



Are the recommendations of paediatricians about complementary feeding aligned with current guidelines in Uruguay?

Leticia Vidal^{1,*}, Isabel Bove², Gerónimo Brunet³, Alejandra Girona⁴, Florencia Alcaire¹, Lucía Antúnez¹ and Gastón Ares¹

¹Sensometrics & Consumer Science, Instituto Polo Tecnológico de Pando, Facultad de Química, Universidad de la República, By Pass de Rutas 8 y 101 s/n, CP 91000 Pando, Canelones, Uruguay; ²UNICEF Uruguay, Montevideo, Uruguay; ³Espacio Interdisciplinario, Universidad de la República, Montevideo, Uruguay; ⁴Departamento de Nutrición Básica, Escuela de Nutrición, Universidad de la República, Montevideo, Uruguay

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Abstract

Objective: To explore Uruguayan paediatricians' personal recommendations about complementary feeding and to assess if they are aligned with current guidelines and scientific evidence.

Design: A questionnaire composed of open-ended questions was used to explore foods recommended to start complementary feeding, foods regarded as the most important during the first meals, recommendations for delayed introduction of foods and foods that should be avoided. Reasons underlying the recommendations were also explored.

Setting: Montevideo, the capital city of Uruguay (Latin America).

Participants: A total of 212 paediatricians were recruited during a National Pediatrics Conference, organised by the Uruguayan Society of Pediatrics.

Results: The recommendations about complementary feeding provided by paediatricians to parents and caregivers in Uruguay seemed not to be fully aligned with the guidelines provided by the Ministry of Health. Paediatricians recommend a rigid food introduction sequence, characterised by the early introduction of soft pureed vegetables and fruits, followed by meat and the delayed introduction of allergenic foods. Food diversity and the concept of ultra-processed were not frequently identified in the responses.

Conclusions: Results stress the importance of developing educational and communication approaches targeted at paediatricians to contribute to the uptake of updated recommendations regarding complementary feeding.

Keywords

Complementary feeding
Complementary foods
Child nutrition
Health professionals

Optimal nutrition during the first 1000 days of life is essential to enable children to achieve their full potential⁽¹⁾. However, childhood malnutrition is still one of the most important public health problems the world faces⁽²⁾. Globally, the three most visible forms of malnutrition, stunting, wasting and overweight affect at least one in three children under 5 years old⁽³⁾.

The transition from exclusive breast-feeding or formula feeding to family foods is a particularly vulnerable period in the life of infants^(1,4). Complementary feeding can be defined as the introduction of solid and liquid foods other than breast milk or breast-milk substitutes once

breast-feeding is no longer sufficient to meet the nutritional requirements of infants^(5,6). It should be timely, safe, adequate in terms of amount and variety to provide sufficient nutrients to meet nutritional needs, suitable for the age, and given according to the signals of appetite and satiety⁽⁷⁾. The introduction of adequate complementary foods shapes preferences, favours the development of healthy eating habits and can provide protection against obesity and chronic diseases throughout life^(8,9).

Inadequate complementary feeding practices such as the early or delayed introduction of solid food, low dietary diversity, insufficient meal frequency and low consumption

*Corresponding author. Email lvidal@fq.edu.uy

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of fruits, vegetables and foods of animal origin (meat, dairy, fish and eggs) have been reported to be highly prevalent worldwide⁽¹⁰⁾. In addition, consumption of ultra-processed products has been recently identified as increasingly prevalent during complementary feeding^(3,11). Ultra-processed products are frequently consumed by a large proportion of children from an early age, replacing natural and healthy foods^(12,13). Results from a cross-sectional survey conducted in Cambodia, Nepal, Senegal and Tanzania showed that 16–23% of children 6–23 months had consumed sugar-sweetened beverages the day prior to the interview⁽¹⁴⁾.

