

Nutrition of Infants and Toddlers: WHO Recommendations and Information Encountered by Czech Parents

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ABSTRACT

Background. Much effort has been devoted with remarkable success in the last 15 years to the support and promotion of breast-feeding. Until recently, however, far less attention has been paid to issues relating to nutrition during the period of transition from exclusively milk feeds to family diet. The aim of the presented study is to provide a qualitative review of information available to parents from various sources on feeding children aged between 6 and 24 months, and to compare these with WHO recommendations based on the Global Strategy for Infant and Young Child Feeding.

Methods and Results. As a part of their practical fieldwork, students of the 1st Medical Faculty of Charles University carried out interviews with 273 mothers of children under 5 years of age and focused interviews with 19 pediatric general practitioners. They also gathered 42 promotion materials and identified and evaluated 16 relevant publications and 14 web pages. All the interviewed practitioners provided nutritional information to mothers, recommended exclusive breast-feeding up to 6 months and appropriate introduction of complementary food, but they did not sufficiently promote breast-feeding after 6 months. As expected, the survey of various sources of information showed certain variations in feeding recommendations, which is partly the consequence of changes that have taken place over the last decade. Most publications emphasize breast-feeding as the ideal nutrition up to 6 months of age. Continuation of breast-feeding after 6 months is not recommended adequately. With some exceptions, complementary feeding recommendations are the same for both breastfed and non-breastfed children, and for those who need to start complementary feeding before 6 months of age. Except for sporadic notes, the publications do not deal with safe food preparation and feeding during and after a common illness.

Conclusions. The harmonization of information on the feeding of older infants and toddlers with WHO recommendations would require paying attention to all 10 areas of WHO guiding principles, the formulation of unambiguous breast-feeding recommendations, the differentiation of information according to the target population, and the adoption of the situation of the thriving infant, exclusively breastfed until completed 6 months of age, as the baseline.

Key words: Complementary food, infant feeding, toddler feeding, breast-feeding.

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INTRODUCTION

Both in this country and abroad there has been a very intensive and successful development of the most diverse types of activities to support and promote breast-feeding (1). However, much less attention has been paid until recently to the feeding of children at the time of transition from exclusively milk feeds to family diet, i. e. the period between the 6th and 24th month. The effort to improve nutrition of infants and young children has led in recent years to numerous international and national activities, resulting in the adoption of the WHO/UNICEF Global Strategy for Infant and Young Child Feeding (2) by the member states of the World Health Organization at the World Health Assembly in 2002. The Strategy formulated the basic general requirements which the WHO processed into 10 guiding principles (3).

The infant and young child feeding recommendations developed gradually. In 1990 the World Health Assembly approved the recommendation for exclusive breast-feeding until 4 to 6 months, and the WHO recommended breast-feeding for at least one year and, where possible, until the age of two years or longer. In 1994, the World Health Assembly adopted the recommendation to breast-feed

exclusively until the age of approximately 6 months. The current recommendation of the Global Strategy is exclusive breast-feeding until 6 months and the introduction of complementary foods from 6 months with continuing breast-feeding on demand until the age of two or beyond.

In the presented work we have tried to draft a qualitative map of information on the introduction of complementary food and child nutrition up the age of two available to Czech mothers and to compare it with WHO recommendations, as an introductory step to the updating of recommendations concerning the feeding of small children.

METHODOLOGY

Fifth year students of the First Faculty of Medicine, Charles University collected and partially assessed data in 2003 - 2005 as a part of fieldwork practical exercises at the Institute of Hygiene and Epidemiology. As a part of the study of feeding practices of children under 5 years of age, students approached at random 273 mothers in Prague (52.7 %) and in 48 other towns and munic-

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palities (47.3 %) and completed a questionnaire with them. The results of the study will be published elsewhere; in this report we present the sources of information according to which mothers learned how to feed their children. The students conducted focus interviews with 19 randomly chosen pediatric general practitioners in Prague and two other large towns; they carried out a survey of free promotional materials available to mothers in the practitioners' offices and in 26 pharmacies in Prague; they visited 4 large bookshops in Prague and they searched the web to evaluate the relevant titles sold and web pages.

