

Department of Hygiene, Medical University of Lublin

MAŁGORZATA KOWAL, MAGDALENA KOWALSKA, BEATA KASPRZAK,  
ILONA OLEJARNIK, ANDRZEJ BORZĘCKI

### *The influence of diet on women's weight gain during pregnancy*

The diet of a pregnant woman has an influence on the course of pregnancy, development of the foetus and the state of health of a new-born (4, 13, 16, 17, 18). A proper diet of a pregnant woman should cover the demand for basic nutritive elements, i.e. proteins, carbohydrates, vitamins and mineral salts, necessary to keep proper homeostasis of the mother's and the developing child organisms (6, 7, 12). It is necessary to individually adjust a diet of a pregnant woman, taking into account her age, the kind of work she performs, the duration and the course of pregnancy (10). Monitoring body mass of a pregnant woman is a highly important element, which is necessary to estimate the state of health not only of the mother but also of the child (3, 5, 17, 18). Both too slow and too fast weight gain of a pregnant woman may constitute the first sign of pathology concerning the developing foetus. According to many authors, the total weight gain of a woman during pregnancy should amount to about 15–20% of her weight from the period before pregnancy (2, 11).

The aim of this study was to estimate the influence of diet of a pregnant woman on her weight gain during pregnancy.

#### MATERIAL AND METHODS

The study included 100 pregnant women at the age of 17–35 visiting a gynaecologist in The Regional Clinic in Kraśnik. The study evaluated the women's body weight from the period before pregnancy and their body weight in the last month of pregnancy. The increase of body weight during the whole period of pregnancy was also calculated. The results were obtained from pregnancy cards. The evaluation of eating habits of a pregnant woman was done on the basis of a survey. Participation in the research was free and anonymous.

#### RESULTS

Among pregnant women taking part in the research, 12% were at the age of 17–20 years, 38% were at the age of 21–25, 32% at the age of 26–30 and 18% at the age of 31–35 (Fig. 1.) 24% of women had higher education, 52% had secondary education, 14% had vocational education and 10% had primary education. The majority of women were pregnant for the first time (52%), 30% for the second time, 12% for the third time and 6% for the fourth time.

The average weight of the studied women was 60.4 kg before pregnancy and in the last month of pregnancy 74.9 kg. The average weight gain of the studied women during pregnancy amounted to 13.8 kg. A proper increase in body mass was found with 35% of pregnant women, with 57% of women the increase in body mass was too high and with 8% it was too low (Fig. 2).

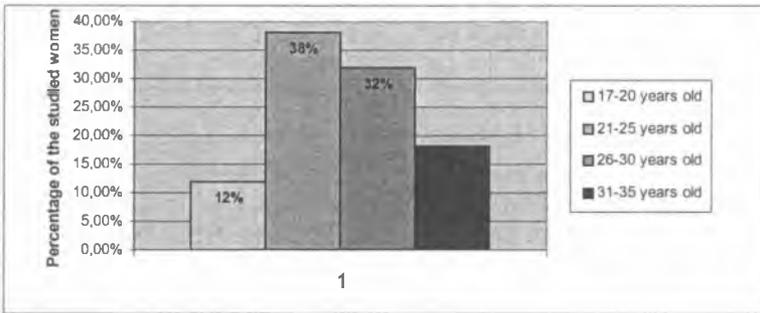


Fig. 1. The characteristics of the studied group of pregnant women with respect to age

