



Educational instrument for intervention in the lifestyle of overweight pregnant women


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Abstract

Objectives: to conduct the semantic validation of the images and text in educational material about eating and lifestyle for overweight women in different stages of pregnancy.

Methods: qualitative, descriptive, analytical, cross-sectional study with focus groups for adapting and semantically validating the messages and images of educational material for women in three moments of the pre-natal period, as well as the support scripts for healthcare providers. The Consolidated Criteria for Reporting Qualitative Research (COREQ – Portuguese acronym) were considered.

Results: participants of this study were seven pregnant women aged 21 to 40 who were in pre-natal care and 17 nutritionists aged 25 to 51. The folder was validated over seven meetings with the focus group, with one-week intervals between the groups. For each folder there were at least two meetings with focus groups, and one meeting for each script. The language was adjusted for the messages, and two images were changed to improve the self-identification of pregnant women. Technical and didactic adaptations were suggested for the scripts.

Conclusion: images and text were semantically adapted; the instrument is easy to use in primary and secondary healthcare, providing support for pregnant women and healthcare providers on the subject of eating habits and lifestyle for overweight women in different stages of pregnancy.

Palavras-chave *Pregnancy, Eating and nutritional education, Qualitative research, Validation studies*



Introduction

The gestational period is characterized by metabolic and physiological changes that require the adoption of an adequate diet to fulfill the nutritional requirements and prevent excessive weight gain during the pregnancy.¹ The goals of prenatal care include the monitoring of risk factors to avoid complications in the pregnancy and to prevent the development of obesity resulting from postpartum weight retention.²

In the study by Zuccolotto *et al.*,² women with greater adherence to the dietary patterns classified as “healthy” and “traditional Brazilian” were less likely to be obese and reported more time spent walking and exercising. Conversely, women classified in the intermediate level of adherence to the “snacks” dietary pattern were more likely to be overweight. Badanai *et al.*³ identified that greater adherence to “traditional Brazilian” and “healthy” dietary patterns was inversely associated with feelings of depression during pregnancy. Evidence suggests that high consumption of ultra-processed foods is associated with increased gestational weight gain and neonatal body fat, which can cause various problems for both pregnant woman and fetus in the short and long term, including problems related to mental health.

Sartorelli *et al.*,⁴ in a cross-sectional study with 785 adult pregnant women, observed that women who reported diets with greater energy contribution from *natural* or minimally processed foods had a 51% lower chance of obesity during pregnancy [OR=0.49 (CI95%=0.30-0.79)] compared to pregnant women classified in the lowest tertile after adjustment for confounding factors. This evidence suggests that encouraging the consumption of these foods can have a positive impact on adequate weight gain.

Educational interventions for healthy eating behaviors and lifestyle habits are emphasized as tools to promote health in pregnancy, addressing themes such as adequate weight gain, physical activity, consumption of appropriate foods, vitamin and mineral supplementation, and cessation of tobacco and alcohol use, among other aspects.⁵ Oliveira *et al.*,⁶ in a clinical trial of an intervention with pregnant women on the use of regional foods, demonstrated that the educational material had an impact on the adequate use of regional foods, with an increase in the dimensions analyzed. A randomized controlled study with an intervention in lifestyle, diet and physical activity in prenatal care presented improvements in the intake of some nutrients, in the intake of vegetables and in lifestyle, emphasizing the importance of interventions during this period and their importance in the quality of self-care and gestational weight gain.⁷

Cognitive processes such as attention and memory can influence food consumption, as shown by some studies.⁸ Favoring the memory of past dietary guidance can be an

important aid for daily food choices. The contribution of the image stands out for its ability to attract attention to the educational material being used, which seems to favor the following of guidelines and recommendations.^{9,10}

The use of significant images for verbal or textual guidance is recommended, as is simplifying the language used in association with the images, being sensitive in creating and selecting images according to the cultural context of the target audience, evaluating the effects produced by the imagery language, involving healthcare providers in the creation of images and guiding the viewer regarding the correct interpretation of them.¹¹

Nutritional guidance should be provided considering the economic, social and cultural possibilities, which implies the need for adequate preparation of healthcare providers in relation to the subject.¹²

Educational instruments for nutritional interventions have relevant applicability in prenatal care, since food is essential to prevent undesirable outcomes in maternal and child health. Accordingly, the aim of the present study was to validate educational material on food and lifestyle for different stages of pregnancy in overweight women.

Methods

This was a qualitative, descriptive and analytical cross-sectional study for the adaptation and semantic validation with focus groups of the messages and images of educational material for pregnant women in three prenatal periods, as well as the support scripts aimed at healthcare providers. This material was developed for a randomized controlled clinical trial of a nutritional intervention in overweight pregnant women treated in Primary Health Units.¹³

The Consolidated Criteria for Reporting Qualitative Studies (COREQ) guidelines were followed.

Adult pregnant women aged ≥ 18 years, regardless of Body Mass Index (BMI) and gestational age, of a group being monitored at the social center of a medium-sized city (380,000 inhabitants) in the state of São Paulo (SP), were invited to voluntarily participate in focus groups to validate the folders. The study exclusion criteria were: twin pregnancy, previous report of diabetes (or use of oral hypoglycemic agents and/or insulin) and use of weight loss medications.

Nutritionists of the city, as professionals specialized in food and nutrition content, were invited to voluntarily participate in the validation of the support scripts aimed at healthcare providers. Pregnant women in this group were excluded. The pregnant women and nutritionists were contacted by telephone and, after confirming the inclusion criteria, focus groups were scheduled. The socioeconomic questionnaire from Brazilian Economic Classification Criteria¹⁵ was applied and data from prenatal care history of the pregnant women were recorded. Weight and height

data were reported by the pregnant women. Data collection took place between October and November 2019.

Researchers involved in the clinical trial,¹³ entitled “*Estudo de intervenção nutricional em gestantes com sobrepeso atendidas em Unidades Básicas de Saúde: um ensaio clínico aleatorizado controlado*”, were responsible for analyzing the focus groups and adapting folders and scripts. After each focus group, the team of researchers, composed of four nutritionists, two professors and two post-doctoral fellows, met to analyze the results and reformulate the folders and guidance scripts.

All focus groups were conducted by the researcher responsible for the validation study.

The educational material consisted of three folders containing messages and images for pregnant women in three different periods of pregnancy: up to the 19th week, from the 20th to the 26th week and from the 27th week. This material will be used in three meetings, which constitute the intervention strategy of the randomized controlled clinical trial.¹³

Each folder, one for each intervention meeting, was constructed with six or seven illustrative messages and images related to the established goals: adequate gestational weight gain, daily consumption of *natural* or minimally processed foods and regular practice of 150 minutes of physical activity per week. All these intervention strategy topics are addressed in the three meetings, however, with different approaches according to the gestational period. The scripts aimed at the healthcare providers responsible for guiding pregnant women constitute support material with detailed information that complements the messages in the folders.

