

NUTRITION IN TEENAGE PREGNANCY AND OBSTETRICAL OUTCOME

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Abstract: Introduction: Teenage pregnancy is considered a high risk pregnancy because of the high incidence of complications. Objective: The purpose of this study was to evaluate the nutritional habits of pregnant teenagers and the obstetrical outcome. Material and method: We studied the socio-economic data and the information obtained from a questionnaire applied to the women who gave birth in our clinic between 01.01.2011 and 30.06.2011. Results: The final study group was formed of 48 teenage mothers (6,6%). We found a positive correlation, statistically significant, between birth weight and mother's BMI ($p=0,000$), and the newborns with a ponderal index higher than 2 were born from mothers with higher weight and BMI ($p=0,001$, respective 0,02). Nutritional habits that we analyzed were not statistically correlated with the weight or ponderal index of the newborns. Conclusions: Inadequate maternal weight before pregnancy and before birth is a risk factor for high birth weight of the newborns.

Cuvinte cheie: sarcina la adolescente, greutate la naștere, spor ponderal în sarcină, nutriție

Rezumat: Introducere: Sarcina la adolescente este încadrată în categoria sarcinilor cu risc obstetrical crescut, datorită incidenței crescute a complicațiilor. Scopul lucrării: Evaluarea obiceiurilor alimentare ale adolescentelor gravide și prognosticul obstetrical. Material și metode: Au fost luate în studiu datele socioeconomice și informațiile obținute prin aplicarea unui chestionar lăuzelor internate în perioada 01.01.-30.06.2011 în Clinica Obstetrică-Ginecologie Sibiu. Rezultate: Lotul final a cuprins 48 lăuze adolescente (6,6%). S-a constatat o corelație pozitivă statistic semnificativă între greutatea la naștere și indicele de masă corporală al mamei ($p=0,000$), iar nou-născuții cu indice ponderal peste 2 au provenit din mame cu greutate înainte de naștere și IMC mai mari ($p=0,001$, respectiv 0,02). Obiceiurile alimentare analizate nu s-au corelat semnificativ statistic cu greutatea sau indicele ponderal al nou-născuților. Concluzii: Greutatea neadecvată maternă atât înainte de sarcină, cât și înainte de naștere, constituie un factor de risc pentru greutatea crescută a nou-născuților.

INTRODUCTION

Adolescence is defined as the period between childhood and adult life, between 10 and 19 years old, and pregnancy at this age represents a public health and social issue in most of the countries. The number of teenagers who become mothers is growing in the last period in Romania. Between 2009-2011, in the Obstetrics and Gynecology Clinic of the city of Sibiu, the incidence of teenage pregnancy was of 5,2%. This growth was due to an early puberty, early start of sexual life and the lack of information about the contraceptive methods.(1)

Teenage pregnancy was defined as a high risk pregnancy in 1856 by Alcott (2), because of the high incidence of obstetrical complications (low birth weight, prematurity, premature rupture of membranes, preeclampsia, gestational diabetes, maternal anemia, intrauterine death, neonatal mortality).(2,3) Beside this, we mention the social problems, poor school results, school abandonment, low socio-economic level, psychological and physical damage and the high risk of sexually transmitted diseases.(4)

Adolescence is a period of rapid physical growth with high nutritional needs for growth and development. If to this, the nutritional and energetic needs of the pregnancy are overlapped, pregnant teenagers are placed in a high risk group from the nutritional point of view.(2)

PURPOSE

The purpose of this study was to evaluate the nutritional habits of pregnant teenagers and obstetrical outcome, especially the factors that influence the appearance of fetal macrosomia.

METHODS

The study group was formed of 720 mothers admitted in the Obstetrics and Gynecology Clinic of the city of Sibiu between 01.01.2011 and 30.06.2011. Inclusion criterions were mothers with singleton term birth without pregnancy pathology and the ones who agreed to answer the survey about nutrition and life style in pregnancy. Preterm and multiple births and the patients who refused to answer our questions were excluded from the study.

We analyzed the information about the socio-economic aspects, maternal and fetal anthropometry, neonatal pathology and the information obtained from the survey. The final study group was formed of 48 teenage mothers, between 13 and 18 years old, representing 6,6% of the large group. The statistics was performed with SPSS 19 for Windows for CI 95%.

RESULTS

After we analyzed the socio-economic data, most of the pregnant teenagers were from the rural environment

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(68,8%), who graduated 8 classes (gymnasium) (43,8%), not married (83,3%), with a monthly income of 500-1000 lei (39,6%). This data are presented in table no. 1.