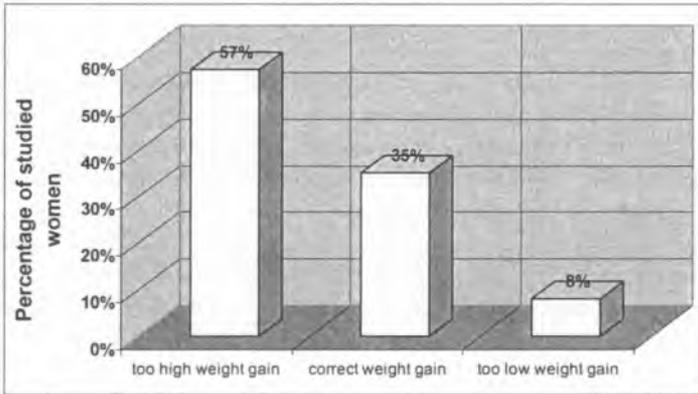


Fig. 2. Weight gain according to pregnancy cards

The conducted research showed that the majority of women with excessive weight gain during pregnancy were on a diet dominated by fats and carbohydrates (Fig. 3, Fig. 4). These women were eating too few vegetables and fruit (Fig. 5). Pregnant women with whom the greatest weight gain was observed were more often eating between meals. It was mainly sweets that increased both the size and the frequency of eaten meals from the very first months of pregnancy (Fig. 6).

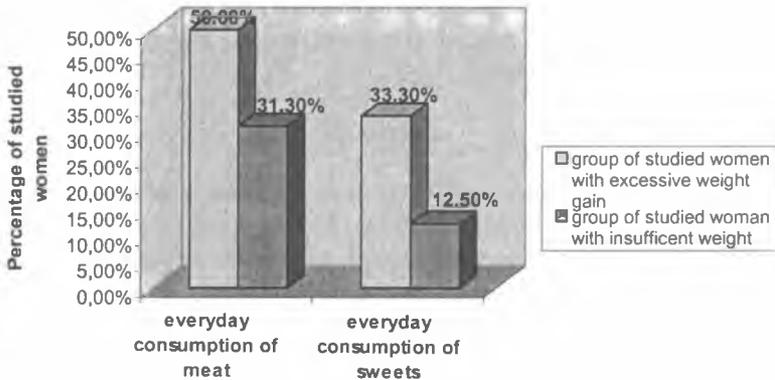


Fig. 3. Diet of the studied women during pregnancy

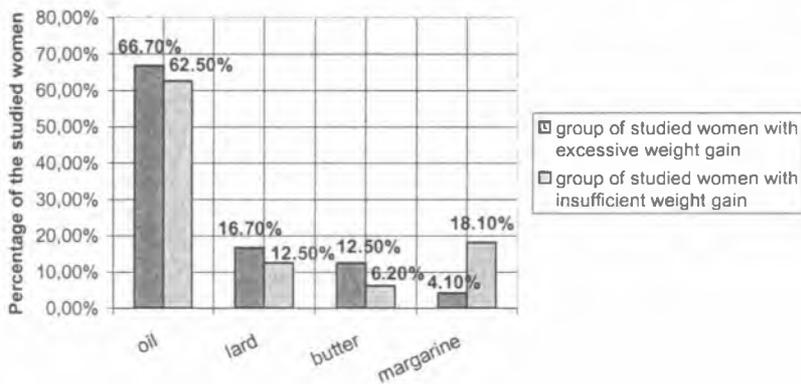


Fig. 4. Products used for frying by the studied population of women

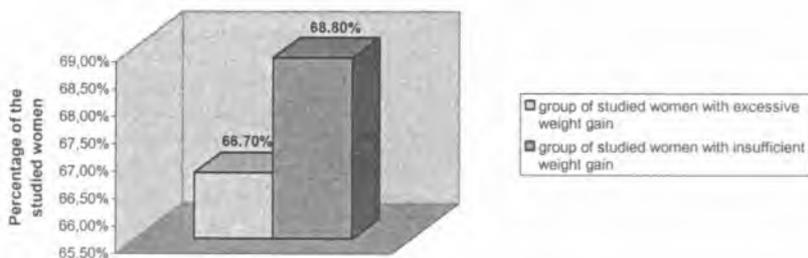


Fig. 5. Consumption of food rich in fruit and vegetables in the group of studied women