The introduction of solid foods has been reported to be a stressful period for parents, who frequently seek for information about complementary feeding to inform their own practices^(15,16). Lack of knowledge about complementary feeding has been identified as one of the causes of inadequate feeding practices^(11,17). For this reason, advice to caregivers and educational interventions have been recognised as a cornerstone strategy to promote adequate complementary feeding practices⁽¹⁸⁾. Indicators related to access to health and nutrition counselling (e.g. number of antenatal clinic visits and timing of post-natal check-up visits) have been reported to be predictors of adequate complementary feeding practices⁽¹⁹⁾. In addition, research has associated counselling with increased knowledge of caregivers, as well as improved infant feeding practices and growth-related outcomes^(17,20–22).

Health professionals have been reported to be the main source of information about complementary feeding for parents and caregivers^(15,23). Parents acquire knowledge about feeding practices through the advice provided by health professionals in the context of the health care system⁽¹¹⁾. Therefore, the knowledge of health professionals, and particularly paediatricians, is crucial for achieving optimal complementary feeding practices. However, the knowledge, beliefs and recommendations of health professionals about complementary feeding have not been explored in-depth yet^(24,25).

Previous research has shown that the advice parents receive about feeding practices from health professionals is sometimes incorrect and inconsistent^(24–27). According to Alcutt *et al.*⁽²⁴⁾, health professionals do not always find it easy to keep up to date with emerging recommendations. Thus, deviations from the recommendations are expected to be more likely for those aspects of complementary feeding for which new scientific evidence has recently emerged. This is the case of recommendations related to the lack of rigid food introduction sequences, introduction of common allergens or gluten for preventing the development of allergic diseases, baby-led weaning and avoidance consumption of ultra-processed foods^(27–30). In addition, it should be taken into account that the recommendations provided by paediatricians to caregivers are not only shaped by scientific evidence but also by their professional experiences and beliefs⁽³¹⁾.

Aims of the study and context

In this context, the aims of the present work were to explore Uruguayan paediatricians' personal recommendations about complementary feeding and to assess if they are aligned with current guidelines and scientific evidence.

The study was conducted in Uruguay, a high-income country located in the south-eastern part of South America with a total population of 3.5 million people (93% living in urban areas). One of the main nutritional challenges in the country is the high prevalence of overweight and obesity in childhood, which coexists with some degree of undernutrition. According to the cohort 2018 of the national survey on infant nutrition, development and health status, 15% of children between 0 and 4 years old are overweight or obese, while stunting affects 7.2%⁽³²⁾. Fe deficiency in early childhood is also a relevant problem in Uruguay. The last national survey, conducted in 2011, showed that the prevalence of anaemia among children under 24 months old was estimated in 31.5%, while a more recent study reported a prevalence of anaemia of 18.3% among 8–12 months children^(33,34). Regarding complementary feeding, the most relevant problems are related to the type of food consumed. In particular, low variety, low consumption of fruits, vegetables and meat, and relatively high consumption of ultra-processed foods rich in sugar, salt and fat⁽³⁵⁾.

According to the Uruguayan recommendations, newborns receive monthly medical follow-up from paediatricians during the first 6 months. In the 5th month control, paediatricians are expected to provide guidance on complementary feeding⁽³⁶⁾. National guidelines on complementary feeding for children between 6 and 24 months old provided by the Ministry of Health were last updated in 2014⁽³⁷⁾. In line with recommendations of the WHO⁽⁵⁾, the guideline stresses the importance of exclusive breastfeeding during the first 6 months of life, establishing 6 months as the appropriate age of introduction of complementary foods. One of the first chapters of the guideline is focused on the opportunity to shape healthy eating habits through an adequate complementary feeding, emphasising consumption of home-made meals based on natural and minimally processed foods, without addition of salt and sugar or honey. Avoiding ultra-processed foods and beverages and other foods rich in sugar, salt, fat and with added sweeteners is also recommended. The guidelines also establish that a variety of natural and minimally processed foods should be offered from the beginning of complementary feeding. No fixed order of first foods is recommended, but special emphasis is made on the inclusion of meat and other Fe-rich foods from the beginning to prevent anaemia. In addition, it is explicitly stated that the introduction of foods regarded as potential allergens should not be delayed beyond the 6 months of age. Additionally, the guideline highlights the importance of responsive feeding, that is being sensitive to the child's cues of hunger and satiety and acting accordingly.