RESULTS

Sources of information

When asked who taught them what food to give to their children, the mothers of 273 children of average age 29.1 (6 – 71) months most often referred to family or friends, health care workers, published literature and company promotional leaflets (Tab. 1).

Information provided by pediatric general practitioners

All the 19 visited pediatric practitioners, or in some cases their nurses, provide nutritional counseling to mothers of infants. Eighteen practitioners recommended exclusive breast-feeding wherever possible up to 6 months, one GP recommended up to 6 to 8 months. The desirable duration of breast-feeding was usually not mentioned, and when it was, it was up to 1 year. Doctors mostly recommended the gradual introduction of complementary food in the vegetable (and meat) – fruit – porridge sequence. The intake of non-milk liquids by breastfed children was not recommended by most doctors until after the 6th month. Almost all practitioners emphasized the advice not to give porridges containing gluten until after the completion of the 6th month or even later.

The opinion of doctors about the choice and quality of available printed materials on complementary feeding differed broadly and covered the whole scale from positive evaluation: "The literature is adequate, both as far as quantity and content are concerned," up to disapproval expressed by the words: "The current publications are all commercial promotional material." More than half the practitioners agreed that there was not enough literature on the feeding of toddlers and especially pre-school children. Only one title was recommended by name, Josef Švejcar's *Péče o dítě (Childcare)* (4). Surprisingly, none of the doctors mentioned chapters on nutrition in the Annex to the Health and immunization certificate of child and adolescent (5).

Annex to the Health and immunization certificate of the child and adolescent: Information for parents (5)

The A6 format brochure (henceforth "Annex") is a potential key source of child nutrition information, because it is given at the maternity ward to the mothers of all children and is the only free non-commercial material found. The chapter on breast-feeding describes clearly the importance and technique of breast-feeding. Of the 8 pages of chapter "Nutrition of toddlers", less than three full pages are devoted to concrete recommendations on the introduction of complementary food. Three pages are devoted to breast milk substitutes, even to such special formulas as anti-reflux formula. The Annex does not deal with feeding after the first year of age in spite of containing chapters on older children, e. g. "Adolescence is a Time of Maturation". The organization of the text and the content of the Annex are identical with the information in two new specialized pediatric titles (6, 7), which are also repeated in various forms in other printed and electronic texts.

Tab. 1. Sources of information on child nutrition quoted by mothers

Source	Number (n=273)	Percentage ⁽¹⁾
Family, friends	126	46.2
Medical practitioners	123	45.1
Child-care books and cook books with recipes for children	90	33.0
Company promotional brochures	57	20.9
Intuition, personal experience or training	18	6.6
Other (magazines, the Internet, TV)	11	4.0

(1) Some mothers quoted more than one source, which is why the total is more than 100%.

Book titles

With the help of bookshop assistants, the students identified altogether 16 titles published since 1998, priced in the 49 to 449 CZK (ca 1.60 to 15 EUR) range, dealing to a greater degree with the feeding of older infants and toddlers (4, 8-22). The comparison of the information found with WHO recommendations is given below. Books by foreign authors were considered to be the least appropriate by the students.

Material on the Web

In April 2005, 1490 references were found using the Google search engine and key words "výživa kojenců" (infant nutrition). Of this number, 183 – indicated as the most relevant – were visited. Others, marked by the search machine as very similar to those already depicted, were left out. In a similar manner, 154 references were called out by the words "výživa batole" (toddler nutrition). Thirteen references were thus found, dealing with the feeding of infants and toddlers in the form of practical advice more or less identical with that in Czech specialized texts (23 – 35), plus one which merely referred to artificial feeding instructions (36). Another 5 references dealt with vegetarian diet and other forms of alternative nutrition. In the case of 6 pages (30-35) the status of the owner was not clearly indicated and thus the searcher was not allowed to evaluate the creditworthiness of the information to a reasonable degree; in two cases the text - *Kalendář Dva roky s tebou* (Calendar – Two Years with You) (28, 29) – was identical.