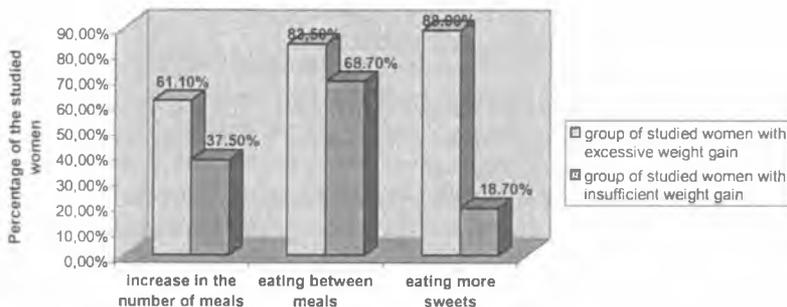


Fig. 6. Changes in eating habits in the group of studied women

### DISCUSSION

The conducted research shows that a rational diet has a considerable influence on the weight gain during pregnancy. According to many authors, a proper weight gain during pregnancy amounts to 15–20% of the body weight from the period before pregnancy. Undernourishment and too low weight gain in the course of pregnancy (values below 15%) increase the risk of congenital defects, deficit conditions of the child, miscarriage, premature births and disorders in intrauterine development. Excessive weight

gain of a pregnant woman (above 20%) may result not only from providing with too big amount of food, but it may also be the result of disorders of carbohydrate-fat metabolism, developing gestosis or water retention. (2, 3, 10, 11).

Our research discovered that the problem of excessive weigh gain during pregnancy concerned 53% of the studied women and underweight was observed with 8% of pregnant women. The fact worth mentioning is that the excessive weight gain was accompanied by improper diet used in the period of pregnancy. This diet was characterised by excessive consumption of fats and carbohydrates increase in the number of meals and by the conviction that a woman should eat for two. Kinnunen and co-authors report also a possibility of increased risk of breast cancer with women whose weight gain during pregnancy exceeded 15 kg (15).

Research of other authors also confirms dependence of the course of pregnancy and the condition of the child on BMI value from before pregnancy (3, 15). BMI of 20–24.9 kg/m<sup>2</sup> is considered a standard value. Overweight women more often suffer from pregnant women diabetes (15). Both primary disease and pharmacological treatment used in its course may have a harmful influence on the course of pregnancy and the state of health of a newborn (11, 14).

Some authors draw attention to the optimal weight gain during pregnancy depending on weight before pregnancy. Slim women (BMI < 20 kg/m<sup>2</sup>) are subjected to the occurrence of higher percentage of premature births and a greater number of births of children with hypotrophy. Overweight women (BMI 26 kg/m<sup>2</sup>) more often suffer from diabetes of pregnant women (3).

## CONCLUSIONS

1. There is a necessity of spreading preventive activities aiming at diet education among pregnant women.
2. Monitoring body weight of pregnant women is an important element in the evaluation of correctness of the course of pregnancy.

## REFERENCES

1. Beck W. W. jr: *Położnictwo i ginekologia*. U & P, 1995.
2. Cekański A.: *Wybrane zagadnienia z położnictwa i ginekologii dla położnych*. Śląska Akademia Medyczna, Katowice 1999.
3. Chazan B.: *Położnictwo w praktyce lekarza rodzinnego*. PZWL, 1997.
4. Dmoch-Gajzerska E.: *Położnictwo i ginekologia*. CMKP, Warszawa 1993.
5. Dudenhausen J. W., Pschyrembel W.: *Położnictwo praktyczne i operacje położnicze* PZWL, Warszawa 2002.
6. Hasik J., Gawcki J.: *Żywienie człowieka zdrowego i chorego*. PWN, Warszawa 2000.
7. Hasik J. et al.: *Dietetyka*. PZWL, Warszawa 1999.
8. Kinnunen T. I. et al.: Pregnancy weight gain and breast cancer risk. *BMC Womens' Health* 21, 4 (1), 7, Oct. 2004.
9. Łepecka-Klusek C.: *W oczekiwaniu na narodziny dziecka*. Neurocentrum, Lublin 1997.
10. Łepecka-Klusek C.: *Pielęgniarstwo we współczesnym położnictwie i ginekologii*. Czelej, 2003.
11. Martius G., Breckwoldt M.: *Ginekologia i położnictwo*. U & P, 1997.
12. Michels K., Napier K.: *Mamo, chcę jeść zdrowo. Właściwe odżywianie w czasie ciąży*. Świat Książki, Warszawa 2003.