The following theoretical frameworks were used in the elaboration of the intervention strategy: *Guia Alimentar para a População Brasileira*¹⁶ for dietary guidelines; Institute of Medicine (IOM)¹⁷ for gestational weight gain recommendations; and the American College of Obstetricians and Gynecologists (ACOG)¹⁸ for instructions on regular physical activity.

For the semantic validation of the educational material, focus groups were held with the pregnant women and nutritionists, based on the participatory construction of the groups for the necessary adjustments to the messages and images considering the intended message.^{19,20} The process of this construction in the focus groups occurred through the interpretation and discussion of each message and, after the explanation of the intended message, the appropriate reconstitution was carried out, according to the language and image significant for the groups.

The criteria adopted in the validation of the folders were: relevance between the text and the illustrations; understandable, accessible, clear and appropriate language; educational goals achieved with the messages and images; practical feasibility of the proposed messages; motivating

and reflection-inducing content; and the pregnant women's identification with the messages and images.

The criteria for the support scripts aimed at healthcare providers were: relevance between the message in the folder and the way of transmitting the information; understandable, accessible, clear and appropriate language; relevance considering the objectives of the proposed guidelines; and motivating and reflective content.

The dynamic in the focus groups with pregnant women followed the following steps: each message and corresponding illustrative image were shown using a data show and in printed format for handling; discussion was opened and the participants' statements were recorded, seeking ways to adapt the message or recommendations for an alternative image; once the discussion of the folder had been exhausted and the group agreed, the session was closed.

The dynamics in the focus group with the nutritionists followed the following steps: each professional received a printed copy of the orientation script and contents of the folder, a blank sheet and pen to take notes. After reading each message aloud, the discussion was opened, the participants' statements were recorded, seeking ways to improve the message; once all discussion was finished, a consensus was reached on the content and the group was closed.

All meetings were audio-recorded and transcribed in full. After discussing each folder and the respective guidance script, the team of researchers met to make the adjustments suggested by the focus groups. Once this was done, new focus groups were scheduled to discuss the edited version of the educational material.

The present study was approved by the Research Ethics Committee of the School Health Center of the Ribeirão Preto Medical School on 08/01/2017 (CAAE 69997717.6.0000.5414). All participants signed the consent form prior to data collection.

Results

All 10 pregnant women of the group were invited to voluntarily participate in the social center where the focus groups took place. Of these, seven agreed to participate. The validation step of the folders consisted of seven focus group sessions with an interval of one week between each. For each folder, there were at least two meetings. Folder 1 was completed with three focus groups (G1, G2 and G3), with 5 pregnant women participating in G1; 7 pregnant women in G2; and 6 pregnant women in G3. All 7 pregnant women participated in the discussions related to the other folders. The women were between 21 and 40 years of age, with a mean of 32.4 years, pre-pregnancy BMI (reported) between 18.98kg/m² and 43.34kg/m² (mean of 26.50kg/m², overweight), gestational age (reported) between 10 and 24 weeks (mean of 17), with 50% being primiparae. The majority of the pregnant women had completed high

school (85.6%) and worked outside the home (71.4%). In relation to the economic class, 57.14% belonged to class D-E, receiving the minimum wage of R\$768.00, and 42.86% to class C2, with a salary of R\$1,625.00.¹⁵

Regarding the invited nutritionists, 17 agreed to participate in the focus groups, however, in no meeting it was possible for all of them to participate. In total, there were three meetings (G1, G2 and G3), one for each script, with 11 nutritionists participating in G1; 10 in G2; and 4 in G3. They were between 25 and 51 years of age, mean of 33.4 years, with only one male. The professionals worked in different areas of activity, such as offices, hospitals, public services and education.

The semantic validation of the educational instrument, with the description of the altered messages in folders and scripts and the modifications carried out in illustrative images, is presented in Table 1. In the folders, the main suggestions were related to the adequacy of the language so that the messages were better understood, detailing some information and changing some terms that had been used, but that were not clear to the participants, such as “cooked meals” in reference to homemade food. Regarding the illustrative images, only two modifications were suggested, one of them so that the image could better represent the purpose of the proposed message (folder 2)



and the other so that the image more adequately reflects the identification of the pregnant women with their body perception of a pregnant woman (folder 3). In the scripts, the nutritionists made many suggestions, especially in the first one. In general, the main changes were related to the relevance between the message of the folder and the way of transmitting information, and to the adequacy of the proposed guidelines in order to be more didactic, detailed and to arouse greater interest and attention for pregnant women to follow the recommendations.

The final version of the folders, with the description of messages and illustrative images, is presented in Tables 2 and 3, while the final version of the scripts is presented in Table 4.

Discussion

Promoting greater autonomy for people is one of the goals of health actions of professionals working in the sector, with the availability of educational material to support health actions contributing to increase their efficacy.^{19,20} The understanding and identification of the user with the meanings of the material support adherence to self-care.²⁰ The reproduction of the three versions of nutritional and lifestyle guidelines was carried out to bring

Table 1

Semantic changes in the language and images of the folders and scripts for healthcare providers. Ribeirão Preto, SP, 2021.		
Folder 1 (message number)		
Original message	Justification for change	Final message
(3) Eat cooked meals every day for lunch and dinner.	Change the “cooked meals” term used to facilitate comprehension regarding homemade food.	Eat homemade food every day for lunch and dinner.
(5) Before eating, wash fruits and vegetables well.	Detail the step-by-step process of cleaning fresh products.	Before eating fruits, vegetables and legumes: wash, leave to soak (1 tablespoon of bleach for 1 liter of water) for 15 minutes and rinse.
(6) Drink plenty of water. Sodas and juices do not replace water.	Specify the amount of water.	Drink at least 8 glasses of water a day. Soda and juice do not replace water.
(7) Soda, artificial juice, crackers and savories harm your health. Avoid eating these products.	Exemplify other industrialized food options and set a consumption limit per week. Note: in this message, the consumption limit suggestion was not accepted. In the focus group with nutritionists, the professionals suggested that setting a limit could encourage the consumption of these foods.	Limit the consumption of processed foods (sodas, artificial juices, cookies, savories). These foods harm your health and that of your baby.
Folder footnote Warning: in special cases of health problems, talk to your doctor.	Replace the term “warning” with “attention” to better emphasize the message and include this footnote information in all the folders.	Attention: in special cases of health problems, talk to your doctor.
Folder 2 (message number)		
(5) Drink water. Water is essential for your life.	Add the information that water is also important for the baby’s health. With this, the guidance is emphasized more.	Drink water. Water is essential for your life and that of your baby.
(6) Image	Change the image to indicate what to avoid and prioritize, according to the content of the message.	
		

Folder 3 (message number)

(1) Image



Change the image to make it easier to see the whole body, highlighting the belly, to identify the image with the body of a pregnant woman.