Regarding the way of introduction of solid foods, Uruguayan national guidelines follow recommendations from the WHO, which state that feeding should start with purees and gradually increase the consistency following the child's development of chewing and swallowing abilities^(5,38). An alternative approach to the introduction of solid foods, known as baby-led weaning, was introduced in the UK in the early 2000s and has gained popularity in the last two decades⁽³⁹⁾. In the baby-led weaning approach, instead of spoon-feeding soft purees, infants are rather encouraged to self-feeding table foods in the form of soft small pieces⁽³⁹⁾.

Materials and methods

Participants

Participants were recruited during a National Pediatrics Conference, organised by the Uruguayan Society of Pediatrics, which was held in Montevideo in October 2019. A stand was placed at the conference lobby, and attendees were invited to complete a short self-administered questionnaire during conference breaks. The questionnaire was completed by 277 people, of which sixty-five were nurses, medicine students or paediatric residents. For this study, only data from the 212 participants who reported to be paediatricians were considered. A summary of the characteristics of the participants is provided in Table 1. The large proportion of female participants responds to the population paediatricians in Uruguay (90% of graduated paediatricians between 2011 and 2014 were female)⁽⁴⁰⁾. All participants signed an informed consent form before completing the questionnaire and did not receive any compensation.

Procedure

Considering that the onset of complementary feeding is mostly aligned with the recommendations^(32,33), the study

was focused on the types of foods recommended to introduce, delay and avoid. The questionnaire, presented on paper ballots, comprised five main questions related to complementary feeding. The first question was a word association task about the first foods of a baby, which was not included in the present research. The word association task was followed by four open-ended questions: (i) *Which food would you recommend to begin complementary feeding?* (In Spanish: *¿Con qué comida recomendaría comenzar la alimentación complementaria?*); (ii) *Which foods are the most important in the first meals?* (In Spanish: *¿Qué alimentos son los más importantes en las primeras comidas?*); (iii) *Which foods would you recommend for delayed introduction during complementary feeding?* (In Spanish: *¿Qué alimentos recomendaría introducir tardíamente durante la alimentación complementaria?*); (iv) *Which foods and beverages would you recommend to avoid during the first meals?* (In Spanish: *¿Qué alimentos y bebidas recomendaría evitar en las primeras comidas?*). Questions (ii), (iii) and (iv) were followed by an extra open-ended question asking *Why?*

The final part of the questionnaire consisted of a series of questions to characterise the sample, including age, gender, profession, years of experience and type of health facility in which they work (public, private or both).

Data analysis

Participants' responses to each of the open-ended questions were analysed separately using content analysis based on inductive coding⁽⁴¹⁾. Two researchers with previous experience in content analysis coded responses into categories as they emerged from the data, and the final categories were established by consensus. Categories mentioned by at least 2 participants (1%) were retained for further analysis, and all responses provided by a single participant were coded together in a category named *others*. Data analysis was performed in Spanish. Category names and examples of each category were translated to English for publication.

The percentage of participants who provided responses coded with each of the identified categories was computed. For each of the questions, the χ^2 test was used to explore whether the frequency of mention of responses related to the different categories differed according to paediatricians' years of experience and type of health facility in which they worked. Statistical analysis was performed in R version 4.0.0⁽⁴²⁾.

Results

The frequency of mention of the categories identified in the content analysis for each of the questions is shown in Tables 2–5. Results are presented at the aggregate level

Table 1 Characteristics of the participants of the study (n 212)

Characteristics	Number of participants	Percentage of participants
Gender		
Male	15	7
Female	197	93
Age (years)		
26–35	59	28
36–45	76	36
46–55	47	22
56–67	30	14
Years of experience		
0–5	66	31
6–10	55	26
11–20	57	27
More than 20	34	16
Type of health facility		
Public	17	8
Private	84	40
Both	111	52

Table 2 Percentage of participants who provided responses coded in each of the categories identified in the content analysis for the question 'which food would you recommend to begin complementary feeding?'