13. Midwifery J.: Womens' Health 48 (3), 229, 2003.
14. Oleszczuk J. et al.: Rekomendacje postępowania w najczęstszych powikłaniach ciąży. Biforium, 2002.
15. Reviewed by Geary D. Vagin, M. D.: Maternal Weight Before Pregnancy Affects Pregnancy Outcome. ACOG 52<sup>nd</sup> Annual Clinical Meeting: Paper 11s. Presented May, 2004.
16. Sikorska B.: Żywnie kobiety ciężarnej i karmiącej. Pielęgniarka i Położna, 6, 23, 1997.
17. Szostak-Węgierek D.: Żywnie kobiety ciężarnej a przebieg ciąży i stan zdrowia dziecka. Żywność. Żywnie a Zdrowie, 1, 16, 1998.
18. Weiss J. L. Malone F. D.: Cięża u otyłych kobiet. Gin. po Dypl., 3, 12, 2002.
19. Yin Yz et al.: Relations of pre-pregnant weight and weight gain during pregnancy with pregnancy-induced hypertension and birth weight. Di Yi Da Xue Xue Bao., 25(2), 226, Feb. 2005.

### SUMMARY

The aim of the study was to evaluate the influence of a pregnant woman's diet on the increase in her body mass during pregnancy. The research included 100 pregnant women visiting a gynaecologist in the Regional Clinic in Kraśnik. In successive months measurements of body mass of the women were taken. The evaluation of the pregnant women's diet was done on the basis of a survey. With 35% of the studied women, the increase in body mass was normal, with 57% the increase in body mass was too big and with 8% it was too small. The majority of women with excessive body mass increase during pregnancy had a diet dominated by fats and carbohydrates. These women were more often eating between meals. Regular meals rich in fruit and vegetables were dominant in the group of women who had normal and low body mass increase. The conducted research shows that a rational diet has a considerable influence on the increase in body mass during pregnancy. This suggests a necessity of spreading preventive activities aiming at diet education among pregnant women.

### Wpływ odżywiania na przyrost masy ciała kobiet w okresie ciąży

Celem pracy była ocena wpływu sposobu odżywiania kobiety ciężarnej na przyrost jej masy ciała. Badaniem objęto 100 kobiet ciężarnych, zgłaszających się do poradni K Przychodni Rejonowej w Kraśniku. W kolejnych miesiącach przeprowadzono pomiary masy ciała badanych. Ocenę sposobu odżywiania u ciężarnych dokonano na podstawie ankiety. U 35% badanych kobiet zaobserwowano prawidłowy przyrost masy ciała, u 57% przyrost masy ciała był zbyt duży, a u 8% zbyt mały. Większość kobiet z nadmiernym przyrostem masy ciała w okresie ciąży stosowała dietę, w której dominowały tłuszcze i węglowodany. Kobiety te częściej dojadały między posiłkami. Regularne spożywanie posiłków bogatych w warzywa i owoce dominowało w grupie kobiet, u których obserwowano prawidłowy i niski przyrost masy. Przeprowadzone badania wskazują na to, że racjonalny sposób odżywiania ma znaczący wpływ na przyrost masy ciała w okresie ciąży. Sugeruje to konieczność rozszerzenia działań profilaktycznych, ukierunkowanych na edukację dietetyczną wśród kobiet w ciąży.