Company commercial materials

Students acquired a total of 42 free promotional materials on infant complementary food and non-milk drinks from 8 producers and distributors. Companies generally have one glossier and more attractive brochure plus a various number of leaflets on individual product lines or products. The brochures contain a varying amount of instructions concerning the preparation and serving of complementary foods; sometimes they contain menu charts and different kinds of other information. The company materials emphasize optically the suitability of selected complementary foods and juices from the 4th month of age, teas from the end of the 1st week. The brochures usually mention breast-feeding as the best way of feeding children in the first months of their lives. The leaflets, however, rarely do this, and when they do it is in small print. Mention of the desirability of *exclusive* breast-feeding is very exceptional in these materials. In the case of a thriving child, complementary food is most frequently recommended from the end of the 6th month. The possibility of earlier introduction of complementary feeding, not however before the completed 4th month of age, is usually mentioned without any concrete justification.

With one exception, the menus were identical for breastfed and non-breastfed children. All the menus, including the mentioned exception – a menu for breastfed child, were based on a daily distribution of 5 to 6 milk portions, gradually replaced by a non-milk complementary food, which means they recommend breast-feeding only twice or three times a day from the 5th or 7th month, and not at all in the last months of the first year of life.

WHO recommendations on nutrition of small children (3) compared to information available in Czech non-commercial publications

RECOMMENDED PRACTICE 1. Practice exclusive breast-feeding until the child is 6 months old. Start introducing complementary foods at 6 months of age (180 days) while continuing to breast-feed.

Czech publications: None of the materials recommends introduction of complementary foods before the end of the 4th month. Most materials give priority to breast-feeding until 6 months, but at the same time some of the materials recommend the introduction of complementary foods *not later than the end of the 6th month*, i. e. not after the completion of 6 months or at the age of 4 to 6 months. Concrete criteria for the introduction of complementary foods before the 6th month are usually not specified.

The texts are not unequivocally formulated as recommendations, e. g. “*should be/can be fully breastfed*”. The expression “*fully*” breastfed is sometimes used instead of “*exclusively*” and includes the option of feeding non-milk liquids (37). Some of the materials do not use any attribute, which may evoke the impression that after the 6th month of age the child need not be breastfed. Information that an exclusively breastfed infant does not need any complementary food and not even liquids is often lacking.

The amount of text dealing with formulas is comparable in many of the publications with the amount of text on introduction of complementary food; sometimes it is even longer.

RECOMMENDED PRACTICE 2. Continue frequent, on-demand breast-feeding until two years of age or beyond.

Czech publications: Half of the publications do not mention breast-feeding after the 6th month; most of the remaining ones write about breast-feeding up to the completion of the first year, while very few mention 2 years. Some negative information was found: “... there is no need to breast-feed in the 2nd year, because the child has learnt how to eat other food” (10) and “...there are more disadvantages than benefits of breast-feeding in the 2nd year, because breast milk contains harmful substances from the environment” (16).

In formulations relating to breast-feeding after the 6th month, expressions that are not clear recommendations predominate, e. g. “*it is possible*”, “*can*”, “*there is no reason to interrupt breast-feeding*”.

None of the materials on complementary food mentions *on demand* breast-feeding – they usually contain regimes common for artificially fed children.

RECOMMENDED PRACTICE 3. Practice responsive feeding: feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues.

Feed slowly and patiently, encourage, but do not force children to eat.

If the children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement.

If the child easily loses interest in food, feed the child in a quiet environment where there is no distraction.

Do not forget that mealtimes are also a time of learning and love – talk to the child during meals and do not forget eye to eye contact.

Czech publications: This topic is dealt with carefully.

RECOMMENDED PRACTICE 4. Practice good hygiene and proper food handling:

Wash caregivers’ and children’s hands before food preparation and eating.

Store foods safely and serve foods immediately after preparation.

Use clean utensils to prepare and serve food.

Use clean cups and bowls when feeding children.

Avoid the use feeding of bottles, which are difficult to keep clean.

Czech publications: The topic is not dealt with systematically in any of the publications. Occasional disjointed instructions occur as well as general encouragement to observe hygienic requirements.

RECOMMENDED PRACTICE 5. Start introducing a small amount of complementary food at 6 months of age and gradually increase the amount as the child gets older. Continue frequent on-demand breast-feeding.