(5) Preferentially eat seasonal fruits, vegetables and legumes.

Emphasize the need to consume a variety of fruits and vegetables.

Consume different types of vegetables, legumes and fruits every day.

(6) Drink water throughout the day to remain hydrated.

Add the information that water is also good for the baby, giving more emphasis to the guidance.

Drink water throughout the day to remain hydrated and for your baby's health.

(7) Avoid consuming products such as cookies, snacks, noodles®, sausages, soda and artificial juice.

Include more examples of processed foods.

Avoid consuming industrialized products, such as: cookies, savories, instant noodles, sausages, sodas, artificial juices and fast foods.

Script 1 (message number)

(1) For you, it is recommended to gain a maximum of 11.5kg during your entire pregnancy. It is more common for this weight gain to be greater towards the end of the pregnancy, so don't be anxious to gain a lot of weight in early pregnancy. Stay tuned and track your weekly weight gain, if possible using the same scales. Remember that inadequate weight gain, if greater or less than recommended, can be harmful to your health and that of your baby.

Explain that this weight gain recommendation is specific to the BMI classification of overweight. Do not indicate that pregnant women weigh themselves weekly to avoid an increase in anxiety about weight gain and highlight the harmful effects of inadequate weight gain on the health of mother and baby.

According to your weight and height, it is recommended that you gain 7.0 to 11.5kg throughout your pregnancy. It is more common for this weight gain to be greater towards the end of the pregnancy. If possible, monitor your weight gain regularly, preferably using the same scales, which does not necessarily have to be done at the Primary Health Unit. Remember that inadequate weight gain, greater or less than recommended can be harmful to your health, increasing the risk of diabetes, obesity and high blood pressure. It can also harm your baby's health, increasing the chance that they will be born with inadequate weight, prematurely and develop diseases in later life.

(2) This is the recommended frequency of physical activity during pregnancy, if you don't have any contraindications and respecting your doctor's guidelines. If you don't have this habit, start slowly, walking 10 minutes a day and increase the time until you reach 30 minutes 5 days a week or a total of 150 minutes a week according to your availability. Regular physical activity, such as walking, will help control your weight gain, reduce swelling in your legs, and reduce stress. In addition, it can also improve the functioning of your intestines.

State that the activity should be pleasurable. Explain better the indication of time per week of physical activity and exemplify other options for physical exercises.

This is the recommended frequency of physical activity during pregnancy, if you don't have any contraindications from your doctor. If you don't have this habit, start slowly, performing some physical activity that is pleasurable for you for 10 minutes a day and increase the time until you reach 30 minutes 5 days a week or a total of 150 minutes (2 hours and 30 minutes) per week according to your availability. Regular physical activity, such as walking, dancing, cycling or other activities, will help you control weight gain, reduce swelling in your legs, reduce stress and improve the functioning of your intestines.

(3) Always give preference to homemade food. If you are in the habit of cooking, keep it this way; if you don't have this habit, start small, ask your family and friends for help and share some recipes. To make your day to day easier during pregnancy, it is important that you plan shopping and food preparation, also consider the possibility of freezing some prepared foods. Homemade food is healthier and rich in nutrients that are important for your pregnancy and the proper development of your child.

Include what food should be chosen when it is not possible to prepare food at home. In the guidance on freezing, remove the term "prepared foods", as they could understand that these are industrialized foods. In addition, emphasize what would be considered homemade food and that it is a pleasure to eat.

Always give preference to homemade food. If you are in the habit of cooking, keep it this way. However, if you don't have this habit, start small, ask your family and friends for help and share some recipes. To make your day to day easier, it is important that you plan your food shopping and preparation. Know that you can freeze the food you have prepared. If you are going to eat out, look for a place where you recognize the food as being homemade. Homemade food, such as rice and beans, in addition to being tasty, is healthier and rich in important nutrients for you and your child.

(4) To increase variety, you can consume fruits, vegetables and legumes that are cheaper. A tip is to buy these foods at street markets and greengrocers. These foods are rich in several important vitamins and minerals to reduce the risk of high blood pressure, prematurity and fluid retention and strengthen your defense system and that of your child.

Add that the consumption of fruits, vegetables and legumes can also favor good intestinal functioning.

To increase variety you can consume fruits, vegetables and legumes that are cheaper, that is, in season. A tip is to buy these foods at street markets and greengrocers. These foods are rich in several vitamins and minerals that can lower the risk of high blood pressure, prematurity and swelling and can improve bowel function and strengthen your defense system and that of your child.

