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ANALYSIS OF ANTHROPOMETRIC PARAMETERS AND HEALTH STATUS OF ROMANY NEWBORNS IN CHMINIANSKE JAKUBOVANY (EASTERN SLOVAKIA) FOR THE PERIOD 2010–2013

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Abstract

The aim of this study was to compare three anthropometric variables (birth weight, birth length and head circumference) of full-term Romany neonates. The studied group comprised newborns from the village of Chminianske Jakubovany. All the children examined were born in the years 2010–2013 and data came from the 37th week of pregnancy and above. A total of 256 Romanies (125 girls and 131 boys) were evaluated. We also focused on the health status of full-term Romany newborns and determined the percentage incidence of individual diseases and congenital disorders in the neonatal period in children of the Romany population. In the evaluated group 52.8% of newborns were found to have an infectious disease, 33.3% had congenital malformations and 13.8% were with other health problems. Based on the most common diseases, we were able to evaluate the possible impact of deteriorating living conditions of the Romanies.

Key words: ethnicity, Romany and non-Romany newborns, birth weight, birth length, head circumference, neonates, Slovakia

Introduction

Birth weight was defined as the first weight of the fetus or newborn obtained after birth, preferably measured within the first hour of life before significant postnatal weight loss has occurred (Bernasovský and Bernasovská 1999, Aras 2013, Duranková et al. 2019). According to an international agreement, low birth weight is defined as a birth weight of less than 2,500 grams (Bernasovský and Bernasovská 1999, Wardlaw et al. 2005, Duranková et al. 2019), which may be the result of preterm birth (before the 37th week of gestation) or of restricted fetal (intrauterine) growth.

The Romany population is characterized by a high birth rate and low childbirth age, an unhealthy lifestyle, misbehavior, drugs and alcohol consumption as well disinterest in their health during pregnancy. For this reason, the study of growth and development of children in this isolated ethnic group is very topical and important (Bernasovský and Bernasovská 1999, Duranková et al. 2019).

Several authors have confirmed that ethnicity together with socioeconomic disadvantage are important factors that influence body dimensions, mainly resulting in lower values in mean birth weight and birth length (Bernasovský and Bernasovská 1999, Williams 1999, Okosun et al. 2000, Pearl, Braveman and Abrams 2001, Lawlor and Shaw 2002, Rich-Edwards et al. 2003, Nazroo 2003, Kelly et al. 2008, Singh and Huston-Presley 2010, Johnson 2014). Moreover, it is important also in view of how it influences the risk of development of chronic disease, morbidity and disability in later

life (Aras 2013). A summary of older studies from Slovakia and Czech Republic as well from other countries (Duranková et al. 2019) confirms that the neonatal weight of Romany newborns is approximately the same as that of Indian neonates (Namboodiri and Balakrishnan 1959). On the other hand, a comparison of the basic somatic parameters of Romany and non-Romany newborns from eastern Slovakia confirmed significantly lower values (Bernasovský and Bernasovská 1999, Duranková et al. 2013, 2019).

The main aims of this study were to contribute to knowledge on quantitative characteristics of size variables in newborns of the Romany population.

Material and methods

The evaluated dataset was obtained from full-term newborns from Chminianske Jakubovany (eastern Slovakia). Data on anthropometric parameters and health status of the newborns were obtained from the medical records of the children in collaboration with a pediatrician. All newborns were born in the years from 2010 to 2013, and data came from the 37th week of pregnancy or higher. The dataset consisted of 256 newborns (125 girls and 131 boys) belonging to a minority ethnic group living in Slovakia, i.e. Romanies.

All parameters were measured according to the recommendations of the International Standards for Anthropometric Assessment (Martin and Saller 1957, Kopecký, Krejčovský and Švarc 2013) and by using classical anthropological instruments: birth weight in grams (M71), birth body length in cm (M1) and head circumference in cm (M61).

The obtained dataset (untransformed data) was evaluated using the following statistical parameters: mean, standard deviation (SD), standard error of mean (SEM) and variation coefficient (V). Normal distribution was tested using two normality tests (the D'Agostino-Pearson omnibus K^2 test and the Shapiro-Wilk *W*-test).

The incidence of individual diseases and congenital disorders in the neonatal period in children of the Romany population in Chminianske Jakubovany was evaluated as a percentage. All diseases and congenital malformations that occurred in Romany newborns in Chminianske Jakubovany in the years 2010–2013 are showed in Tables 2–5. We recorded individual diseases and congenital disorders in newborns on the basis of their highest incidence in a given year. The most recorded and most common diseases in 2010–2013 in newborns born in Chminianske Jakubovany were: rhinitis (14.5%), neonatal jaundice (9.1%), earache (7%), dilatation of the hollow renal system (6.3%), cough (4.4%), and dyspepsia (3.1%).