Table no. 1. Socio-economic characteristics of pregnant teenagers

Socio-economic characteristics		No. (%)
Marital status	Married	8 (16,7)
	Not married	40 (83,3)
Environment	Urban	15 (31,2)
	Rural	33 (68,8)
Studies	No studies	4 (8,3)
	Primary school	13 (27)
	Gymnasium	21 (43,8)
	Professional school	10 (20,9)
Family monthly income	Under 350 RON	15 (31,25)
	350-500 RON	8 (16,65)
	500-1000 RON	19 (39,6)
	1000-3000 RON	6 (12,5)

From the obstetrical point of view, most of the pregnant teenagers were primiparas (83,3%), the antenatal care was provided only by general practitioner (37,5%) and the pathology diagnosed in pregnancy was syphilis in 2 cases (4,16%). In 46 cases (95,8%), the birth was vaginally and the cesarean section was necessary only in 2 cases because of dilatation dystocia. Moderate anemia was the complication registered in 2 patients (4,16%), but did not required blood transfusion in any case. The characters of the newborns were a medium birth weight of 3131 grams (minimum 2400 grams and maximum of 4200 grams), medium length was 52 cm and head circumference of 32 cm. Apgar score was between 6 and 10, with a medium value of 9,5. Obstetrical trauma was registered in 21 newborns, of which minimal trauma was in 41,6% and major trauma (collarbone fracture) only in 2,1%. Obstetrical characteristics are described in table no. 2.

Table no. 2. Obstetrical characteristics of pregnant teenagers

Obstetrical characteristics		No (%)
Antenatal care	Without antenatal care	13 (27,1)
	General practitioner	18 (37,5)
	General practitioner and obstetrician	17 (35,4)
Parity	1	40 (83,34)
	2	8 (16,66)
Birth	Vaginal birth	46 (95,8)
	Cesarean section	2 (4,2)
	Forceps	-
Pathology	Syphilis	2 (4,2)
Postpartum complications	Moderate anemia	2 (4,2)

Regarding the nutritional habits in pregnancy, 37,5% were interested in changing them; 54,2% change it quantitatively, and only 16,6% change it in the qualitative way.

Most of the teenagers had no preferences in cooking modalities (60,4%). Food prepared by boiling was preferred in 10 patients (20,8%), the rest of them preferring fried or grilled food. After the statistical analysis of cooking modalities and newborn birth weight (BW) or ponderal index (PI), we obtained values of $p=0,74$ and $p=0,83$.

Food preferences of pregnant teenagers are presented in table no. 3. Most of the teenagers ate cooked food daily

(81,25%), 54,2% ate rarely fast food and in 56,15% never ate semi prepared food. The preference for sweets was moderate, in 41,7% of cases were consumed 2-3 times per week, and pastry was ate rarely in 60,4% of cases.

Table no. 3. Food preferences of pregnant teenagers

	Daily	4-5x/week	2-3x/week	Rarely	Never	BW and PI correlations
Cooked food	39 (81,25%)	3 (6,25%)	6 (12,5%)	-	-	$p=1,0$ $p=0,55$
Fast food	-	-	2 (4,2%)	26 (54,2%)	20 (41,6%)	$p=0,38$ $p=0,95$
Semi-prepared	2 (4,2%)	-	4 (8,4%)	15 (31,25%)	27 (56,15%)	$p=0,30$ $p=0,46$
Sweets	5 (10,4%)	7 (14,6%)	20 (41,7%)	10 (20,8%)	6 (12,5%)	$p=1,0$ $p=0,57$
Pastry	-	1 (2,1%)	14 (29,1%)	29 (60,4%)	4 (8,4%)	$p=1,0$ $p=0,47$

After the analysis of pre-pregnancy body mass index, we see that 15 pregnant teenagers (31,25%) were underweight, 23 (47,9%) had normal weight, 4 (8,3%) were overweight, 2 (4,15%) first degree obese, and 4 (8,3%) could not tell any value. After the statistic calculations, we did not obtained a statistic positive correlation with the newborn weight ($p=0,65\%$), or the ponderal index ($p=0,176$).

Adequate weight gain in pregnancy, between 7 and 12 kg, was recorded in 10 teenagers (20,08%) and 13 (27,1%) had gain a little bit more, between 13 and 15 kg. An insufficient weight gain between 0 and 6 kg was seen in 11 cases (22,9%). A high weight gain of 16 to 25 kg was recorded in 10 pregnant teenagers (20,8%).

We analyzed the maternal weight at birth and body mass index in correlation with newborn weight under 4000 grams and over 4000 grams and with ponderal index under 2 and over 2. Mother's high weight before birth and high BMI were positively correlated with the ponderal index over 2 ($p=0,000$; $p=0,02$). Maternal high BMI was also positively correlated with newborn weight over 4000 grams ($p=0,001$).

DISCUSSIONS

Birth incidence in the teenagers in the Obstetrics and Gynecology Clinic of Sibiu in the last three years was of 5,2%, with a percentage higher than the global incidence published in USA in 2009, where this was of 4,2%. (4)

Pregnant teenagers of our study are from an environment with low socio-economic level; this affirmation being found also in the literature. (3)

From the obstetrical point of view, in our group there has not been recorded any major complications, only secondary moderate anemia with an incidence of 4,16%. Cesarean section incidence was of 4,16%, comparable with the literature. (6) Diagnosed pathology in pregnancy was syphilis in 4,16% of cases, emphasizing the fact that teenagers with early onset of sexual life are exposed at sexually transmitted diseases.