Category	Examples	Frequency of mention*	
		Number of participants	Percentage of participants
Pureé	Pureé, Pureed vegetables, pureed fruits and vegetables, mashed food	107	51
Vegetables	Vegetables, pumpkin, potato, carrots	89	42
Fruits	Fruits, apple, banana, pear	82	39
Meat	Meat, red meat, white meat, chicken, fish, liver	57	27
Cereals	Cereals, grains, flour	14	7
Gradual	Gradual, progressive, one at a time	12	6
Polenta/Pasta/Rice	Polenta, rice, pasta, corn	11	5
Oil	Oil	10	5
Everything	All, all food groups, complete feeding	8	4
No additions	Without salt, no sugar,	8	4
Dairy	Dairy, yogurt, custards	6	3
Soft/Minced	Minced meat, chopped meat, soft consistency	5	2
Specific nutrients	Carbohydrates, proteins, flourine	4	2
Variety	Varied, different vegetables, diverse meats	4	2
Foods to avoid	No honey, no pulses, without seeds, no gluten	4	2
Water	Water	3	1
Lunch	Lunch	3	1
Home-made	Home-made, foods cooked at home	3	1
Savoury	Start with savoury	3	1
Mixed (sweet/savoury)	Mixed (sweet/savoury), sweet and savoury puree	3	1
Baby-led weaning	BLW, Baby-led weaning	3	1
Allergy caution	No allergens, provided no allergy history	3	1
Others†	According to family habits, at 6 months, cooked, undercooked, orange juice, four meals, legumes, breast-feeding	12	6

*Percentages do not sum up 100 % because some responses were coded with more than one category.

†Includes responses provided by a single participant.

Table 3 Percentage of participants who provided responses coded in each of the categories identified in the content analysis for the question 'which foods are the most important in the first meals?'

Category	Examples	Frequency of mention*	
		Number of participants	Percentage of participants
Vegetables	Vegetables, pumpkin, lettuce	148	70
Meat	Meat, red meat, white meat, chicken, fish, liver	134	63
Fruits	Fruits, banana, orange, citrus	133	63
Cereals/Tubers	Cereals, tubers, potato, grains, flour	49	23
Carbohydrates	Carbohydrates, hydrates of carbon	26	12
Proteins	Proteins	24	11
Everything	All, all food groups, complete feeding	15	7
Variety	Varied, variety of vegetables, variety of textures	15	7
Dairy	Dairy, cheese, milk, cow milk	13	6
Minerals	Minerals, rich in Fe, fluorine, Ca	13	6
Pureed/Soft/Minced	Puree, minced meat, ground beef, semisolid, not hard	11	5
Water	Water	10	5
Oil	Oil	9	4
Fats	Fats, essential fatty acids, <i>n</i> -3	7	3
Vitamins	Vitamins	6	3
Natural	Natural, no preservatives, no colourings	5	2
No addition of salt and sugar	Without salt, no sugar,	4	2
Legumes	Legumes	3	1
Egg	Egg	3	1
Breast milk	Breast milk	3	1
Energy	Energetic food, calories	3	1
Fibre	Fibre	3	1
Home-made	Home-made, foods cooked at home	3	1
Hedonic	Pleasant flavour, pleasant texture, palatability	3	1
Others†	Raw, cooked, fresh, in season, easy to manipulate, healthy	13	6

*Percentages do not sum up 100 % because some responses were coded with more than one category.

†Includes responses provided by a single participant.

**Table 4** Percentage of participants who provided responses coded in each of the categories identified in the content analysis for the question 'which foods would you recommend for delayed introduction during complementary feeding?'