Czech publications: The publications contain detailed and on the whole unified descriptions of the gradual introduction of complementary food and its amount. For remarks on breast-feeding see recommendation 2.

RECOMMENDED PRACTICE 6. Gradually increase food consistency and variety as the child gets older, adapting the diet to the infant’s requirements and abilities.

At the age of six months the child can eat purée and porridge. By eight months of age most children are capable of eating “finger food”, which the children can eat alone.

At about 12 months of age, most children are capable of eating family diet. Bear in mind that children need food rich in nutrients.

Do not serve food that may cause the child to choke (bits of food that may become stuck in the trachea, like nuts, grapes, raw carrot).

Czech publications: The publications usually describe the infant feeding in detail and more or less uniformly. Information on the feeding of toddlers is usually less detailed and less instructive.

RECOMMENDED PRACTICE 7. Increase frequency of complementary foods feeding as the child gets older. The appropriate number of meals depends on the energy density of the foods and on the amount of food the child usually eats during each meal.

Feed the average 6 – 8-month-old breastfed infant complementary food 2-3 times per day, the 9-11-month-old infant 3-4 times per day. From the first year of age the child should get 3-4 meals per day with 1-2 nutritious snacks, as desired.

If the energy density of the food is low or if the amount of consumed food is small or the child is no longer breastfed, the child may need to be fed more frequently.

Czech publications: The frequency given in the publications corresponds with the recommendations.

RECOMMENDED PRACTICE 8. Feed a variety of foods to ensure that nutrient needs are met.

Meat, fish or eggs should be eaten daily or as often as possible.

Vegetarian diets do not meet nutrient needs at this age unless nutrient supplements or fortified products are used.

Feed vitamin-A rich fruits and vegetables daily.

Provide diets with adequate fat content.

Avoid giving drinks with low nutrient value, such as tea, coffee and sugary beverages.

Limit the amount of juice offered so as to avoid displacing more nutrient rich foods.

Czech publications: The topic is usually described well.

RECOMMENDED PRACTICE 9. Give the infant complementary foods fortified with vitamins and minerals or mineral and

vitamin supplements, as needed (to be determined on the basis of local research of deficiencies in the child population).

Czech publications: Some publications mention vitamin D, which is recommended in the CR, exceptionally also fluoride if the water does not contain it in adequate amounts.

RECOMMENDED PRACTICE 10. During illness increase fluid intake, breast-feed more frequently and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give foods more often than usual, and encourage children to eat more.

Czech publications: Few publications mention the increased need of liquids, but the students found no recommendations concerning food in any of the reviewed materials.

DISCUSSION

The work of students was to model the situation in which an educated mother tries hard to acquire information on suitable food for her breastfed child at the time when breast milk alone no longer meets his needs. Other information sources also exist but students did not find them during their search, so mothers would not find them easily either. The aim was to find out the range of existing information, not to provide an exhaustive or quantitative assessment of this information.

It is encouraging that all the practitioners questioned provide information on nutrition, emphasizing preference of exclusive breast-feeding for a period of 6 months, and on suitable introduction of complementary foods, although there is reason to believe that not enough emphasis is given to promotion of breast-feeding after the 6th month.

The search of various sources of information confirmed the expected variation in the recommendations on feeding of small children, which is partly a consequence of the changes in the recommendations over the last decade. A positive finding is that none of the materials recommends feeding complementary food before the end of 4 months of age, and none of the sources, with the exception of corporate promotional materials, recommends feeding with non-milk fluids before 4 months of age. Most publications emphasize the benefits of breast-feeding compared to formulas and breast-feeding as the ideal option until 6 months of age, although they do not use the terms “*completed*” and “*exclusive*”. Continuation of breast-feeding after 6 months of age is definitely not recommended adequately, especially until two years of age or beyond. Where the material does mention continuation of breast-feeding, it is usually mentioned as a possibility, not as a recommended practice, and instructions on how to do it are lacking altogether.

