = 27.71$) in this calendar year.

The average number of births of mothers in 2007 ranged from 1.58 to 1.65 with median 1 except for hypertrophic newborns that have median value 2 (Table 3).

Discussion

In this study the data for the birth weight and birth length of newborns from Tuzla Canton born in 2007 have been presented.

In the total sample more boys were born than girls, i.e. on 100 girls 108 boys were born. Examining the secular trend of newborns in TC, Begić²⁰ had a similar result for 1976, 1987 and 1997. This was expected and it coincides with the results which many authors had, e.g. Misir-Galić²¹ for five Croatian counties, Božić-Krstić²² for the Vojvodina area, Stefanović²³ for Podgorica, Kotar and Pljevlje and others. According to Gavrilović et al.²⁴ in the USA on 100 girls 105.5. i.e. 106 boys are born.

TABLE 2

DESCRIPTIVE STATISTICS OF THE OBSERVED PARAMETERS OF HYPO-, EU-, HYPERTROPHIC AND THE TOTAL SAMPLE OF FEMALE NEWBORNS (2007)

	2007. ♀♀	Birth weight (g)	Birth length (cm)	Mother's age	Order of birth
Hypotrophic newborns	N	123	122	123	123
	\bar{X}	2020.33	45.79	26.08	1.66
	M	2180	47	25	1
	\bar{X}_{min}	730	30	17	1
	\bar{X}_{max}	2480	55	49	7
	Range	1750	25	32	6
	SD	427.24	4.18	5.31	1.14
SE	38.52	0.38	0.48	0.10	
Eutrophic newborns	N	1659	1656	1657	1659
	\bar{X}	3322.65	52.57	26.53	1.63
	M	3350	53	26	1
	\bar{X}_{min}	2500	39	15	1
	\bar{X}_{max}	3980	61	46	8
	Range	1480	22	31	7
	SD	340.52	2.22	5.21	0.84
SE	8.36	0.05	0.13	0.02	
Hypertrophic newborns	N	188	188	187	188
	\bar{X}	4215.27	56.00	27.40	1.74
	M	4150	56	26	2
	\bar{X}_{min}	4000	50	15	1
	\bar{X}_{max}	5200	62	41	4
	Range	1200	12	26	3
	SD	228.93	1.98	4.96	0.79
SE	16.70	0.14	0.36	0.06	
Total	N	1970	1966	1970	1973
	\bar{X}	3326.52	52.47	26.59	1.64
	M	3350	53	26	1
	\bar{X}_{min}	730	30	15	1
	\bar{X}_{max}	5200	62	49	8
	Range	4470	32	34	7
	SD	544.00	3.09	5.20	0.86
SE	12.26	0.07	0.12	0.02	

TABLE 3

DESCRIPTIVE STATISTICS OF THE OBSERVED PARAMETERS OF HYPO-, EU-, HYPERTROPHIC AND THE TOTAL SAMPLE OF MALE NEWBORNS (2007)

	2007. ♂♂	Birht weight (g)	Birht length (cm)	Mother's age	Order of birth
Hypotrophic newborns	N	98	96	98	98
	\bar{X}	2002.91	45.72	27.71	1.65
	M	2025	47	27	1
	\bar{X}_{min}	1130	37	16	1
	\bar{X}_{max}	2450	56	49	5
	Range	1320	19	33	4
	SD	350.16	3.31	6.20	0.89
SE	35.37	0.34	0.63	0.09	
Eutrophic newborns	N	1725	1722	1721	1725
	\bar{X}	3392.27	53.01	26.23	1.58
	M	3450	53	26	1
	\bar{X}_{min}	2500	35	15	1
	\bar{X}_{max}	3980	60	47	8
	Range	1480	25	32	7
	SD	351.73	2.30	5.23	0.80
SE	8.47	0.06	0.13	0.02	
Hypertrophic newborns	N	299	299	299	299
	\bar{X}	4211.04	56.45	27.00	1.64
	M	4150	57	26	2
	\bar{X}_{min}	4000	50	17	1
	\bar{X}_{max}	5150	62	42	5
	Range	1150	12	25	4
	SD	13.00	0.12	0.28	0.04
SE					
Total	N	2122	2117	2119	2123
	\bar{X}	3443.47	53.16	26.40	1.59
	M	3500	54	26	1
	\bar{X}_{min}	1130	35	15	1
	\bar{X}_{max}	5150	62	49	8
	Range	4020	27	34	7
	SD	542.53	3.08	5.24	0.79
SE	11.78	0.07	0.11	0.02	

The number of stillborn in the past thirty years has been halved. Relative frequency of these kinds of deliveries in 1976 was 1.5% and in 2007 it was 0.7% which is the result of improvements of socio-economic living conditions and greater prenatal care of offspring²⁰.