<p>(5) If you are going to consume these foods raw, first wash under running water to remove dirt. Soak in a mixture with 1 tablespoon of bleach in 1 liter of water (4 cups) for 15 minutes, and then rinse the food in drinking water. Bleach is suggested to sanitize these foods. When buying this product, look for the brands that say on the label "Can be used to disinfect fruits and vegetables". Some brands that have this information on the label are: <i>Qboa</i>, <i>Chemix</i>, <i>Cândida</i>, <i>Tá Boa</i> and <i>Triex</i>. If you prefer, there is an option on the market for hypochlorite from the <i>Pury Vitta</i> or <i>Hidroesteril</i> brands. In this case, follow the same steps, but replace 1 tablespoon of bleach with hypochlorite (according to the package recommendation) in 1 liter of water. If you have been advised by your doctor not to consume these foods, remember that if you sanitize properly when you consume them at home, there will be no problems. However, if you are going to consume them in a place you don't know, it is better not to eat this food raw.</p>	<p>In the cleaning stage, adapt the message in the folder according to the explanation in the script, replacing chlorine with bleach. Add a step-by-step illustration of the cleaning to be clearer and do not mention the information that you may receive different guidance from the doctor, but that it would be safe to consume these foods, as long as they are properly sanitized.</p>	<p>If you are going to consume these foods raw, first wash them under running water to remove dirt. Soak in a mixture with 1 tablespoon of bleach in 1 liter of water (4 cups) for 15 minutes, then rinse the food in drinking water. Example of step-by-step cleaning (Figure 1). Bleach is suggested to sanitize these foods. When buying this product, look for the brands that say on the label "Can be used to disinfect fruits and vegetables". Some brands that have this information on the label are: <i>Qboa</i>, <i>Chemix</i>, <i>Cândida</i>, <i>Tá Boa</i> and <i>Triex</i>. If you prefer, there is an option on the market for hypochlorite from the <i>Pury Vitta</i> or <i>Hidroesteril</i> brands. In this case, follow the same steps, but replace 1 tablespoon of bleach with hypochlorite. If you have been advised not to consume these foods, remember that if you sanitize them properly when you consume them at home, there is no problem. However, if you are going to consume them in a place you don't know, it is better not to eat this food raw.</p>
<p>(6) Drink plenty of water throughout your day. A tip is to have a bottle of filtered water with you always. Water hydrates the body, maintains the proper functioning of the organs, reduces the swelling of the legs, and should not be replaced by soft drinks and artificial juices, as they contain a lot of sugar and this can cause weight gain.</p>	<p>Exemplify the equivalent measure of a bottle of water. Add examples of artificial juices and better emphasize the benefits of water intake.</p>	<p>Drink plenty of water throughout your day. A tip is to always have a bottle of filtered water with you (1 bottle of 500ml is equivalent to 2 glasses). Water hydrates the body, maintains the proper functioning of the organs, improves the functioning of the intestine and decreases the swelling of the legs. Water should not be replaced by soft drinks and artificial juices (boxed or powdered), as these contain a lot of sugar, which can cause excess weight gain and complications for your health. If your feet are very swollen or if you are very thirsty after meals, cut down on salt, but not water.</p>
<p>(7) Generally, these foods are sold in very colorful packages and are often ready to eat, simply by heating. Other examples are: box cake, packet soup, instant noodles, frozen dishes, ham, bologna, sausage, mayonnaise and other ready-made sauces. These products are rich in fat, salt and sugar, so if you are going to consume them, choose only two types twice a week, as their consumption can lead to excess weight gain, increase the risk of gestational diabetes, high blood pressure, swelling in the legs, and can compromise your child's development.</p>	<p>Adjust the text to emphasize that the consumption of processed foods is harmful to health and mention what their problems are. Better direct the maximum consumption limit and exemplify the quantities to facilitate understanding.</p>	<p>Although these foods are apparently attractive, they are harmful to health, as they are low in nutrients and very high in fat, salt and sugar, which can increase the risk of excess weight gain. If you are going to consume these products, make it a maximum of 2 servings per week. Some examples of 1 serving are: 1 200ml glass of soda or boxed juice or powdered juice; 2 filled cookies; 5 water and salt crackers or cream crackers; 1 cup (tea) of chips; 1 bonbon; 1 popsicle; 1 scoop of ice cream; ½ packet of instant noodles.</p>
<p>Script 2 (message number)</p>		
<p>(1) To track your weight gain during pregnancy, remember to weigh yourself regularly, preferably using the same scales. Adequate weight gain decreases the risk of complications in your pregnancy, such as gestational diabetes, high blood pressure and prematurity, as well as inadequate birth weight of the baby.</p>	<p>Add the guidance that if the weight gain expected in pregnancy had already been achieved, not to continue gaining weight.</p>	<p>To track your weight gain during pregnancy, remember to weigh yourself regularly, preferably using the same scales. If you have already achieved the weight gain expected throughout the pregnancy (11.5kg), the important thing is not to continue gaining weight. Accordingly, you should opt for healthier eating habits. Adequate weight gain decreases the risk of complications in your pregnancy, such as gestational diabetes, high blood pressure, prematurity and inadequate birth weight of the baby.</p>
<p>(2) During pregnancy, it is recommended that you do a physical activity such as walking, dancing, cycling or another activity of your preference, habit and according to your limit for about 30 minutes 5 days a week. If you have any contraindications, always follow your doctor's instructions. Regular physical activity decreases your risk of developing gestational diabetes, high blood pressure and excess weight gain. In addition, it helps your child to be born with the proper weight.</p>	<p>Remove the types of exercises, just guide that it is regular exercise, respecting the limit. State other benefits of the practice of physical activity.</p>	<p>During pregnancy, it is recommended that you do a physical activity such as walking or another activity of your preference, habit and according to your limit for about 30 minutes 5 days a week. If you have any contraindications, always follow your doctor's instructions. Regular physical activity helps at the moment of the birth and lowers your risk of developing gestational diabetes, high blood pressure, swelling and excess weight gain. In addition, it helps your child to be born with the proper weight.</p>

<p>(3) When preparing meals for your family, you should ensure that everyone eats fresh food. Do not substitute homemade food (rice, beans, meats, salads, stir-fried vegetables, pasta, vegetable soup, among others) for foods that are not culinary preparations, such as instant noodles, packet soup, frozen lasagnas and pizzas, and fast foods). Home cooking is tasty, rich in nutrients, and healthy for you, your baby, and your family.</p>	<p>Clarify the harmful effects of consuming processed foods and include more examples. Add more information about home cooking.</p>	<p>When preparing meals for your family, you should ensure that everyone eats fresh natural food. Do not substitute homemade food (rice, beans, meats, salads, stir-fried vegetables, pasta, and vegetable soup, among others) for processed foods, such as: instant noodles, packet soup, frozen lasagna and pizzas, soft drinks, filled cookies and fast foods. These foods are high in calories and low in nutrients and contain excess sugar, salt, fat, preservatives and coloring. Give preference to roasted and grilled preparations instead of frying and use natural seasonings. Home cooking is tasty, rich in nutrients, and healthy for you, your baby, and your family.</p>
<p>(4) The colors of fruits and vegetables represent different types of vitamins and minerals, for example: orange tones are related to the presence of vitamin A and vitamin C, while the dark green of vegetables is related to the minerals iron, calcium and to the vitamin folic acid. To maintain food variety, remember to consume at least 3 fruits and 3 types of vegetables every day. The vitamins and minerals present in fruit, vegetables and legumes are very important for your health and that of your baby (vision, hair, nails, and body resistance).</p>	<p>Simplify information about the benefits of fruit and vegetable consumption to facilitate comprehension.</p>	<p>To maintain food variety, remember to consume at least 3 fruits and 3 types of vegetables every day. The more colorful your plate, the more vitamins and minerals it has. For example, for a five-color dish, you can include rice, beans, meat and/or eggs and vegetables. The vitamins and minerals present in fruit, vegetables and legumes are very important for your health and that of your baby (vision, hair, nails, and body resistance) and prevent malformation of the baby.</p>
<p>(5) Most of our body is made up of water. Throughout the day, it is important that you drink at least 8 glasses of water to keep your body well hydrated. Water maintains the proper functioning of the entire body, such as digestion, transport of nutrients, circulation, body temperature balance and elimination of impurities.</p>	<p>Add the information that water intake is also important to prevent urinary tract infection.</p>	<p>Most of our body is made up of water. It is important that you drink at least 8 glasses of water throughout the day to keep your body well hydrated. Water maintains the proper functioning of the entire body, such as digestion, transport of nutrients, circulation, body temperature balance and elimination of impurities and helps prevent urinary infection.</p>
<p>(6) Avoid replacing natural foods and homemade food with industrialized products, such as: instant noodles, packet soups, sausage, crackers and packaged cookies, chips, artificial juices (powdered or boxed) and sodas. Natural foods are better for you and your baby's health as they lower the risk of you gaining excess weight.</p>	<p>Justify the reasons that processed foods are harmful to health and emphasize that natural foods are beneficial to health if consumed in a balanced way. Add other complications that can be avoided through a balanced diet.</p>	<p>Avoid replacing natural foods and homemade food with industrialized products, such as: instant noodles, packet soups, sausages (sausage, ham, salami, bologna), hamburgers, nuggets, chips, crackers and packaged cookies, sweets, cereal bars, artificial juices (powdered or boxed) and sodas. These foods contain a lot of preservatives, colorings and flavorings and are high in sugar, salt and fat. Natural foods, consumed in a balanced way, are better for you and your baby's health, as they reduce the risk of you gaining excess weight and other complications such as gestational diabetes, high blood pressure, swelling, prematurity and inadequate weight of the baby.</p>
<p>Script 3 (message number)</p>		
<p>(1) Remember that according to your weight and height, it is recommended that you have a total weight gain of 7kg to 11.5kg. Be extra careful about weight gain in the last trimester of pregnancy. Excessive weight gain during pregnancy can interfere with your health and that of your child, from baby to adulthood.</p>	<p>Emphasize that weight gain is greater in the last trimester and that, for this reason, greater attention should be paid. State what the complications of excessive weight gain are for the mother and baby.</p>	<p>Remember that, according to your weight and height, it is recommended that you have a total weight gain of 7kg to 11.5kg. Throughout pregnancy, weight gain occurs and in the last trimester this gain is greater, so be more attentive at this stage. Excessive weight gain during pregnancy can interfere with your health and that of your child, from gestation to adulthood. For you, complications can be: obesity, high blood pressure, swelling and diabetes. For your baby, the possible complications are: being born with low weight or overweight, diabetes, and obesity, among others.</p>
<p>(3) Don't go too long without eating throughout the day. It is better for you to eat less more times a day. Eat vegetables and legumes at lunch and dinner. Fruits, in addition to being tasty, are great options to eat for breakfast and between meals. Having these as snacks during the day is healthier and helps to reduce heartburn, a very common symptom during pregnancy.</p>	<p>Include the information that adequate consumption of fruits also helps in the proper functioning of the intestine.</p>	<p>Don't go too long without eating throughout the day. It is better for you to eat less more times a day. Eat vegetables and legumes at lunch and dinner. Fruits, in addition to being tasty, are great options to eat for breakfast and between meals. It is essential to have these snacks during the day, reducing the chance of having heartburn and constipation, which are very common symptoms in pregnancy.</p>