Category	Examples	Frequency of mention*	
		Number of participants	Percentage of participants
Allergens	Allergens, allergenics, those that cause allergy	58	27
Fish and seafood	Fish, seafood	46	22
Red berries	Strawberry, red berries	40	19
Kiwifruit, citrus	Kiwifruit, citrus, orange, fruits rich in vitamin C	39	18
None	None, everything can be included from the beginning	37	17
Processed/ultra-processed	Processed, ultra-processed, industrialised, manufactured	28	13
Egg	Egg	22	10
Allergy history	Take into account family allergy history, intolerance, allergies	21	10
Leafy greens	Leafy greens, spinach, chard	17	8
Nuts	Nuts, peanuts	16	8
Tomato	Tomato	14	7
Cereals, flour	Cereals, gluten, bread, baked goods, flour	13	6
Sugar, sugary products	Sugar, sugary products, sweet foods	13	6
Dairy	Cow milk, dairy	8	4
Salt, salty products	Salt, salty products	8	4
Legumes	Legumes, lentils	6	3
Honey	Honey	6	3
None among the healthy ones	Everything from the beginning provided they are healthy, among the recommended foods	5	2
Beetroot	Beetroot	5	2
Nitrites	Nitrites, foods rich in nitrites	4	2
Meat	Meat	4	2
Processed meat products	Processed meat products	4	2
Fried	Fried foods	4	2
Candies	Candies	3	1
Foods poor in nutrients	Foods poor in nutrients, soups	2	1
Others†	Juices, textures difficult to process, starchy foods, spicy, fatty foods	8	4

*Percentages do not sum up 100 % because some responses were coded with more than one category.

†Includes responses provided by a single participant.

Table 5 Percentage of participants who provided responses coded in each of the categories identified in the content analysis for the question 'which foods and beverages would you recommend to avoid during the first meals?'

Category	Examples	Frequency of mention*	
		Number of participants	Percentage of participants
Sweetened beverages	Sweetened beverages/juices, soft drinks, artificial juices, soda	132	62
Processed/Ultra-processed	Ultra-processed, processed, industrialised, artificial, packaged, canned, not home-made	86	41
Sugar, sugary products	Sugar, sugary products, foods with high sugar content	38	18
Salt, salty products	Salt, salty products	33	16
Juices/smoothies	Juices, fruit juices, smoothies	32	15
Additives	Colourings, preservatives, non-energetic sweeteners	18	9
Fried food	Fried foods	16	8
Natural "allergenic" foods	Allergens, fish, tomato, strawberry, kiwi, eggs	11	5
Beverages different to water	All beverages different to water	10	5
Processed meat products	Processed meat products	9	4
Snacks	Snacks	8	4
Candies, alfajores‡	Candies, alfajores, chocolate	7	3
Other natural foods	Chard, spinach, meat, legumes, cow milk	6	3
Other processed products	Soy milk, baked goods, cookies, gelatin	5	2
Fats	Fats, saturated fats, trans fats	5	2
Honey	Honey	4	2
Spicy food	Spicy food	4	2
Soups	Soups, broths	4	2
Nuts, peanuts	Nuts, peanuts	3	1
None	None	2	1
Others‡	Stews, mate, coffee, tea, alcohol	4	2

*Percentages do not sum up 100 % because some responses were coded with more than one category.

‡Alfajor is a traditional product in Uruguay. It is a sweet cookie sandwich filled with a layer of dulce de leche (a traditional type of sweetened condensed milk), usually covered with chocolate or meringue.

‡Includes responses provided by a single participant.

as no significant differences were found in the frequency of mention of the categories in any of the questions according to paediatricians' years of experience or type of health facility in which they worked (all P -values ≥ 0.157). In the following sections, the main results are presented.

Foods recommended to begin complementary feeding

A total of twenty-three categories were identified in the content analysis of the responses to the first question, related to paediatricians' recommendations to start complementary feeding. As shown in Table 2, the most frequently mentioned categories were *pureé* (51%), *vegetables* (42%), *fruits* (39%) and *meat* (27%). Other foods were mentioned by a lower percentage of participants including: *cereals* (7%), *polenta/pasta/rice* (5%), *oil* (5%), *dairy* products (3%) and *water* (1%). A small percentage of paediatricians mentioned in their responses that all food groups are recommended to begin complementary feeding (*everything*, 4%), while some of them mentioned *specific nutrients* rather than foods (2%). Also, few participants included references to *variety*, the preference of *homemade* food with *no additions* of salt and sugar, recommendations on starting complementary feeding with *savoury* or with *mixed (sweet/savoury)* foods and during *lunch* (Table 2).

Some of the responses were related to the approach for introducing complementary foods to infants. As previously mentioned, the traditional approach of introducing pureed food was overwhelmingly dominant (*pureé*, 51%; *soft/minced* foods, 2%). Only 1% of the paediatricians (3 out of 212) mentioned *baby-led weaning*. Besides, 6% of the paediatricians indicated in their responses that they recommended a *gradual* introduction of complementary foods.

