Dietary behavior of pregnant women, BMI and premature labor

MARZENA BUCHOLC¹, JAN OLESZCZUK², HENRYK WIKTOR¹

Abstract

Eating habits constitute a very important component of healthy lifestyle. Diversity of food products consumed by the mother has a great influence, through the amniotic fluid, on early formation of eating habits in the child and this phenomenon has been defined as “the first nutrition bridge”. The aim of the work was an attempt to assess nutritional behaviors of women giving birth prematurely, and analysis of the relationship between BMI and the time of termination of pregnancy. In this group were the 342 (61.6%) women. A further 99 (17.8%) were underweight (BMI less than 18.5). Other 96 (17.3%) women were considered overweight (BMI 25.0-29.9), remaining 18 (3.2%) obese (BMI 30.0-34.9). Analysis of the collected material revealed the existence of a relationship (p = 0.06) between BMI and changes in the number of meals consumed during pregnancy (for people with normal body weight). Low body mass index is an important factor influencing early termination of pregnancy. Dietary behavior of pregnant women changes during pregnancy, but it continues to show deficiencies in the full-value diet and regular meals.

Key words: dietary behavior, pregnant women, BMI, premature labor

Eating habits constitute a very important component of healthy lifestyle. Diversity of food products consumed by the mother has a great influence, through the amniotic fluid, on early formation of eating habits in the child and this phenomenon has been defined as “the first nutrition bridge” [20]. Some authors are of the opinion [5, 8,19] that during pregnancy the woman becomes more aware of her eating habits and readily abandons unhealthy behaviours. During pregnancy not only fetal, but also postnatal development of the child is decided and so is his health in childhood and adult life. The necessity of excluding food products which may lead to putting on excessive weight and contribute to developing metabolic disorders or systemic diseases seems fully justified [16]. This applies primarily sugars, animal fats and salt and salty foods. Nutritional standards for the population in Poland, designed for different population groups, pregnant women recommend the use of dietary restriction of sugar food. His participation in the diet should not exceed 10% of the energy value of food ration [16, 21].

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Material and methods

Diagnostic sounding method has been applied in the research process, encompassing two investigation techniques: poll research and medical records analysis. Following investigation tools have been applied: standardized EUROPOP GROUP poll questionnaire with own adjustments to polish conditions and self designed poll questionnaire concerning woman’s lifestyle during pregnancy.

The study was conducted in the Clinic of Obstetrics and Perinatal Medicine at Self-Dependent Public Clinical Hospital No 4 in Lublin, in the period from January 2002 to January 2006. The pilot study had been carried out beforehand, which allowed to verify the questions contained in the own investigation tool. The age of the respondents was in the range of 18-48 years, including 357 (64.3%) at the age of 30 or younger, whereas 198 (35.7%) were older.

Respondents inhabited various places, including 333 (60.0%) from towns, and 222 (40.0%) from the country. Majority of studied women were married (477 i.e. 859%), and remaining 78 (14.1%) were single.

The educational level of respondents varied – 315 (56.8%) middle or higher, 240 (43.2%) basic professional or basic. Primigravida comprised 43.2% (240) of the studied population, and multipara 56.8% (315). Pregnancy at its end, according to obstetrical, ultrasonographical and neonatal assessment, continued for 22 to 36 weeks, with the median value of 32 weeks. In more than a half of women (315, i.e 56.8%) pregnancy ended before 32 week, and in the remaining 240 (43.2%) after this period.

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Obtained study results were subjected to statistical analysis. Analyzed parameters, measured on the nominal scale, were determined according to the number and percentage. To detect existing differences or dependence between analyzed qualitative features homogeneity $\chi^2$ or independence $\chi^2$ tests were employed. Conclusive error was assumed 5% and a significance level connected with it $p < 0.05$; indicating statistically significant differences or relationship. Statistical analyses were carried out by means of STATISTICA V.6.1 computer program (StatSoft, Poland) [15].

Results

On the basis of the respondents on their height and weight before pregnancy, calculated body mass index (BMI). Division into subgroups according to BMI has been made in adopting WHO standards [1]. For normal weight BMI range was adopted 18.5 - 24.9. In this group were the 342 (61.6%) women. A further 99 (17.8%) were underweight (BMI less than 18.5). Other 96 (17.3%) women were considered overweight (BMI 25.0-29.9), remaining 18 (3.2%) obese (BMI 30.0-34.9). Due to the small size of sample group of women with obesity further below we dropped from the distribution which differentiates overweight and obesity. The relationship between the time of delivery and BMI is presented in Table 1.

Table 1. Time of delivery and BMI women

<table>
<thead>
<tr>
<th>Time of delivery</th>
<th>BMI</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Underweight $N = 99$ (17.8%)</td>
<td>Normal weight $N = 342$ (61.6%)</td>
<td>Overweight $N = 114$ (26.6%)</td>
<td></td>
<td></td>
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<tr>
<td>Up to 32th week $N = 315$ (56.8%)</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>69.7</td>
<td>204</td>
<td>59.6</td>
<td>42</td>
<td>36.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 - 32th week $N = 240$ (43.2%)</td>
<td>30</td>
<td>30.3</td>
<td>138</td>
<td>40.4</td>
<td>72</td>
<td>63.2</td>
<td></td>
</tr>
<tr>
<td>Significance $\chi^2 = 8.78$</td>
<td>$p = 0.01$</td>
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Statistically significant differences ($p = 0.01$) during pregnancy were also completed, depending on body mass index (BMI). Birth to 32 weeks of pregnancy followed more often in female respondents which were underweight. Opposite trend outlined in the case of overweight women - they were giving birth later.