<p>(4) Do not substitute homemade food, such as rice, beans, meats, vegetables and legumes, for snacks and/or savories. Homemade food is healthier, nutritious and has fewer calories. Snacks and savories are more caloric, have more fat and salt, increasing the risk of you gaining excess weight and having greater fluid retention in the body.</p>	<p>Include fast foods as an example of processed foods and add that increased blood pressure can also be a risk of consuming processed foods.</p>	<p>Do not substitute homemade food, such as rice, beans, meats, vegetables and legumes, for snacks, savories and fast food. Homemade food is healthier, nutritious and has fewer calories. Snacks, savories and fast food are more caloric and have more fat and salt, increasing the risk of you gaining excess weight and having greater fluid retention and high blood pressure in the body.</p>
<p>(5) You can consume the fruits and vegetables that are cheaper, so you maintain the variety of these foods. These foods are important for your health and that of your baby, as they reduce the risk of high blood pressure, fluid retention, excess weight gain and prematurity, and protect your defense system and that of your child.</p>	<p>Emphasize more the benefits of maintaining a variety of fruits and vegetables.</p>	<p>You can consume the cheapest fruits and vegetables, so you maintain the variety of these foods and ensure an adequate amount of vitamins, minerals and fiber in your diet. These foods are important for your health and that of your baby, as they reduce the risk of high blood pressure, fluid retention, excess weight gain, prematurity, and protect your defense system and that of your child.</p>
<p>(6) Throughout the day, you should drink at least 8 glasses of water to maintain adequate hydration. Adequate consumption of water will help to reduce leg swelling a lot.</p>	<p>Emphasize more clearly the benefits of adequate fluid intake.</p>	<p>Throughout the day, you should drink at least 8 glasses of water. Adequate water consumption can decrease leg swelling and constipation and keep your body hydrated.</p>
<p>(7) These products are harmful to your health as they are high in fat and salt and have few vitamins and minerals. In addition, they can harm your child's development. Always favor homemade food: in addition to being tasty, it is more nutritious, healthier and cheaper.</p>	<p>Exemplify other options for industrialized products.</p>	<p>These products are harmful to your health as they are high in fat, salt, and sugar and are low in vitamins and minerals. In addition, they can harm your child's development. Other examples of industrialized products that can be harmful to you and your baby are: nuggets, sweet rolls, sliced bread, filled cookies, frozen pizzas and lasagnas, etc. Always favor homemade food, which is tastier, more nutritious, healthier and cheaper.</p>

Figure 1

Step-by-step cleaning. Ribeirão Preto, SP, 2021.



1) Pick the leaves, remove damaged parts and/or dirt.



2) Wash leaf by leaf, vegetable by vegetable, a piece or bunch of fruit at a time under running water.



3) Measure 1 liter of clean water (Tip: the measure of a glass is 250 ml, so 4 glasses with water results in 1 liter), put it in a clean container and add 1 tablespoon of bleach.



4) Soak the leaves, vegetables or fruits in the mixture of water and bleach.



15 minutes

5) Soak the leaves, vegetables or fruits for 15 minutes.



6) Thoroughly rinse all leaves, vegetables or fruits, which can be eaten immediately or kept in the fridge.

this information in line with the requirements of women during the progression of pregnancy.

According to Alexandre and Coluci,²¹ the validation of content by specialists is one of the steps for the development of educational instruments. In the method used in the present study, despite the technical content being similar, the scripts aimed at healthcare providers

were also validated considering the different stages of pregnancy. In addition, after consensus, they were adapted to differences contained in the folders for pregnant women, emphasizing the technical content and guidelines according to the gestational period.

The literature suggests that a coherent, cohesive, organized, sufficient structure with adequate language

Table 2

Final version of the messages in the folders (1, 2 and 3) for pregnant women. Ribeirão Preto, SP, 2021.

	Folder 1	Folder 2	Folder 3
1	Weight gain during pregnancy should be between 7.0kg and 11.5kg.	Gaining a lot of weight during pregnancy can compromise your health and that of your baby.	Healthy weight gain is critical for your health and that of your baby.
2	Get 30 minutes of physical activity 5 times a week, as instructed by your doctor.	Exercise during pregnancy as instructed by your doctor.	Remember to practice physical activities, if not prohibited by your doctor.
3	Eat homemade food every day for lunch and dinner.	Cooking is an act of love.	Have breakfast, lunch and dinner every day. Eat fruit between these meals.
4	Eat three types of vegetables and three fruits every day.	The more colorful the fruits and vegetables, the greater the variety of nutrients.	Favor homemade food instead of snacks and savories.
5	Before eating fruits and vegetables: wash, soak (1 tablespoon of bleach to 1 liter of water) for 15 minutes and rinse.	Drink water. Water is essential for your life and that of your baby.	Consume different types of vegetables, legumes and fruits every day.
6	Drink at least 8 glasses of water a day. Sodas and juice do not replace water.	Peel more and unpack less.	Drink water throughout the day to remain hydrated and for your baby's health.
7	Limit the consumption of processed foods (sodas, artificial juices, cookies, savories). These foods harm your health and that of your baby.		Avoid consuming industrialized products, such as: cookies, savories, instant noodles, sausages, sodas, artificial juices and fast foods.
	*Attention: in special cases of health problems, talk to your doctor.	*Attention: in special cases of health problems, talk to your doctor.	*Attention: in special cases of health problems, talk to your doctor.