The average value of birth weight in the total sample of newborns in 2007 was 3387.17g. In 1997 in this canton Begić determined average values of birth weight of 3340.21g. Comparing these two average values high statistical significance may be determined (t-test -4.17; p<0.000). The cause of these differences is the changed

socio-economic status of the population. Namely, the period between the 80ies and 90ies of the past century for our country, and for the TC area, was the period of improvement in the socio-economic status of the society as a whole. This further presumes that people could have a quality life, lead healthier lifestyle, better nutrition etc. In 1987 the percentage of women in BiH increased by 6%, from 29.5% to 35.5% compared to 1976^{25,26}. Greater educational level of women has also contributed to the improvement of lifestyle in this period. Education of pregnant women in the 80ies has also become more intensive

so the old habits could be abandoned like pregnant woman should eat for two. In that period pharmaceutical companies started to produce different preparations, brochures, posters which influenced on the control of increase of body weight of pregnant women, improvement of general health in the society, importance of protein and vitamins intake etc.

According to the statements of Smajkić et al (taken from Skokić et al.²⁷) before the war, which lasted between 1992 and 1995, in the BiH territory primary health care was provided in health care centers and their infirmaries, secondary health care in general and regional hospitals, and only partially in health care centers (specialized counseling centers), and tertiary health care services in medical centers which are university centers at the same time. Perinatal care in BiH was not secured on the level of primary health care, mostly because of insufficient knowledge and perinatal clinical skills of doctors and other staff, and the insufficient adequate equipment and space. Therefore, most health care services for pregnant women, women in labor and newborns were easily accessible in the form of tertiary and secondary health care²⁷.

All the insufficiencies of the organization of the health care system in BiH became obvious during the war between 1992 and 1995. Regular examinations during pregnancy could not have been provided on the level of health care, health care of pregnant women was inadequate, and health care of newborns almost did not exist. Many hospital facilities were destroyed and the existing equipment was damaged or destroyed during the war²⁸, absence of medications was visible, and a great part of the health care workers either left the country or were at the front line. The existing hospital facilities were overcrowded with the wounded and patients with chronic diseases. The whole health care system was adjusted to the war conditions. The result of unavailability of perinatal health care for pregnant women during the war reflected on the perinatal result in TC²⁷ which resulted in decrease of all anthropological parameters in this period.

After the war the average values of the birth weight were gradually increasing which was determined for 1997. This kind of increase was expected bearing in mind great migratory movements in the whole BiH territory. There was a great change in genetic composition of local population due to mass, violent migration of the population during the war. It can be said that population up to 1990 and after 1990 are genetically completely different. It is presumed that they contributed to this kind of secular trend as well.

As a consequence of these kind of changes from 1997 the birth weight was increasing. The care of offspring is increasing as well (deliveries are performed maternal department). Thus, in 1997 in the Federation of BiH 97.92% of infants were born in health care institutions and in 2007 there were 99.95%²⁹, which practically means that all children were born in health care institutions. These indicators present constant increase considering that in 1976 in BiH only 72.28%, and in 1987 94.06% of newborns were born in health care institutions^{25,26}. The care of off-

spring is seen in paying more attention to health care of pregnant women and newborns compared to the previous period.

Secular trend of anthropometrical parameters at birth in BiH have been investigated only on the territory of Gradačac municipality³⁰. In the observed ten-year period (from 1998 to 2008) the authors determined the acceleration of birth weight of 84.96g/decade, birth length 1.13cm/decade and head circumference of 0.34cm/decade.

The determined birth length of newborns in 2007 was 52.83cm. In 1997 Begić determined average birth length of 52.87. Comparing these results with ours it can be concluded that there are no statistically significant differences in the change of this anthropometric parameter (t-test 0.61; p=0.543). The reason for that is that the birth length of the newborns is under bigger control of genetic factors, unlike the birth mass which is under bigger influence of socio-economic factors.

If we analyze the determined results of research according to gender, male infants were 'heavier' than female by 116.95g. the average birth weight of female infants was 3326.52g in 2007 and male 3443.47g. Also, male infants were frequently hypertrophic. Misir-Galić²¹ and Mikulandra et al.³¹ reached these results. Demestre et al.³² researched the influence of socio-economic factors on anthropometric parameters at birth and determined that male infants were heavier than female born in the same gestational week. Thus, at the OGC CC Rijeka in the ten-year period (from 01 January 1996 to 31 December 2005) the lowest median of birth weight of infants born in the 40th week was determined in female newborn of primiparas (3450g), then female newborns of multiparas (3550g) and male newborns of primiparas (3590g). The heaviest were male newborns of multiparas – 3720g³³.

Maternal age has the influence on birth weight and birth length as well. The optimal age of mother for delivery is between the age of 19 and 35. Younger mothers deliver »lighter« children²¹. Usually the average age of mother for hypertrophic infants is higher than for hypotrophic. However, in male infants born in 2007 in TC the average age of mothers of hypertrophic newborns is lower in relation to hypotrophic. The average maternal age of female hypotrophic newborns was $\bar{X}_{sr}=26.08$ years. The average maternal age of female hypertrophic infants was $\bar{X}_{sr}=27.40$ years.