Newborns group was divided according to the birth weight and we studied the factors that influence the appearance of macrosomia. Newborn birth weight was adequately and it was positively correlated with maternal BMI. Ponderal index higher than 2 is depended of high maternal weight and BMI. Because of the low incidence of obstetrical trauma at birth, neonatal outcome was favourable. Fetal macrosomia (obesity) is a predisposing factor for neonatal and childhood complications. Newborns with high birth weight have an increased risk of fetal distress, birth by cesarean section or instrumental delivery, birth trauma, perinatal asphyxia or meconial aspiration. Also, high

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birth weight has risks also for the mother: high incidence of cesarean section or instrumental delivery, perineal tears, hemorrhages, anemia.

We could not correlate the cooking modalities, food preferences or ponderal weight gain with newborn birth weight or ponderal index. Pregnant teenagers from our group seem to have a relatively adequate nutrition, maybe because of the environment. Most of them are from the rural area, where the "temptations" of an unhealthy nutrition, like fast food, are low. Because of the low income, they cannot afford to buy unhealthy food (sweets, pastry, soft drinks). Also, living with their parents, the way of nutrition is imposed by them.

Teenage pregnancy needs to cover the necessities required by age and also by gestation. Regarding the teenage period, the energy required is of about 2200-2300 kcal/day, proteins 44-46 g/day, lipids 10-12 g/day, carbohydrates 130 g/day and high necessities of calcium (1200-1500 mg/day). This period is characterized by some unhealthy nutritional habits (fast food, preference for sweets, soft drinks and low consume of vegetables and fruits), also bad habits like smoking, drug abuse and alcohol consumption). Pregnancy particularities are represented by a higher energy intake of 2400-2800 kcal/day, proteins 60-90 g/day, lipids 50-60 g/day, carbohydrates 300-350 g/day.(7) It is well accepted the idea of folic acid supplementation with 400 µg/day, preconceptional and until 14 weeks of gestation. Because pregnancy in teenagers is not planned, preconceptional supplementation is not used, but becomes compulsory when pregnancy is confirmed.(2) Multivitamin supplementation is necessary in this group, especially in underweight teenagers at the beginning of the pregnancy and in those who is considered that nutrition is poor. Excessive multivitamin supplementation can lead to a high weight gain in pregnancy, with the appearance of fetal macrosomia and the complications that can occur because of that.

When the conception is close to the menarche, the energy and nutritional necessities are higher than of a normal pregnancy.(2) Nutritional needs of a pregnant teenager are different than in pregnant adult. Energy intake must be increased with 300-500 kcal/day for those who in the time of conception were underweight or physically active, and proteins must be increased with 25 g/day.(2) Iron deficiency is a problem among teenagers and is aggravated by pregnancy. So, iron supplementation is recommended starting with the first pregnancy trimester.(2) Because of the teenager skeletal growth and consolidation of bones and the calcium needs are increased in the last trimester, calcium supplementation is recommended.(2) Liquid consumption must be approximately 2 litres each day, but drinks without caffeine.

CONCLUSIONS

Nutrition reflects the socioeconomic level. Pregnant teenagers tend to have a relatively adequate nutrition, because of the environment they come from (rural area, low income and large family). Inadequate maternal weight at birth is a risk factor for high birth weight in newborns. Outcome of teenage pregnancy was favourable in our group, without any major obstetrical or neonatal complications. We need to underline the fact that the psychological and the social problems because of the pregnancy at this early age represents a public health problem, more important than the obstetrical complications.

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REFERENCES

1. Kumar A, Singh T, Basu S, Pandey S, Bhargava V. Outcome of teenage pregnancy, Indian J Pediatr. 2007;74(10):927-931.
2. Lammi-Keefe CJ, Couch SC, Philipson EH. Handbook of nutrition and pregnancy, Humana Press; 2008. p. 101-114.
3. Munteanu I. Tratat de obstetrică, ediția a II-a, Editura Academiei Române; 2006. p. 913-914.
4. Leishman JL, Moir J. Pre-Teen and Teenage Pregnancy A twenty-first century reality, M&K Publishing; 2007. p. 30-45.
5. Chen X, Wen SW, Fleming N, Demissie K, Rhoads G, Walker M. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. International Journal of Epidemiology. 2007;36:368-373.
6. Yadav S, Choudhary D, Narayan KC, Mandal RK, Sharma A, Chauhan SS, Agrawal P. Adverse reproductive outcomes associated with teenage pregnancy. MJM. 2008;11(2):141-144.
7. Stretean A. Obstetrică fiziologică, Editura Universității Lucian Blaga Sibiu; 1997. p. 77-81.