



Narodowe Centrum Edukacji Żywniowej



PREGNANCY



Pregnancy is a physiological state, wherein a woman's body undergoes a number of adaptational changes to allow the foetus to develop correctly. These changes lead to weight gain as a result of the increasing weight of the foetus, higher volume of circulating blood, and a bigger size of the uterus and other organs. Normal body mass gain is necessary for the optimal development of the foetus.

BMI* before pregnancy (kg/m ²)	Normal body mass gain during pregnancy (kg)
< 18,5 (underweight)	12,5-18
18,5-24,9 (normal body mass)	11,5-16
25,0-29,9 (overweight)	7-11,5
≥ 30 (obesity)	5-9

*BMI is the body mass index calculated on the basis of a person's body mass and height.

If there is too much body weight gain during pregnancy, the risk of complications (e.g. gestational diabetes mellitus, hypertension), premature birth or excessive birth weight of the baby increases. On the other hand, insufficient weight gain may be the cause of low birth weight of the newborn, which may lead to higher perinatal morbidity and mortality and increases the risk of developing cardiovascular diseases, diabetes and hypertension in adult life.

Diet

Proper nutrition is crucial for the healthy development of the foetus. The demand for energy and nutrients increases during pregnancy. In the first trimester, energy demand increases only marginally, but then it rises in the second trimester due to maternal tissue development and reaches the highest level in the third trimester due to the intensive growth of the foetus.



In women with normal body mass prior to pregnancy, energy demand increases with each trimester by:

- I trimester + 85 kcal
- II trimester + 285 kcal
- III trimester + 475 kcal

To meet the demand for all nutrients it is recommended to follow a balanced diet that is based on the rules of healthy eating and eat properly composed meals regularly. Do not attempt to lose weight during pregnancy, as it may result in nutrient deficiency, leading to serious health-related consequences for the baby, such as nervous system defects. The diet should meet the individual needs of the patient. Therefore, consider consulting a dietitian who will help change your eating habits.

Key nutritional guidelines

1

Eat regularly, approx. every 3 hours, and have your last meal 2 to 3 hours before bedtime at the latest. Do not skip breakfast.

2

Try to compose your meals as presented on the **Healthy Eating Plate**. Make sure that half of the plate is occupied by vegetables and fruit which are the source of fiber, vitamins and antioxidants. Their daily intake should be **at least 400 g (3/4 of vegetables and 1/4 of fruit)**. Eat varied vegetables as often as you can, preferably raw or cooked al dente (let them be only slightly hard).

3

Consume fruits in smaller amounts, as they contain more simple sugars. Avoid overripe fruit, as it is more sweet and eat it raw, if you can.

4

Products that are the source of carbohydrates (bread, groats, rice, pasta, cereal flakes and potatoes) should be added to the majority of your meals and occupy approximately 1/4 of the plate. **Choose whole grain cereals**, as they are the source of fiber, B vitamins and minerals.

5

Products that are the source of protein (meat, fish, eggs, milk and dairy products, legumes) should occupy approximately 1/4 of your plate and be an element of every meal. Choose lean meats and skimmed dairy products. **Substitute meat with fish once or twice a week and with legumes at least once a week.** Choose fish with low content of mercury compounds, such as salmon (mainly Norwegian), Atlantic mackerel, pollock, sardines, sprat, cod, trout, hake, and flounder. Eat red meat only occasionally, not more than 350-500 g per week, and cut down on meat products (cold cuts, sausages, pâtés, offal products, etc.) to the bare minimum. Eliminate liver from your menu, as it has a very high content of vitamin A, which may cause developmental malformations, if consumed in excess.



6

Eat three portions of natural dairy products daily, preferably fermented, as they are a rich source of protein and calcium (e.g. 1 portion equals 1 small cup of yogurt or a glass of kefir). Choose low-fat products containing up to 3% fat. Make sure they contain no sweet fruit mousses or chocolate. Plant products, such as plant drinks with added calcium, tofu, white beans, almonds, sesame, cabbage can be a valuable alternative source of calcium.

7

Products that are the source of fat can also be an element of a balanced meal, but should be used in smaller amounts. **Choose mainly plant oils** (canola oil, linseed oil, olive oil), **nuts, seeds, avocado**. So, in other words, products that are rich in anti-inflammatory unsaturated fatty acids. Limit the amount of products that are the source of saturated fatty acids, such as fat meat, full-fat dairy products, butter. When it comes to fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are especially important, as they are essential for the proper development of the nervous system, brain and retina of the foetus. They are found in fatty sea fish and algae. To cover the demand, pregnant women should eat 1 to 2 portions of these products a week and introduce supplementation after consulting a specialist.