Interviewed consumed before pregnancy from 1 to 6 meals per day, on average there were four. During pregnancy 372 (67.1%) of women have changed the number of meals consumed, but in all this number has increased. Pregnant used to eat from 2 to 8 times, on average, five. Others interviewed in the number of 183 (32.9%) reported that during pregnancy the number of consumed meals did not change compared to the previous period. Details on this are presented in Table 2.

Table 2. The change of the number of meals consumed during pregnancy and BMI

<table>
<thead>
<tr>
<th>The change of the number of meals consumed during pregnancy</th>
<th>BMI</th>
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<tbody>
<tr>
<td></td>
<td>Underweight $N = 99$ (17.8%)</td>
<td>Normal weight $N = 342$ (61.6%)</td>
<td>Overweight $N = 114$ (26.6%)</td>
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<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>No $N = 183$ (32.9%)</td>
<td>36</td>
<td>36.4</td>
<td>93</td>
<td>27.2</td>
<td>54</td>
<td>47.4</td>
</tr>
<tr>
<td>Yes $N = 372$ (67.1%)</td>
<td>63</td>
<td>63.6</td>
<td>249</td>
<td>72.8</td>
<td>60</td>
<td>52.6</td>
</tr>
<tr>
<td>Significance $\chi^2 = 5.46$</td>
<td>$p = 0.06$</td>
<td></td>
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</tr>
</tbody>
</table>

Analysis of the collected material revealed the existence of a ($p = 0.06$) relationship between BMI and changes in the number of meals consumed during pregnancy (for people with normal body weight).

In the study group were 372 (67.1%) women who declared that during pregnancy tried to eat regularly at about the same time of the day, including three main meals. Breakfast, lunch, dinner regularly consumed 90 (24.2%) people, two – a further 87 (23.4%), one – the other 78 (20.9%), four – 42 (11.3%) patients, and five – 75 (20.2%). Others interviewed in the number of 183 (32.9%) admitted that during pregnancy ate irregularly, i.e., during the day did not consumed any food about the same time. Distribution of meals taken by women at a constant time was illustrated in Figure 1.

Over half of respondents (309-55.7%) reported that during pregnancy had a habit of regularly eating breakfast. Slightly smaller percentage of statements was related to dinner I (48.6% – 270 person) or dinner II (44.3% – 246 person). Meals which women were least likely to eat were lunch (123 – 22.2%) and afternoon tea (120 – 21,6%). 471 (84.9%) respondents has admitted increased food consumption during pregnancy, and 84 denied (15.1%). Further information on products which consumption increased during pregnancy, including the sharing of benefits for its mileage or not, was depicted graphically in Figure 2.
Among the great products which consumption increased during pregnancy predominated fruits (390 – 82.8%), milk and its preparations, such as: yogurt, cottage cheese (345 – 73.2%) and vegetables (279, ie .59.2%). Subsequently exchanged meat, mainly poultry and veal (195 – 41.4%) and cereal products, eg whole wheat bread, cereals (168 – 35.7%). Among the unfavorable exchange most products surveyed: sugar and sweets (156 – 33.1%), animal fat, mainly lard (81, ie 17.2%), and salt and salty foods, such as fingers, crisps (39, ie 8.3%).

Discussion

In the world literature there are numerous studies showing that the consequence of abnormal maternal body weight may be multiple obstetric complications, including premature termination of pregnancy [2, 3, 8, 12]. To a certain extend the analysis of the collected material confirmed the experiences of other researchers. Although no association between BMI and occurring pathological conditions was found, it was revealed that in underweight patients significantly more pregnancies ended before 32 weeks of its duration. These data point to an undeniable need for awareness of women on the need to normalization of body weight, even during preconceptual care.

In a discussion devoted to issues of prevention of premature birth there is often remark that the improvement could contribute to the maternity lifestyle of a pregnant woman [4, 5, 7, 10, 14]. Indeed, the period of pregnancy is often for many parents the determinant of behavior change in health sphere, the termination of harmful habits, and greater attention to himself in terms of the child’s health. Pregnant changed their diet. This applied both to increase the in number of meals, as well as in the participation of individual nutrients in the diet. After the occurrence of pregnancy women ate an average of five meals per day, which is consistent with accepted standards [21]. Siega-Riz and colleagues [13] have shown that in pregnant eating less meals than the rate in question premature labor occurred statistically more frequently. With respect to respondents it can be considered that this factor did not affect the premature termination of pregnancy. Experts in matters of human nutrition indicate that not only the number, but regular consumption of meals affects health. Most pregnant women ate at a regular time of the day, although only in half of them it was related to three main meals.

Full-value diet can be achieved by diversion of the relevant nutrients and their balance. In the group of nutritional products which consumption interviewed increased during pregnancy, were mainly: dairy products containing live bacteria cultures (yogurt, kefir), and fruits and vegetables. According Sawulickiej-Oleszczuk [11] it is important in the prevention of prematurity. For the negative can be considered that none of the women surveyed did not increase fish consumption. Many authors [17, 18] indeed, believes that too little omega fatty acids - 3 in the diet of pregnant women is associated with a higher likelihood of premature birth and low birth weight of infant. Some concerns also raises the fact that...
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Some surveyed increased the amount of sugar in the diet, animal fats and salt, but just as often others wrote about its control. This allows the conclusion that not all pregnant comply with the principles of healthy eating. To similar conclusions came Kozłowska-Wojciechowska and colleagues [4], studying nutrition knowledge and behavior of pregnant women.

Conclusions

Low body mass index is an important factor influencing early termination of pregnancy.

Dietary behavior of pregnant women changes during pregnancy, but it continues to show deficiencies in the full-value diet and regular meals.

References


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