Foods regarded as the most important in the first meals of a baby

There was high agreement among the paediatricians on the foods which are deemed the most important in the first meals of a baby (Table 3). *Vegetables* were mentioned by 70% of the participants, followed by *meat* (63%) and *fruits* (63%). *Cereals* and *tubers* were mentioned in 23% of the responses, and more than 10% of paediatricians mentioned *carbohydrates* and *proteins*. Other food groups (e.g. *dairy*, *water*, *oil*) as well as other nutrients (e.g. *minerals*, *fats* and *vitamins*) were mentioned by a lower percentage of participants (Table 3). The consideration that all food groups are important in the first meals of a baby was explicitly mentioned by 7% of the paediatricians, while the same percentage of responses stressed the importance of *variety*. A small percentage of participants mentioned other characteristics of foods regarded as important, including *pureed*, *soft* or *minced* (5%), *natural* (2%), with *no addition* of salt or sugar (2%) and *home-made* (1%).

When asked to explain the reasons underlying their responses, most participants included references to nutritional composition, including *nutritional contribution* (32%), *vitamins* (20%), *iron* (20%), *minerals* (10%), *protein* (10%), *energy* (15%), *micronutrients* (6%), *macronutrients* (2%), *carbohydrates* (4%) and *fiber* (4%) content. Concepts such as *diet quality* (e.g. 'healthy foods', 'adequate' and 'balanced') and *variety* were mentioned by 9% and 8% of paediatricians, respectively. Categories related to physical health were also mentioned in the reasons for considering certain foods as important, such as the relevance of those foods for *child growth and development* (9%) and for *anaemia prevention* (8%), *easy to digest* (4%) and *neurological development* (2%).

Moreover, some of the paediatricians indicated in their responses reasons such as providing different *textures* (9%) and *flavours* (8%), making the meals *pleasurable* (11%), and that the foods regarded as important are relevant for *learning to eat* (11%).

Some of the reasons for regarding certain foods as important were clearly related to specific foods. In particular, the great majority of responses including as reasons *iron content*, *protein content* and *anaemia prevention* were provided by participants who had considered *meat* as one of the most important foods (95, 100 and 88%, respectively).

Foods recommended for delayed introduction

Table 4 presents the twenty-six categories identified in the content analysis of responses to the question: *what foods would you recommend for delayed introduction during complementary feeding?* Only 17% of the paediatricians explicitly answered that *none* of the foods should be introduced with delay, and 2% stressed the fact that this recommendation was for healthy foods. Examples of such responses are: '*none of the suggested ones (fruits, vegetables, cereals, meat, dairy)*' and '*among the healthy ones, none*'. The main reason for this recommendation was that *children should eat everything*.

As shown in Table 4, 27% of the paediatricians indicated that they would recommend the delayed introduction of *allergens*, while foods like *fish and seafood*, *red berries* and *kiwifruit and citrus* were mentioned in 18–22% of responses. Other natural foods, such as *egg*, *nuts*, *tomato* and *cereals/flour*, were mentioned by 6–10% of the paediatricians. *Allergy prevention* was the main reason that paediatricians mentioned to justify the delayed introduction of all these foods and was mentioned by 49% of paediatricians. *Leafy greens* were indicated for delayed introduction by 8% of participants, mainly due to their *nitrite content* and risk of *kidney overload* and *MetHb syndrome*.

Processed and *ultra-processed* foods were mentioned as foods for delayed introduction by 13% of paediatricians, whereas *sugar* or *sugary products*, and *salt* or *salty products* were included in 6% and 4% of responses,



respectively. Various reasons for these recommendations were identified in the content analysis of the *why* question, but they were mentioned by a small percentage of participants. Examples are: *not healthy/nutritive* (5%), *high sugar content* (3%), *obesity/overweight prevention* (3%), *disease prevention* (3%), *high fat content* (2%) and *cardiovascular disease prevention* (2%). The rest of the identified categories were mentioned in <5% of the responses (Table 4).