8

Limit the amount of sweets and products containing sugar. Read product labels and pick products with reduced or zero sugar content. Using fructose as a sugar substitute is not recommended. Studies have shown that sweeteners may negatively affect the course of pregnancy.

9

Food may be the source of pathogenic micro-organisms that can be harmful to the foetus (e.g. *Listeria monocytogenes*, *Toxoplasma gondii*, *Salmonella sp.*, *Campylobacter jejuni*). Therefore, make sure to thoroughly wash raw products, such as vegetables and fruit, before eating them. **Eliminate unpasteurized products** from your diet, such as juices, milk and dairy products (see whether unpasteurized milk is listed as an ingredient on the product label), **as well as raw or undercooked meat, fish and eggs**. Pickled food may be the source of *Listeria monocytogenes* bacteria.

10

The daily demand for liquids increases during pregnancy by 300 ml on average. Drink mainly water. Replace sweetened drinks with sugar-free drinks, as well as light tea and herbal infusions. Reduce the amount of coffee and strong tea, as large quantities of caffeine may negatively affect foetal development. Make sure to keep your body well hydrated by drinking small amounts of fluids more often.

11

The most common ailments during pregnancy are nausea and vomiting. To alleviate these symptoms, eat smaller portions more frequently, avoid spicy and hard-to-digest products, e.g. fat or fried food. Ginger used as a spice or supplement in capsules, or added to your meals or drinks may also be beneficial, as well as starting your day by eating a portion of dry cereals (e.g. crunchy bread, corn flakes).









12

Some nutrients, such as vitamin D, folic acid and iodine, are recommended to be supplemented during pregnancy. However, it is not recommended to take multivitamin products routinely. Supplementation of selected nutrients should be prescribed by the doctor.



Recommended and not recommended products during pregnancy

Remember that the overall profile of your diet, the composition of individual meals and the quality of individual products are all important aspects. In the table below you will find examples of products that should be the basis of your diet as well as those which you should limit to the bare minimum. Treat it as a guide to changing your dietary habits to healthier ones.

Group of products	Recommended	Not recommended
Vegetables 	<ul style="list-style-type: none"> all fresh and frozen 	<ul style="list-style-type: none"> vegetables served with greasy sauces, roux pickled vegetables raw vegetable sprouts
Fruit 	<ul style="list-style-type: none"> all fresh and frozen dried fruit in moderate quantities 	<ul style="list-style-type: none"> candied fruit fruit syrups
Grain products 	<ul style="list-style-type: none"> wholegrain flour whole grain bread and graham bread natural cereal flakes, e.g. oat, barley, spelt, rye wheat, rye and oat bran groats: buckwheat, hulled barley, bulgur, quinoa rice: brown, wild, red wholegrain pasta: wheat, rye, buckwheat, spelt 	<ul style="list-style-type: none"> refined flour confectionery breads, light bread (toast bread, Kaiser roll, white bread, butter rolls) sweetened breakfast cereals (cornflakes, chocolate flakes, muesli, crunchy flakes) fine-grained groats: farina, couscous, cornmeal white rice light pasta: wheat pasta, rice noodles
Potatoes 	<ul style="list-style-type: none"> cooked baked 	<ul style="list-style-type: none"> potatoes with fatty additives like cream or butter fried potatoes French fries, chips fried potato pancakes
Milk and dairy products 	<ul style="list-style-type: none"> reduced-fat milk (up to 2% fat) dairy products: natural (sugar-free), fermented, with up to 3% fat (e.g. yogurt, kefir, buttermilk, skyr, cottage cheese, soured milk) skimmed and semi-skimmed curd cheese mozzarella light cream cheese in moderate quantities 	<ul style="list-style-type: none"> unpasteurised milk and dairy products (certain types of soft cheese) whole milk condensed milk sour cream, coffee cream sweetened fruit yogurts, dairy desserts cheese: full-fat curd and hard cheese, processed cheese, feta cheese, soft cheese, e.g. brie, camembert, roquefort, full-fat mozzarella cheese, mascarpone
Eggs 	<ul style="list-style-type: none"> soft-boiled eggs, hard-boiled eggs, poached eggs, scrambled eggs and omelettes fried without fat or with a small amount of fat 	<ul style="list-style-type: none"> raw or undercooked eggs eggs fried in a large amount of fat, e.g. butter, bacon, lard or salo (slanina) eggs served with mayonnaise
Meat and meat products 	<ul style="list-style-type: none"> lean skinless meat, e.g. veal, chicken, turkey, rabbit lean beef and pork (pork loin, tenderloin) in moderate quantities lean cold cuts, preferably home-made e.g. tenderloin, cooked ham, poultry cold cuts, roasted pork loin, roasted turkey/chicken breast 	<ul style="list-style-type: none"> raw meat (e.g. tartar steak) undercooked meat (raw steak) fatty meats such as beef, pork, mutton, goose, duck fatty cold cuts e.g. gammon, salami, brawn, bacon, spam canned meat, offal cold cuts, pâtés, hot dogs, kabanos sausages, sausage raw and maturing cold cuts (Parma ham, serrano ham, chorizo)
Fish, fish products and seafoods 	<ul style="list-style-type: none"> lean or fatty sea fish and freshwater fish (Norwegian farmed salmon, sprat, sardines, wels catfish, farmed trout, flounder, cod, butter fish, Atlantic mackerel, hake) shrimps, scallops, oyster, crab, lobster, anchovies, spiny lobster herring* and sardines in plant oil, hot smoked fish in moderate quantities carp, halibut, perch, marlin, monkfish, Spanish mackerel, herring in limited amounts (max. 1 portion/week) <p>*Baltic fish is not recommended due to water contamination with heavy metals.</p>	<ul style="list-style-type: none"> raw or undercooked fish and seafood (e.g. sushi, tartar steak) predatory fish (e.g. swordfish, shark, king mackerel, tuna, American eel, tilefish, pike, pangasius, tilapia, orange roughy) salmon and Baltic herring smoked sprat cold smoked fish canned fish