In a number of materials the very extensive information on artificial feeding, often introduced by the clause “*if the mother cannot breast-feed*”, may give the impression that breast-feeding difficulties and thus the need for substitutes are normal. This certainly does not support the mother’s self-confidence, which is necessary for the maintenance of lactation and, in a certain sense, it promotes artificial nutrition. The main principle of the International Code of Marketing of Breast Milk Substitutes (38), which has been incorporated to some degree into the Czech Ministry of Health Regulation No. 54/2004 Sb (39), is not to target the promotion of breast milk substitutes at the whole population. The labeling requirements pursuant to this regulation, pertaining to initial infant formulas, include note that the product may be used only on the recommendation of a doctor or person qualified in area of human nutrition, pharmacy or mother and child care. The need of artificial nutrition should therefore be discussed individually by the health specialist with the mother. It would be appropriate to consider the application of this principle also in popular publications, leaving the details on artificial nutrition to specialized literature.

The same set of complementary feeding recommendations for breastfed and non-breastfed children, as well as for those who need to

start complementary feeding before the 6 months of age, may give the impression that it is common to give breastfed children complementary food before completion of 6 months of age and to reduce the number of milk food portions, i. e. of breast milk, from the total number of 5-6 to 2-3. Such recommendations do not support on-demand breast-feeding; indeed, if the recommended schedule is observed, they may lead to its involuntary termination. Nor do they correspond with the feeding scheme of successfully breastfed children according to a Czech study (40): at the age of 9 months the children were breastfed 4.7 times daily on average and were given complementary food 3.9 times a day; at the age of 12 months they were breastfed 4 times daily on average and were given complementary food 4.9 times a day.

As for company materials, more emphasis on the enforcement of the principles of the Code of Marketing of Breast-milk Substitutes would be desirable. A positive feature is the significant effort on the part of some companies to comply with the requirements of the Code, but even in their materials there is frequent occurrence of the above-mentioned criticized aspects in variations emphasizing company interests.

Of the 10 guiding principles recommended by the WHO, except for breast-feeding, the publications deal quite satisfactorily with food consistency, frequency, amount and type of meals. Most of the materials mention the manner in which children should be fed, some mention giving vitamin D and/or fluoride, both recommended in the CR. Apart from sporadic mention, the publications do not deal with safe food preparation, in spite of the fact that the Czech Republic ranks first among European countries in the WHO Atlas of Health in Europe (41) in the number of notified food-borne diseases per 100,000 inhabitants. Nor do Czech recommendations deal with feeding during and after common illness.

The harmonization of information on the feeding of older infants and toddlers with WHO recommended practices would require:

Devotion of attention to all ten WHO guiding principles.

Wording of breastfeeding recommendations in a clear way, which cannot be interpreted as a mere option.

Careful assessment of the priority and scope of individual topics according to the target population. Restriction of information, the application of which is undesirable without prior consultation with a specialist, in publications designated for the general public.

Wording of instructions on the introduction of complementary foods drawing on the situation of a thriving child who has been exclusively breastfed until completion of 6 months of age. Separate presentation of information relating to special circumstances, i. e. the formula-fed child, the child that needs complementary food before the end of 6 months of age.

Abbreviations

WHO - World Health Organization
UNICEF - United Nations Children’s Fund

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COMMENTARY

Comment on E. Kudlová : “Nutrition of Infants and Toddlers: WHO Recommendations and Information Encountered by to Czech Parents”

The work of E. Kudlová comparing WHO Recommendations on infant nutrition with the information encountered by mothers in real life is very commendable and useful. The article cannot but reflect the specialization of the author and, naturally, pays due attention to the hygienic aspects of nutrition and to a critical evaluation of the recommendations and information provided to mothers. I agree that the recommendations should also devote more attention to the relevant items of the WHO guiding principles. On the other hand, however, the wording of some of the WHO recommendations is so general (e. g. WHO recommendation 10 – *Increase fluid intake during illness, breast-feed more often and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more*) that it cannot be translated, without reservation, into practical advice that would benefit the child during illness. Moreover, every illness is specific and it is not always wise to instruct the mother to increase the amount of fluids given to the child

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if the child rejects them. A child recovering from illness usually has a satisfactory appetite, and it is usually not necessary to force it to eat. It is also not clear how the mother would interpret the notion "encourage to eat". I therefore think it more appropriate to discuss the issue of dietary measures in specific situations, especially situations when the child has diarrhea or is vomiting. The mother could interpret encouragement to eat as forcing the child to eat, and attractive foods as the necessity to offer constantly new types of dishes. Professor Švejcar warned against these practices a long time ago in his book (the only book recommended by pediatric general practitioners, incidentally). Such practices could lead to real dysorexia and failure of the child to thrive.