Foods and beverages that should be avoided in the first meals of a baby

The twenty-one categories identified in the content analysis of responses about foods and beverages that should be avoided in the first meals of a baby are shown in Table 5. A large percentage of paediatricians indicated that they recommend to avoid *sweetened beverages* (62%), such as 'artificial juices' and 'soft drinks'. *Processed* and *ultra-processed* products were mentioned in 41% of the responses. In fact, 15% of the paediatricians literally wrote down the term *ultra-processed* in their answers. *Sugar* and *sugary products* (18%), *salt* and *salty products* (16%) and *juices/smoothies* (15%) were also among the foods and beverages that paediatricians recommend to avoid in the first meals of a baby.

The recommendation of avoiding food *additives* and *fried food* was mentioned in 8% of paediatricians' responses. The rest of the identified categories were mentioned by 5% or less of the participants. Some of these categories included references to specific processed or ultra-processed foods, such as *processed meat products* (4%), *snacks* (4%) and *candies* and *alfajores* (3%). *Other natural foods* (3%) and *natural 'allergenic' foods* (foods that had been described as allergenic in the previous responses, 5%) were also mentioned by some paediatricians.

When asked to provide the reasons why some foods and beverages should be avoided, many of the responses indicated that these items are *harmful* (18%), that they have *no nutritional contribution* (16%), are *not recommended* (8%) and *unnecessary* (6%). Many participants also mentioned the *high sugar* (18%), *high caloric* (16%), *high sodium* (9%) and *high fat* (8%) content, as well as the presence of *food additives* (12%).

Paediatricians also mentioned as reasons for their recommendations the prevention of *overweight and obesity* (8%) and *non-communicable diseases* (5%), to *encourage good eating habits* (6%) and to *prevent that children get used* (5%) to consuming the foods and beverages that should be avoided. *Allergy prevention* (8%) was also mentioned in 8% of responses.

Discussion

Paediatricians are a key source of information about complementary feeding for parents and caregivers. The present

work explored the recommendations about complementary feeding provided by paediatricians to parents and caregivers in Uruguay. Results showed that although the recommendations were not completely inadequate, they did not fully align with the guidelines provided by the Uruguayan Ministry of Health and by international organisations^(5,37,38).

Results from the present study suggest that recommendations tend to be based on a rigid food introduction sequence, despite the fact that national guidelines do not recommend any set order for the first meals⁽³⁷⁾. Soft pureed vegetables were regarded as the most appropriate foods to start complementary feeding, as well as the most important food during the first meals. Similar results were reported by a recent study conducted in France⁽⁴³⁾. Interestingly, the variety of vegetables mentioned by the paediatricians was limited and mainly stressed pumpkin, potatoes and carrots. Additionally, specific references to variety were mentioned by a minority of respondents. National guidelines stress the importance of food variety since the beginning of complementary feeding⁽³⁷⁾. Exposure to variety has been associated with vegetable consumption in the first 3 years of life⁽⁴⁴⁾. Considering that vegetable consumption among children remains low in Uruguay⁽³⁵⁾, further emphasis on variety in the discourse of paediatricians could have a positive impact on the diets of Uruguayan children.

Although meat was regarded as one of the most important foods during the first meals due to its Fe content and its contribution to the prevention of Fe deficiency (anaemia), it was not frequently mentioned as one of the foods recommended at the start of complementary feeding. The relevance of the early introduction of Fe-rich foods, such as meat, has been widely reported in literature⁽⁴⁵⁾. In fact, national guidelines include a chapter stressing the importance of including meat from the start of complementary feeding⁽³⁷⁾. However, paediatricians still seem not to recommend meat as the first food to be introduced during complementary feeding. Instead, they tend to recommend its introduction after children have started to consume vegetable or fruit purees. The lack of emphasis on the early introduction of meat in the recommendations of paediatricians could potentially contribute to its late introduction among Uruguayan children. In this regard, a recent study conducted in Uruguay reported that the prevalence of anaemia among 8–12 months children was 18.3%, whereas late introduction of meat was registered in 66% of the children⁽³⁴⁾.