Table 3

Final version of the images in the folders (1, 2 and 3) for pregnant women. Ribeirão Preto, SP, 2021.

	Folder 1	Folder 2	Folder 3
1			
2			
3			
4			



Table 4

Final version of the scripts (1, 2 and 3) for professionals of nutritional guidance for pregnant women. Ribeirão Preto, SP, 2021.

	Script 1	Script 2	Script 3
1	<p>According to your weight and height, it is recommended that you gain 7.0 to 11.5kg throughout your pregnancy.</p> <p>It is more common for this weight gain to be greater towards the end of the pregnancy. If possible, monitor your weight gain regularly, preferably using the same scales, which does not necessarily have to be done at the Primary Health Unit.</p> <p>Remember that inadequate weight gain, greater or less than recommended, can be harmful to your health, increasing the risk of diabetes, obesity and high blood pressure. It can also harm your baby's health, increasing the chance that he or she will be born with inadequate weight, prematurely and develop diseases in later life.</p>	<p>To track your weight gain during pregnancy, remember to weigh yourself regularly, preferably using the same scales. If you have already achieved the weight gain expected throughout the pregnancy (11.5kg), the important thing is not to continue gaining weight. Accordingly, you should opt for healthier eating habits. Adequate weight gain decreases the risk of complications in your pregnancy, such as gestational diabetes, high blood pressure, prematurity and inadequate birth weight of the baby.</p>	<p>Remember that, according to your weight and height, it is recommended that you have a total weight gain of 7kg to 11.5kg. Throughout pregnancy, weight gain occurs and in the last trimester this gain is greater, so be more attentive at this stage.</p> <p>Excessive weight gain during pregnancy can interfere with your health and that of your child, from gestation to adulthood. For you, complications can be: obesity, high blood pressure, swelling and diabetes. For your baby, the possible complications are: being born with low weight or overweight, diabetes, and obesity, among others.</p>
2	<p>This is the recommended frequency of physical activity during pregnancy, if you don't have any contraindications from your doctor. If you don't have this habit, start slowly, performing some physical activity that is pleasurable for you for 10 minutes a day and increase the time until you reach 30 minutes 5 days a week or a total of 150 minutes (2 hours and 30 minutes) per week according to your availability.</p> <p>Regular physical activity, such as walking, dancing, cycling or other activities, will help you control weight gain, reduce swelling in your legs, reduce stress and improve the functioning of your intestines.</p>	<p>During pregnancy, it is recommended that you do a physical activity such as walking or another activity of your preference, habit and according to your limit, for about 30 minutes 5 days a week. If you have any contraindications, always follow your doctor's instructions.</p> <p>Regular physical activity helps at the moment of the birth and lowers your risk of developing gestational diabetes, high blood pressure, swelling and excess weight gain. In addition, it helps your child to be born with the proper weight.</p>	<p>If you don't have any contraindications, do physical activity for about 30 minutes a day 5 times a week.</p> <p>The regular practice of physical activities helps to keep weight gain within the recommended limit during pregnancy. In addition, it decreases back pain and swelling, improves circulation and will help you during the birth and with weight loss after the birth of your child.</p>

<p>3</p> <p>Always give preference to homemade food. If you are in the habit of cooking, keep it this way. However, if you don't have this habit, start small, ask your family and friends for help and share some recipes. To make your day to day easier, it is important that you plan your food shopping and preparation. Know that you can freeze the food you have prepared. If you are going to eat out, look for a place where you recognize the food as being homemade.</p> <p>Homemade food, such as rice and beans, in addition to being tasty, is healthier and rich in important nutrients for you and your child.</p>	<p>When preparing meals for your family, you should ensure that everyone eats fresh natural food. Do not substitute homemade food (rice, beans, meats, salads, stir-fried vegetables, pasta, and vegetable soup, among others) for processed foods, such as: instant noodles, packet soup, frozen lasagna and pizzas, soft drinks, filled cookies and fast foods. These foods are high in calories and low in nutrients and contain excess sugar, salt, fat, preservatives and dyes.</p> <p>Give preference to roasted and grilled preparations instead of frying and use natural seasonings.</p> <p>Home cooking is tasty, rich in nutrients, and healthy for you, your baby, and your family.</p>	<p>Don't go too long without eating throughout the day. It is better for you to eat less more times a day. Eat vegetables and legumes at lunch and dinner. Fruits, in addition to being tasty, are great options to eat for breakfast and between meals. It is essential to have these foods during the day, reducing the chance of having heartburn and constipation, which are very common symptoms in pregnancy.</p>
<p>4</p> <p>To increase variety, you can consume fruits and vegetables that are cheaper. A tip is to buy these foods at street markets and greengrocers. These foods are rich in several vitamins and minerals that can lower the risk of high blood pressure, prematurity and swelling and can improve bowel function and strengthen your defense system and that of your child.</p>	<p>To maintain food variety, remember to consume at least 3 fruits and 3 types of vegetables every day. The more colorful your plate, the more vitamins and minerals it has. For example, for a five-color dish, you can include rice, beans, meat and/or eggs and vegetables.</p> <p>The vitamins and minerals present in fruit, vegetables and legumes are very important for your health and that of your baby (vision, hair, nails, body resistance and prevent malformation of the baby).</p>	<p>Do not substitute homemade food, such as rice, beans, meats, vegetables and legumes, for snacks, savories and fast food. Homemade food is healthier, nutritious and has fewer calories. Snacks, savories and fast food are more caloric and have more fat and salt, increasing the risk of you gaining excess weight and having greater fluid retention and high blood pressure.</p>
<p>5</p> <p>If you are going to consume these foods raw, first wash them under running water to remove dirt. Soak in a mixture with 1 tablespoon of bleach in 1 liter of water (4 cups) for 15 minutes, and then rinse the food in drinking water.</p> <p>Example of step-by-step cleaning. Bleach is suggested to sanitize these foods. When buying this product, look for the brands that say on the label "Can be used to disinfect fruits and vegetables"; some brands that have this information on the label are: <i>Qboa</i>, <i>Chemix</i>, <i>Cândida</i>, <i>Tá Boa</i> and <i>Triex</i>. If you prefer, there is an option on the market for hypochlorite from the <i>Pury Vitta</i> or <i>Hidroesteril</i> brands. In this case, follow the same steps, but replace 1 tablespoon of bleach with hypochlorite.</p> <p>If you have received any advice not to consume these foods, remember that if you sanitize them properly when you consume them at home, there is no problem. However, if you are going to consume them in a place you don't know, it's better not to eat this food raw.</p>	<p>Most of our body is made up of water. It is important that you drink at least 8 glasses of water throughout the day to keep your body well hydrated.</p> <p>Water maintains good functioning of the entire body, such as digestion, transport of nutrients, circulation, body temperature balance and elimination of impurities and helps prevent urinary infection.</p>	<p>You can consume the cheapest fruits, vegetables and legumes, so you maintain the variety of these foods and ensure an adequate amount of vitamins, minerals and fiber in your diet.</p> <p>These foods are important for your health and that of your baby, as they reduce the risk of high blood pressure, fluid retention, excess weight gain, prematurity, and protect your defense system and that of your child.</p>
<p>6</p> <p>Drink plenty of water throughout your day. A tip is to always have a bottle of filtered water with you (1 bottle of 500ml is equivalent to 2 glasses). Water hydrates the body, maintains the proper functioning of the organs, improves the functioning of the intestine and decreases the swelling of the legs. Water should not be replaced by soft drinks and artificial juices (boxed or powdered), as these contain a lot of sugar, which can cause excess weight gain and complications for your health. If your feet are very swollen or if you are very thirsty after meals, cut down on salt, but not water.</p>	<p>Avoid replacing natural foods and homemade food with industrialized products, such as: instant noodles, packet soups, sausages (sausage, ham, salami, bologna), hamburgers, nuggets, chips, crackers and packaged cookies, sweets, cereal bars, artificial juices (powdered or boxed) and sodas. These foods contain a lot of preservatives, colorings and flavorings and are high in sugar, salt and fat.</p> <p>Natural foods, consumed in a balanced way, are better for you and your baby's health, as they reduce the risk of you gaining excess weight and other complications such as gestational diabetes, high blood pressure, swelling, prematurity and inadequate weight of the baby.</p>	<p>Throughout the day, you should drink at least 8 glasses of water. Adequate water consumption can decrease leg swelling and constipation and keep your body hydrated.</p>