Results and discussion

Our results confirmed the significant sex differences between the mean values of the measured anthropometric variables, which were higher for boys in both Romany groups (Table 1). These findings were fully in line with previous studies. These were older studies from before 1990, which were summarized by Bernasovský and Bernasovská (1999). Similarly, recent studies (Pavúk 2007, Duranková and Bernasovský 2002, Duranková et al. 2012, 2013, 2019, Duranková, Surmanková and Pavúk 2018) confirmed lower values in the monitored somatic indicators in comparison with the majority (non-Romany) population of newborns. This is the reason why Bernasovský and Bernasovská (1999) assumed that lower birth weights in certain ethnic groups are in some way "normal" (Duranková et al. 2019). The authors proposed to lower the low birth weight limit for Romany newborns to 2,250 g. In contrast, the WHO defined the low birth weight of a newborn as 2,500 g. This newly proposed birth weight therefore appears to be biologically correct. It should be noted, that although the anthropometric parameters of mothers (mainly the mother's body height and weight) were not monitored in our study, previous studies have confirmed their importance (Miletić et al. 2007, Voigt et al. 2010, 2012, Britto et al. 2013, Rochow et al. 2018, Duranková et al. 2019).

The percentage incidences of disease affecting Roma newborns in individual years (2010–2013) are shown in Tables 2–5. These findings show the deteriorating health of Romany newborns. In the

evaluated group, 52.8% of newborns were found to have an infectious disease, 33.3% had congenital malformations and 13.8% were with other health problems.

We confirmed that the most common infectious diseases were rhinitis, cough, various inflammations and ear pain, which may also be of infectious origin (Tables 2–5). These results were in agreement with several studies (Stupák et al. 2013). Neonatal jaundice occurred in almost 9.1% (23 cases) of 256 Romany children (12.2% of boys and 5.6% of girls), while 3.2% had dyspepsia (a set of chronic functional digestive problems), and 6.3% (8.4% of boys and 4.0% of girls) dilatation of the hollow renal system (widening of the drainage hollow system in the kidney). However, if we evaluate the whole group, morbidity was mainly dominated by non-chronic diseases (Tables 2–5).

We believe that inflammatory diseases and infections can be caused by poor living conditions; therefore, their frequent occurrence also has a negative impact on the health of newborns of the Romany population. We consider poor hygiene and poverty to be the most important factors. These are responsible for malnutrition, a lack of financial resources for medical care and also ignorance in the field of health (Duranková, Surmanková and Pavúk 2018, Duranková et al. 2019). On the other hand, the occurrence of congenital malformations or other acute and chronic diseases of Romany newborns may also have been influenced by genetic factors, insufficient prenatal care and the age of the mother.

Conclusion

Our study confirmed lower values of anthropometric parameters for newborns from Chminianske Jakubovany. Moreover, we showed that several infectious diseases were the most common diseases of newborns. In general, these diseases are not chronic in nature, although their frequent occurrence may be the cause of more serious chronic health problems at a later age (Filadelfiová, Gerbery and Škobla 2007).

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Table 1: Average values of body weight, body length and head circumference of Romany newborns born in 2010–2013 from Chminianske Jakubovany

Birth weight (g)						
Year	**Sex**	**N**	**Mean**	**SEM**	**SD**	**V%**
2010	Boys	28	2967.93	330.27	62.43	11.13
	Girls	32	2856.67	326.22	57.64	11.41
2011	Boys	30	2839.03	442.84	80.81	15.59
	Girls	28	2926.90	338.33	63.96	11.56
2012	Boys	45	2996.96	381.95	72.39	12.74
	Girls	32	2770.91	358.12	57.00	12.92
2013	Boys	28	3021.38	435.63	60.14	14.42
	Girls	33	2986.97	464.71	82.35	15.56
2010-2013	Boys	131	2956.32	397.67	70.65	13.47
	Girls	125	2885.36	371.84	66.46	12.86
Birth body length (cm)						
2010	Boys	28	46.45	9.15	1.80	19.70
	Girls	32	46.24	8.47	1.50	18.31
2011	Boys	30	45.87	8.82	1.61	19.22
	Girls	28	46.31	9.04	1.71	19.52
2012	Boys	45	47.22	7.36	1.10	15.96
	Girls	32	45.82	8.43	1.49	18.39
2013	Boys	28	46.86	9.33	1.76	19.91
	Girls	33	46.71	8.63	1.50	18.48
2010-2013	Boys	131	46.60	8.66	1.57	18.70
	Girls	125	46.27	8.64	1.55	18.68
Head circumference (cm)						
2010	Boys	28	32.17	6.31	1.19	19.61
	Girls	32	31.88	5.93	1.05	18.60
2011	Boys	30	31.87	6.09	1.11	19.12
	Girls	28	31.97	6.28	1.19	19.65
2012	Boys	45	32.70	5.15	0.77	15.74
	Girls	32	31.94	5.85	1.03	18.31
2013	Boys	28	32.59	6.38	1.21	19.57
	Girls	33	31.88	5.79	1.01	18.17
2010-2013	Boys	131	32.33	5.98	1.07	18.51
	Girls	125	31.92	5.96	1.07	18.68

Note: SEM – standard error of mean, SD – standard deviation, V – coefficient of variation in %.