Reasons underlying the recommendation of specific foods were mainly related to the nutritional needs of children and food composition. On the contrary, references to pleasure, the development of oral skills, food preferences and food habits were only mentioned by a minority of the participants. A more frequent inclusion of references to pleasure and food preferences in the discourse of paediatricians could contribute to the promotion of optimal complementary feeding practices, as postulated by Pettigrew for the promotion of healthy eating⁽⁴⁶⁾.

Emphasis on pureed and soft foods was observed, particularly when participants were asked to describe the start of complementary feeding. This suggests that spoon-feeding is the most frequently recommended mode of introduction. On the contrary, baby-led weaning or auto-weaning was only mentioned by a small percentage of participants. This points out that traditional approaches to complementary feeding are still predominant in the recommendations of Uruguayan paediatricians, whereas baby-led weaning still has a marginal role. Similar results have been reported in previous studies conducted in different countries^(43,47–49). This result is probably related to the fact that baby-led weaning has not been introduced as an alternative recommended practice in the national and international guidelines on complementary feeding^(5,37,38). However, considering that the popularity of baby-led weaning is increasing worldwide, paediatricians should be aware of its benefits (e.g. healthier eating patterns) and risks (e.g. low iron intake) to provide appropriate counselling to parents^(50–53). In addition, references to the need to expose the child to a variety of textures during complementary feeding were also limited to a small percentage of paediatricians.

Delayed introduction of allergenic food was a highly prevalent recommendation among paediatricians, in line with traditional recommendations⁽³⁰⁾. Fish, citruses, kiwi-fruit, strawberry and eggs were frequently mentioned, in agreement with the fact that they have been traditionally maligned foods, although there is no scientific evidence to delay their introduction^(28,30,54). In recent years, the recommendation to delay the introduction of common allergens has been modified by early introduction, as new evidence has suggested a potential reduction in the risk of allergic responses^(54–58). Although national guidelines recommend the early introduction of potentially allergenic foods, a great proportion of paediatricians seemed to have not incorporated the update in their practice. Lack of familiarisation with this specific recommendation has been reported by other authors^(27,43,59).

Sweetened beverages were identified as the main food and beverages to avoid during the first meals, in agreement with current recommendations and their high consumption among Uruguayan children^(28,30,35,37). Processed and ultra-processed foods were the second most frequently mentioned category to avoid. However, only a minority of the participants explicitly referred to ultra-processed products. Most of the specific foods mentioned by participants are clearly associated with ultra-processed products, for example, sweetened beverages, processed meat products and snacks⁽⁶⁰⁾. However, other less obvious ultra-processed products frequently consumed by children, such as yogurt, milk desserts, and cookies, were not mentioned. This suggests the need to develop strategies to further familiarise paediatricians with the concept of ultra-processed products in order to facilitate their identification.

Finally, it is important to acknowledge the limitations from the present study. Paediatricians' recommendations on complementary feeding were explored using open-ended questions, which were mainly focused on foods and beverages recommended to introduce, delay or avoid. Thus, recommendations other than specific foods and beverages, such as variety, approach of introduction of complementary foods, references to pleasure and development of preferences and oral skills are probably underrepresented. Further research is needed to explore more in-depth paediatrician's recommendations on complementary feeding.

Conclusions

The recommendations about complementary feeding provided by paediatricians to parents and caregivers in Uruguay seemed to be not fully aligned with the guidelines provided by the Ministry of Health. Paediatricians tended to recommend a rigid food introduction sequence, characterised by the early introduction of soft pureed vegetables and fruits, followed by meat and the delayed introduction of allergenic foods. Although specific ultra-processed products were identified as the main category to avoid during the first meals, only a minority of the participants explicitly referred to ultra-processed products.

Results from the present study stress the importance of developing educational and communicational approaches with a strong interdisciplinary emphasis targeted at paediatricians to contribute to the uptake of updated recommendations regarding complementary feeding. Considering that paediatricians have been identified as a key source of information during complementary feeding, the aforementioned approaches could contribute to the promotion of optimal eating habits in early childhood. Further research should be conducted to explore how the recommendations provided by paediatricians influence the complementary feeding practices of parents and caregivers.

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