In male hypotrophic infants the average maternale age was $\bar{X}_{sr}=27.71$ years. In hypertrophic infants the average maternal age was $\bar{X}_{sr}=27.00$ years.

Galić³⁴ states that in medical treatment of pregnant women, after the age of 25 women are classified as 'old pregnant women'. In the last ten or so years there is a trend of decrease of deliveries in earlier age for women in Croatia. These trends have been present in the USA and the developed countries for a while. According to the data of Croatian Institute of Public Health the share of mothers younger than 20 is decreased by 34% compared to the period 10 years ago, and the share of mothers older than 35 has increased by 5% compared to the period 10 years

ago. These trends are much emphasized in Slovenia, and are characteristic to other European countries³⁴.

Examining the impact of body weight and BMI of pregnant women on pregnancy outcomes in Virovitica Šegregur³⁵ found that most pregnant women were aged 20–29 years (66.5%) and there was least of them in the group of more than 40 years of age (2, 0%). It has also been found that the average age of women was 26.25±5.62 years. The average age for all mothers was 27.48 years in Nova Bila for the period between 1999 and 2003³⁶. Exploring a ten-year secular trend in Gračanica from 1998 to 2008 Hadžihalilović and associates³⁰, have concluded that the average age of mothers from Gračanica today (2008) is 26.30 years. Parity of mother has also an effect to birth weight. In this study, in all the investigated time points in both boys and girls the median for birth order of the hypotrophic infants is 1, and hypertrophic infants have median 2. This means that the first children are frequently hypotrophic in comparison to the second, third,.... child. Median of 2 means that hypertrophic children are born often as second, third, fourth,.... child.

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Children of primiparous women are lighter than children of biparae and multiparae³⁷. Kayastha and Tuladhar³⁸ have concluded that primiparae are more likely to give birth to low birth weight infants and in their study 53% of infants of low birth weight were by primiparous.

In Croatia, eutrophic male newborns from the second birth are later 130g heavier from the male infants in the first birth, and female infants from the second birth are later heavier compared to first born female infants by 150 grams²¹.

Conclusion

The value of the examined anthropometric characteristics of infants in TC, birth weight and birth length differ from the determined values in relation to the compared population from other countries but in relation to the same population ten years before. These differences can be ascribed to the different socio-economic status of the population as well as to different genetic structure of the population.

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OSNOVNE KARAKTERISTIKE NOVOROĐENČADI SA PODRUČJA TUZLANSKOG KANTONA ROĐENIH TOKOM 2007. GODINE

SAŽETAK

U radu su proučavane osnovne antropometrijske karakteristike, porođajna masa i dužina tijela novorođenčadi, sa područja Tuzlanskog kantona (TC) rođenih tokom 2007. godine. Istraživanje predstavlja retrospektivnu studiju u kojoj su korišteni podaci iz knjige protokola sa Klinike za ginekologiju i porodništvo Univerzitetskog kliničkog centra u Tuzli (GAK UKC Tuzla). Od 01.01. do 31.12.2007. godine u GAK UKC Tuzla ukupno je bilo 4057 poroda u kojima je rođeno 4125 novorođenčadi. Od ukupnog broja, mrtvorodenih je bilo 29(0,7%), od toga 16 dječaka i 13 djevojčica. Živorodenih je bilo 4096 (99,3%), od toga 2123 (51,83%) dječaka i 1973 (48,17%) djevojčice. Na 100 djevojčica rođeno je 108 dječaka. Prosječne vrijednosti posmatranih parametara u ukupnom uzorku novorođenčadi imale su sljedeće vrijednosti za: porođajnu masu 3387,17 g; dužinu tijela 52,83 cm; starost majke je iznosila $\bar{X}_{sr}=26,49$ godina, a prosječan redoslijed poroda je 1,61. Porođajna masa u ukupnom uzorku muške novorođenčadi kretala se od minimalne koja je iznosila 1130g do maksimalne 5150 g. Prosječna vrijednost porođajne mase muške novorođenčadi je iznosila 3443,47 g, a ženske 3326,38g. Dužina tijela muške novorođenčadi u ukupnom uzorku kretala se od minimalne koja je iznosila 35cm do maksimalne 62cm, a prosječna vrijednost dužine tijela je iznosila 53,16cm. Novorođenčadi sa malom porođajnom masom, hiptofičnih novorođenčadi, rođeno je 123 ili 6,24%. Eutrofičnih novorođenčadi rođeno je 1659 ili 84,22%. Novorođenčadi velike porođajne mase, hipertrofična novorođenčad, rođeno je 188 ili 9,54%. Muška novorođenčad su bila češće hipertrofična od ženske.