The general conclusion from the work of E. Kudlová is that a comparison of WHO principles with the recommendations provided to mothers either in printed form, on the Internet or directly from health care workers indicates that the current situation is broadly favorable for the mothers and, implicitly, for the children. Personally, I am far from being so optimistic. As the author of a book for parents dealing with infant nutrition, I accept the point that the feeding of breastfed children after the age of six months ought to be separated more clearly in the recommendations from formula-fed children, to avoid any doubt about it being natural to breastfeed, and not only in the first months of life. On the other hand, the recommendations should be formulated as briefly, clearly and coherently as possible, and that is not always easy and not always achieved. I cannot fully agree that information on artificial feeding should be rather general. There is such a wealth of artificial nutrition products on the market and the curious mother has the right to find in literature a comprehensive survey of artificial nutrition as well as information on the associated pitfalls and options. She will not get this information from the leaflets of individual companies. It is not a good idea to provide information in books for parents in the form of prohibitions and orders; it is usually better if the author chooses a friendlier form of recommendation. This is but a minor additional remark to the conclusions of E. Kudlová's article. A greater problem is the fact that a large percentage of mothers do not read printed information. They especially do not read those they get "automatically" and free of charge (Health and Inoculation Card and its Annexes). They then follow the advice of the people around them, which is nicely documented in the study in Table 1 – *Sources of information on child nutrition provided by mothers*. According to this Table, information on feeding provided by health care staff (I understand this to mean pediatric general practitioner and nurse) is in second place as a source of information for the mother. The pediatric general practitioner is therefore a key figure when it comes to deciding how and in what way to feed the child. I think I can claim that the GP is actually the arbiter when it comes to broader family differences on child nutrition. The stumbling block in the study is the objectivity of the evaluation of information acquired from GPs. As a pediatrician and neonatologist I am in frequent contact with breastfeeding mothers; moreover, I work in a GP's outpatient office and also answer inquiries sent by mothers (most of them concern child feeding) through the Web, and that brings me back to reality.

What then, in my view, are the main shortcomings in the care for the correct nutrition of infants and small children?

1. The continuing inadequate support of the breastfeeding program, resulting in the low percentage of breastfed children older than 3 months. It is not enough merely to convey the information that breastfeeding is natural, that breast is best ... It is necessary to pay attention to the breasts and the future nutrition of the child before birth, to teach the mother the right breastfeeding technique soon after delivery and to observe fully the Ten Steps to Successful Breastfeeding (unfortunately, this is still not common practice in all maternity hospitals), to know how to advise the mother on what to do during a lactation crisis or, even better, how to avoid such crises. The most common type of help provided in such cases at the pediatric GP's office is the stressful repeated weighing of the child and the early and unnecessary switch to formula milk (often "to try it out" on a sample of formula. Some companies supply such samples to pediatric GP clinics. Using various tricks and measures they circumvent the International Code of Marketing of Breast Milk Substitutes).

2. The premature introduction of non-milk supplementary foods by mothers who are supported in their effort to provide the most varied types of meals to the child. This effort is aided, paradoxically, by the graphically well-designed and content-wise correctly drafted menus and instructions (especially in company brochures), but often also by recommendations provided by health care staff. The mothers, too, keep on asking for such menus.

3. The often false and misleading advertisements in the media - this affects in particular the feeding of children over 1 year of age.

I agree with the author that a great shortcoming is the failure to make use of all the possibilities offered to mother and physician by the Health and Inoculation Certificate. The greatest mistake, I think, is the absence of percentile diagrams, which an educated mother could use as an ideal tool to assess the growth, nutrition and health of her child.

In conclusion, I would like to thank the author for her very useful work. The feeding of the youngest children remains a topical theme as views of correct nutrition change as rapidly as the landscape that surrounds us.

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