Table 2: Health status of Romany newborns born in 2010 from Chminianske Jakubovany state in percentage

	Boys (N=28)		Girls (N=32)	
Health status	**N**	**%**	**N**	**%**
Earache	2	7.14	1	3.13
Throat infection	-	-	1	3.13
Heart murmurs	3	10.71	3	9.36
Rash	1	3.57	-	0.00
Neonatal jaundice	3	10.71	3	9.36
Soor	1	3.57	1	3.13
Conjunctivitis	1	3.57	-	-
Bronchitis	1	3.57	-	-
Glaucoma	-	-	1	3.13
Inflammation of the eye	-	-	1	3.13
Rhinitis	2	7.14	4	12.50
Diaper dermatitis	-	-	2	6.25
Diarrhea	1	3.57	-	-
Periventricular hemorrhage	-	-	1	3.13
Pigment nevi	-	-	1	3.13
Dilatation of the hollow renal system	1	3.57	1	3.13
Dyspepsia	-	-	1	3.13
Glandular hypospadias	1	3.57	-	-
Coughing	-	-	1	3.13

Table 3: Health status of Romany newborns born in 2011 from Chminianske Jakubovany state in percentage

	Boys (N=30)		Girls (N=28)	
Health status	**N**	**%**	**N**	**%**
Earache	-	-	4	14.26
Dilatation of the hollow renal system	1	3.33	2	7.14
Dyspepsia	2	6.67	3	10.71
Neonatal jaundice	2	6.67	1	3.57
Coughing	-	-	5	17.86
Soor	1	3.33	2	7.14
Vomiting	-	-	1	3.57
Pharyngitis	1	3.33	-	-
Anemia	2	6.67	-	-
Bronchitis	2	6.67	3	10.71
Sepsis	1	3.33	-	-
Inflammation of the eye	1	3.33	-	-
Polydactyly	1	3.33	-	-
Rhinitis	5	16.67	6	20.55
Navel inflammation	1	3.33	-	-
Diaper dermatitis	-	-	1	3.57
Brain pseudocysts	1	3.33	-	-
Diarrhea	1	3.33	-	-
Intraventricular bleeding	-	0.00	1	3.57
Impetigo	1	3.33	-	-

Table 4: Health status of Romany newborns born in 2012 from Chminianske Jakubovany stated in percentage

	Boys (N=45)		Girls (N=32)	
Health status	**N**	**%**	**N**	**%**
Earache	7	15.55	-	-
Polydactyly	1	2.22	-	-
Throat infection	1	2.22	-	-
Impetigo	-	-	1	3.13
Heart murmurs	3	6.67	2	6.25
Hernia	2	4.44	-	-
Neonatal jaundice	8	17.78	2	6.25
Rhinitis	7	15.55	2	6.25
Soor	3	6.67	-	0.00
Hepatopathy	1	2.22	-	0.00
Bronchitis	1	2.22	2	6.25
Dysplasia coxae	1	2.22	1	3.13
Dilatation of the hollow renal system	7	15.55	-	-
Diaper dermatitis	1	2.22	-	-
Conjunctivitis	2	4.44	-	-
Diarrhea	1	2.22	-	-
Coughing	4	8.89	-	-
Knee dislocation	-	-	1	3.13
Dyspepsia	1	2.22	-	-
Vomiting	1	2.22	-	-

Table 5: Health status of Romany newborns born in 2013 from Chminianske Jakubovany stated in percentage

	Boys (N=28)		Girls (N=33)	
Health status	**N**	**%**	**N**	**%**
Earache	4	14.29	-	-
Neonatal jaundice	3	10.71	1	3.30
Rhinitis	6	21.43	4	12.20
Soor	1	3.57	-	-
Bronchitis	1	3.57	1	3.30
Diaper dermatitis	1	3.57	1	3.30
Coughing	-	-	2	6.60
Periventricular hemorrhage	1	3.57	-	-
Dilatation of the hollow renal system	2	7.14	2	6.60
Umbilical hernia	1	3.57	-	-
Congenital urethral defect	1	3.57	-	-
Dyspepsia	1	3.57	-	-