<p>Although these foods are apparently attractive, they are harmful to health, as they are low in nutrients and very high in fat, salt and sugar, which can increase the risk of excess weight gain. If you are going to consume these products, make it a maximum of 2 servings per week.</p> <p>Some examples of 1 serving are:</p> <p>7 1 200ml glass of soda or boxed juice or powdered juice; 2 filled cookies; 5 water and salt crackers or cream cracker; 1 cup (tea) of chips; 1 sugarplum; 1 popsicle; 1 scoop of ice cream; ½ packet of instant noodles.</p>	<p>These products are harmful to your health as they are high in fat, salt, and sugar and are low in vitamins and minerals. In addition, they can harm your child's development. Other examples of industrialized products that can be harmful to you and your baby are: nuggets, sweet rolls, sliced bread, filled cookies, frozen pizzas and lasagnas, etc. Always favor homemade food, which is tastier, more nutritious and healthier, as well as cheaper.</p>
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should be adopted as quality criteria in health educational materials.^{22,23} Therefore, the following evaluation criteria were used in the material validation process: clear, relevant and accessible language; images appropriate for the message; and the pregnant women's identification with the way in which contents were presented.

Adjusting the content to the proposed theme, with the integration of topics and paragraphs or excerpts, with a logical sequence of ideas, starting with general and impersonal issues and progressing to more specific subjects, are also recommendations contemplated in the construction process of educational material.^{22,23} Sufficiency is an aspect closely related to the validity of the content of materials, as it reflects relevant topics of the proposed theme in a comprehensive way and avoids possible uncertainties of the reader.^{22,23}

Among the aspects necessary for the language of a good instrument, objectivity and clarity stand out. Long, detailed sentences can lead to dispersion and make reading tiring. An extensive instrument can also compromise the willingness to respond and result in inappropriate and inaccurate answers.^{24,25}

It is essential to use language accessible to all layers of society, regardless of the level of education of the target population, given that the material needs to be easy to comprehend. The use of images is important for transforming textual information into visual language, in order to stimulate interest in reading and facilitate understanding.²⁶

An important point to favor the interpretation and comprehension of educational material is the simplicity of the image, that is, to suppress minimal details that can divert the reader's attention.¹¹ In the present study, the validated educational material prioritized simple images that facilitated the comprehension and understanding of the messages, with colorful illustrations that represent the daily life of this population. As recommended by Houts *et al.*,²⁷ the use of pictures in health education should focus on images that provide significant support for the verbal or textual guidance. Furthermore, the language used in association with the images should be simplified,

in a creative way, according to the cultural context of the target audience, being as close as possible to the natural world, with elements readable by any layperson, such as gestures, views and attitudes.²⁸

Verbal and visual texts are polysemic and complementary, as pictures can increase attention to educational materials, comprehension and recall of information, and can favor adherence.^{5,11}

The visual aid for dietary guidance represents an interesting way of conveying dietary information,⁹ especially when there is cultural identification with the characters portrayed in the images. However, it should be emphasized that the educational support material is an additional reinforcement and does not replace the verbal guidelines provided by the healthcare provider.

In the study by Micali and Diez-Garcia,⁵ the objective of which was to construct, validate and evaluate the memorization of dietary guidelines transmitted with the support of an imagistic instrument in eutrophic and obese women, the imagistic instrument stood out as a useful tool for use in obesity treatment and prevention. This material was effective in transmitting the messages intended with photos and addressed relevant food topics to improve the Brazilian diet.

Clark *et al.*²⁹ found that 30 days after viewing nutritional education materials there was a loss of approximately 60.0% of the information memorization. This result was observed in all age groups of the study, regardless of the type of printed material used in the interventions and the degree of memorization initially assessed in each group. These authors also observed that the educational material that had clearer textual language and that had pictures favored greater memorization of the information in comparison to other materials used.

The main limitation of the study was the subjectivity of the experts' analysis, as well as the divergence from the ideal number of participants. However, the validation of educational material constitutes essential information for overweight pregnant women and for the healthcare provider who will guide them during the gestational

period. Another potential of the study is that it presents illustrations that are consistent with the text, favoring communication and understanding. Accordingly, the present study highlights the relevance of content validation studies in this important stage of life.

The use of images associated with written and/or verbal information that is significant for the target population can favor cognitive processes and memorization of guidelines, as well as facilitate the work of health teams. The educational material was validated according to content and appearance and was considered appropriate and well adapted to the local culture. Accordingly, it can contribute to a more effective intervention for overweight pregnant women and to the practice of researchers and healthcare providers in the development of educational content.