Recommended and not recommended products during pregnancy

Group of products	Recommended	Not recommended
Legumes and legume products 	<ul style="list-style-type: none"> all, e.g. soybeans, chickpeas, peas, lentils, beans, broad beans legume spreads soy flour, sugar-free soy drinks, soy products: tofu, tempeh legume pastas (e.g. from beans or peas) 	<ul style="list-style-type: none"> low-quality, ready-made legume products, e.g. soy sausages, breaded soy cutlets, soy pates, vege burgers
Fats 	<ul style="list-style-type: none"> olive oil, canola oil, linseed oil butter and vegetable oils mix soft margarines 	<ul style="list-style-type: none"> butter and clarified butter lard, сало (slanina), tallow hard margarine (blocks) tropical oils: palm, coconut
Nuts and seeds 	<ul style="list-style-type: none"> nuts (e.g. walnuts, hazelnuts) and almonds seeds (e.g. pumpkin, sunflower) 	<ul style="list-style-type: none"> nuts and seeds: salted, in chocolate, in caramel, honey, sprinkled, breaded
Sugar, sweets and salty snacks 	<ul style="list-style-type: none"> dark chocolate, at least 70% cocoa natural yogurt with fresh fruit fruit purees, mousses and sorbets, jams with no added sugar in limited quantities as an element of a meal kissel and jellies without added sugar home-made pies and cakes without added sugar 	<ul style="list-style-type: none"> sugar, e.g. white, cane, brown, coconut honey, maple syrup, date syrup, agave syrup sweets high in sugar and fat, e.g. cakes, cookies, chocolate bars, milk and white chocolate, halva, doughnuts, Angel wings, candies high-sugar jam salty snacks, e.g. chips, salty sticks, crispy flakes, crackers, nachos, crisps sweeteners (e.g. saccharine, xylitol, stevia, erythrol)
Beverages 	<ul style="list-style-type: none"> water sugar-free beverages, e.g. coffee, cereal coffee, tea, herbal and fruit infusions, kompots, cocoa vegetable and fruit juices in limited quantities as an element of a meal home-made lemonade with no sugar 	<ul style="list-style-type: none"> alcohol drinks sweet sparkling and still beverages energy drinks nectars, high-sugar fruit syrups unpasteurised juice drinking chocolate
Spices and sauces 	<ul style="list-style-type: none"> fresh and dried single-ingredient herbs, e.g. basil, oregano, turmeric, cinnamon, ginger salt-free spice mixtures (e.g. herbs de Provence) home-made salad dressings based on a small amount of oil or yogurt, herbs, lemon 	<ul style="list-style-type: none"> salt (e.g. table salt, Himalayan salt, sea salt) spice mixtures containing large amounts of salt bouillon cubes liquid spices to enhance flavour ready-made sauces/dressings
Soups 	<ul style="list-style-type: none"> soups based on vegetable or lean meat broths soups whitened with yogurt or milk up to 2% fat 	<ul style="list-style-type: none"> soups based on fatty meat broths soups whitened with sour cream and thickened with roux instant soups
Prepared meals 	<ul style="list-style-type: none"> frozen stir-fry vegetables mix, frozen fruit mix groats and legume blends cream soups ready-made vegetable stir-fry foods salt-free vegetable pastes and purees <p>*Read labels, compare ingredients and pay attention to added sugar, salt and fat content</p>	<ul style="list-style-type: none"> fast food, e.g. toasted open-faced sandwiches, hot dogs, hamburgers, kebab frozen pizzas, toasted open-faced sandwiches ready-made food products in breadcrumbs, fatty sauces, from refined flour instant oatmeal instant meals, e.g. sauces, soups
Technological processing of food 	<ul style="list-style-type: none"> boiling, steaming (cereals, vegetables cooked al dente) grilling (electric grill, grill pans) baking in foil, parchment paper, roasting bags, heat-resistant dish no-fat frying* stewing without pre-frying <p>* Small amounts of the recommended vegetable fat, e.g. olive oil or canola oil are acceptable, if used occasionally.</p>	<ul style="list-style-type: none"> deep frying stewing with prior deep frying baking in large amounts of fat breadding