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Authors' contribution

Manochio-Pina MG participated in the study design, data collection and analysis, and writing of the manuscript. Crivellenti LC and Diez-Garcia RW participated in the study design, data analysis and review of the manuscript. Sartorelli DS participated in the study design, data analysis and review of the manuscript. All authors approved the final version of the article and declared that there was no conflict of interest.

References

1. Ministry of Health (BR). Sociedade Beneficente Israelita Brasileira Albert Einstein. Nota Técnica para Organização da Rede de Atenção à Saúde com Foco na Atenção Primária à Saúde e na Atenção Ambulatorial Especializada. Saúde da mulher na gestação, parto e puerpério. São Paulo: Hospital Israelita Albert Einstein/ Ministry of Health; 2019.

2. Zuccolotto DCC, Crivellenti LC, Franco LJ, Sartorelli DS. Padrões alimentares de gestantes, excesso de peso materno e diabetes gestacional. *Rev Saúde Pública*. 2019; 53: 52.
3. Badanai NL, Zuccolotto DCC, Crivellenti LC, Sartorelli DS. Association of dietary patterns and degree of food processing with feelings of depression in pregnancy. *Rev Bras Saude Mater Infant*. 2019 Jul/Sep; 19 (3): 591-600.
4. Sartorelli DS, Crivellenti LC, Zuccolotto DCC, Franco LJ. A relação entre consumo de alimentos minimamente processados e ultraprocessados durante a gestação e obesidade e diabetes mellitus gestacional. *Cad Saúde Pública*. 2019 May; 35 (4): e00049318.
5. Micali FG, Diez-Garcia RW. Pictorial instrument of food and nutrition education for promoting healthy eating. *Rev Nutr*. 2016; 29 (6): 917-28.
6. Oliveira SC, Fernandes AFC, Vasconcelos EMR, Ximenes LB, Leal LP, Cavalvanti AMTS, *et al*. Efeito de uma intervenção educativa na gravidez: ensaio clínico randomizado em cluster. *Acta Paul Enferm*. 2018 Jun; 31 (3): 291-8.
7. Aşçı Ö, Rathfisch G. Effect of lifestyle interventions of pregnant women on their dietary habits, lifestyle behaviors, and weight gain: a randomized controlled trial. *J Health Popul Nutr*. 2016 Feb; 35: 7.
8. Higgs S, Robinson E, Lee M. Learning and memory processes and their role in eating: implications for limiting food intake in overeaters. *Curr Obes Rep*. 2012 Feb; 1: 91-8.
9. Daghio MM, Fattori G, Ciardullo AV. Use of pictorial advice to promote compliance to diet and drugs among illiterate and migrant patients. *J Diabetol*. 2010; 1 (3): 1-4.
10. Levie WH, Lentz R. Effects of text illustrations - a review of research. *Educ Comm Tech J*. 1982; 30 (4): 195-232.
11. Houts PS, Doak CC, Doak LG, Loscalzo MJ. The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient Educ Couns*. 2006 May; 61 (2): 173-90.
12. Castro IR, Souza TS, Maldonado LA, Caniné ES, Rotenberg S, Gugelmin AS. A culinária na promoção da alimentação saudável: delineamento e experimentação de método educativo dirigido a adolescentes e a profissionais das redes de saúde e de educação. *Rev Nutr*. 2007 Dec; 20 (6): 571-88.
13. Sartorelli DS, Crivellenti LC, Manochio-Pina MG, Baroni NF, Carvalho MR, *et al*. Study Protocol

- effectiveness of a nutritional intervention based on encouraging the consumption of unprocessed and minimally processed foods and the practice of physical activities for appropriate weight gain in overweight, adult, pregnant women: a randomized controlled trial. *BMC Pregnancy Childbirth*. 2020 Jan; 20 (1): 24.
14. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007 Dec; 19 (6): 349-57.
 15. Associação Brasileira de Empresas de Pesquisa (ABEP). Critério Padrão de Classificação Econômica Brasil (CCEB). O novo critério padrão de classificação econômica Brasil. São Paulo: ABEP; 2015.
 16. Ministry of Health (BR). Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Guia alimentar para a população brasileira. 2ª ed. Brasília (DF): Ministry of Health; 2014.
 17. Institute of Medicine (US); National Research Council (NRC); Rasmussen KM, Yaktine AL, eds. Weight gain during pregnancy: reexamining the guidelines. Washington (DC): The National Academies Press; 2009.
 18. American College of Obstetricians and Gynecologists (ACOG). ACOG Committee opinion. Number 267, January 2002: exercise during pregnancy and the postpartum period. *Obstet Gynecol*. 2002 Jan; 99 (1): 171-3.
 19. Carneiro AC, Souza V, Godinho LK, Faria ICM, Silva KL, Gazzinelli MF. Educação para a promoção da saúde no contexto da atenção primária. *Rev Panam Salud Pública*. 2012; 31 (2): 115-20.
 20. Ministry of Health (BR). Universidade Federal de Minas Gerais (UFMG). Instrutivo: metodologia de trabalho em grupos para ações de alimentação e nutrição na atenção básica. Brasília (DF): Ministry of Health/UFMG; 2016.
 21. Alexandre NMC, Coluci MZO. Content validity in the development and adaptation processes of measurement instruments. *Ciênc Saúde Colet*. 2011 Jul; 16 (7): 3061-8.
 22. Khurana S, Rao BK, Lewis LES, Bhat R, Purkayastha J, Kamath A, *et al.* Development and validation of educational leaflet for caregivers of preterm infants. *J Clin Diagn Res*. 2016 Jul; 10 (7): YC01-YC04.
 23. Leite SS, Afio ACE, Carvalho LV, Silva JM, Almeida PC, Pagliuca LMF. Construction and validation of na educational content validation instrument in health. *Rev Bras Enferm*. 2018; 71 (Suppl 4): S1635-S41.
 24. Keszei AP, Novak M, Streiner DL. Introduction to health measurement scales. *J Psychosom Res*. 2010 Apr; 68 (4): 319-23.
 25. Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, *et al.* The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. *Qual Life Res*. 2010 May; 19 (4): 539-49.
 26. Oliveira MC, Lucena AF, Echer IC. Neurological sequelae: preparation of a guidance manual for health care. *J Nurs UFPE On line*. 2014; 8 (6): 1597-603.
 27. Houts PS, Doak CC, Doak LG, Loscalzo MJ. The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient Educ Couns*. 2006 May; 61 (2): 173-90.
 28. Freitas F, Rezende Filho LA. Análise semiótica de imagens em impressos para educação em diabetes. In: VII Encontro Nacional de Pesquisa em Educação em Ciências (Enpec). Florianópolis, Santa Catarina, Brazil; 2000 Nov 08. Florianópolis: Enpec; 2000.
 29. Clark KL, Abusabha R, Von Eye A, Achtenberg C. Text and graphics: manipulating nutrition brochures to maximize recall. *Health Educ Res*. 1999 Aug; 14 (4): 555-64.

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