Quality menu ideas for pregnant women

BREAKFAST:

Sandwiches with hummus, egg and vegetables

- whole grain bread
- hummus
- egg
- avocado
- bell pepper
- cucumber
- chives

LUNCH:

Yogurt with oat flakes, dried fruit and nuts, apple and cinnamon

- natural yogurt
- oat flakes
- walnuts
- dried apricot
- apple
- cinnamon

DINNER:

Baked rainbow trout with potatoes and broccoli

- rainbow trout
- lemon juice
- dill
- lemon pepper
- potatoes
- olive oil
- potato spices: garlic, sweet paprika, smoked paprika, herbal pepper
- broccoli



AFTERNOON SNACK:

Chocolate and fruit cocktail with millet flakes

- millet flakes
- natural yogurt
- cocoa
- banana
- raspberries
- almond flakes

SUPPER:

Whole grain tortilla with chicken and vegetables

- whole grain tortilla
- chicken breast
- olive oil
- lettuce
- tomato
- cucumber
- onion
- Dressing: natural yogurt, mustard, herbs de Provence, lemon juice

Physical activity

1

As long as there are no contraindications and the pregnancy is healthy, introduce physical activity of low to moderate intensity to your daily routine to engage large muscle groups (walking, nordic walking, swimming, aqua-aerobic, aerobic exercises, cycling, yoga). Physical activity positively affects the course of pregnancy. However, injury-prone physical activity, such as skiing or horse riding, is not recommended.

2

The optimal duration of exercises should be 30 minutes a day for the bigger part of the week (at least 150 minutes weekly). Women who were not physically active before pregnancy should start by exercising 10 minutes daily and gradually increase the duration of exercises.

Other elements of lifestyle

1

Eliminate alcohol from your diet entirely. Even the smallest amount of alcohol may lead to serious health consequences to the baby, such as central nervous system developmental defects, organ damage, psychomotor delay, as well as premature birth and stillbirth.

2

Quit smoking. Both active smoking and passive tobacco smoke exposure, the so-called passive smoking, during pregnancy increases the risk of serious consequences in the newborn, such as low birth mass, premature birth, sudden death syndrome, nervous system dysfunctions or impaired lung development.

3

If you are under stress, learn how to manage it effectively. Some relaxation techniques based on mindfulness and meditation may help, as well as breathing techniques or yoga.

4

Get enough good quality sleep (at least 7-8 hours a day). Try to go to sleep and wake up at about the same time every day. Avoid using electronic devices (smartphone, tablet, computer, TV) one hour before bedtime.

References:

1. Szostak-Węgierek D. (red.): Żywnienie w czasie ciąży i karmienia piersią. Wydawnictwo Lekarskie PZWL, Warszawa, 2021.
2. Dulęba M., Chądzyńska M., Kozakiewicz B.: Wpływ picia alkoholu na zdrowie kobiet w ciąży i ich dzieci – przegląd badań. *Pediatr Med Rodz* 2021; 17(3): 203-210.
3. Kalayasiri R., Supcharoen W., Ouyianukoon P.: Association between secondhand smoke exposure and quality of life in pregnant women and postpartum women and the consequences on the newborns. *Qual Life Res* 2018; 27: 905-912.
4. Wender-Ożegowska E., Bomba-Opoń D., Brząrt J. i wsp.: Standardy Polskiego Towarzystwa Ginekologów i Położników postępowania u kobiet z cukrzycą. *Ginekologia i Perinatologia Praktyczna* 2017; 2(5): 215-229.
5. Goran MI, Plows JF, Ventura EE. Effects of consuming sugars and alternative sweeteners during pregnancy on maternal and child health: evidence for a secondhand sugar effect. *Proc Nutr Soc.* 2019 Aug;78(3):262-271.
6. Jarosz M., Rychlik E., Stoś K. i wsp. (red): Normy żywienia dla populacji Polski i ich zastosowanie. Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2020.
7. Weker H. (red. nauk.): Żywnienie kobiet w okresie ciąży – teoria i praktyka. PZWL, Warszawa, 2021.

