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Food neophobia - natural developmental stage or feeding difficulty? A study of children's behavior and parents' knowledge about children's neophobic behaviors

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Abstract

Background: An increasing number of parents report problems with feeding their children to dietitians. Failure to expand the diet or sudden discontinuation of a variety of foods makes them increasingly worried about their child's monotonous diet and mealtime behavior. The aim of this study was to assess parents' awareness of food neophobia and the attitudes and behaviors associated with it.

Material and method: The study was carried out using a questionnaire-based indirect survey technique using a web form (CAWI). A total of 224 adults (parents of preschool children) participated in the study. The research tool was an anonymous survey questionnaire consisting of three parts. In the last part, a scale concerning neophobic behavior was used. The study group consisted mainly of mothers - 78.3% (n=159); fathers - 21.7% (n= 44).

Results: In the study group, no child scored several points indicating a very high probability of neophobia. A high probability is possible in 28 children (13.79%), a possible predisposition to the occurrence of food neophobia exists in 66 children (32.51%), while 109 children (53.69%) do not present a predisposition to food neophobia.

Conclusions: The study did not show children's behaviors reported by parents that could indicate a very high probability of food neophobia in their children. Moreover, the results of the questionnaire of neophobia scale indicate that this problem in the studied population concerns about 10% of the examined children.

Keywords: food neophobia; parents; children; child nutrition; neophobic behavior

Background

An increasing number of parents come to dietitians with problems concerning feeding their children. Failure to expand the diet or sudden discontinuation of various foods makes them increasingly worried about their child's monotonous diet and eating behavior. Eating behavior is very individual and depends on many factors. In the case of young children, significant influences on feeding include the child's readiness to accept solid foods, acquired oral-motor skills, and taste preferences. In the case of parents, it is important to understand that their children are in the learning stage and are just developing their taste preferences and self-regulatory processes, as well as acquiring the skills to accept solid foods.

Feeding would seem to be a simple activity. However, it is a complex process that requires the interaction of the central nervous system with the peripheral nervous system, a properly functioning oropharyngeal mechanism, an efficient respiratory system, and a properly functioning digestive system [1]. During feeding, coordination of the muscles and structures in the oral cavity along with the cranial and spinal nerves is essential. This is essential for proper coordination of the lips, jaw, cheeks, tongue, and soft palate [2]. To prevent aspiration of ingested food into the airways, it is necessary to coordinate the functions of sucking - and, in older children, solid food intake, breathing, and swallowing. The whole of these complicated processes, in young children who are still being fed by their parents or caregivers, additionally requires appropriately coordinated interactions between them. Otherwise, feeding problems may occur [1].

The terminology of feeding, eating, and nutrition problems are quite extensive. Food selectivity, food neophobia, picky eating, food aversion, and food avoidance/restriction are all terms that have one common denominator for parents - "my child does not eat" [2]. However, there is much more to this term than the mere fact of not eating enough (in the parents' opinion), which is very often heard by dietitians in their offices [3].

The terms that describe problems with food intake are not the same. Some of these terms include eating and nutrition disorders, some include difficulties in food intake of various etiologies, and some refer to behaviors that are a natural developmental stage in the life of a young person [2]. Incorrectly interpreted - both by parents and specialists - they introduce chaotic behavior which, inadequate to the condition, may cause serious health consequences or reinforce undesirable behaviors [3].

One of the child's eating behaviors that cause parents great concern is food neophobia. Food neophobia is characterized by the child's rejection of foods that are new or unfamiliar, both visually and in terms of taste [4]. Neophobic behavior can appear to a small degree as early as the first year of life, but most often intensifies between 18 and 24 months of age, which is related to the child's increased mobility. This is a stage that should eventually resolve spontaneously [5]. It is worth noting that the period of food neophobia overlaps, so to speak, with the time when the child's rate of growth and development begins to slow down. It is also the period when the child begins to express its autonomy, not infrequently during a meal. According to the Chatoor classification [6], food neophobia is included in the group of feeding disorders - selective eating, while selective eating is included in a broader group that is sensory food aversions.

Feeding disorders occur when a child refuses or avoids eating and is unable to eat due to behavioral disorders, neurological disorders, anatomical abnormalities of the gastrointestinal tract, co-morbidities of the cardiovascular system, respiratory system, genetic, metabolic, or allergic diseases [1]. Feeding disorders consequently lead to deterioration of health as a result of chronic insufficiency of nutrients and energy necessary for development. Feeding disorders may require pharmacological treatment and often parallel therapy, carried out by a multidisciplinary team that should include a pediatrician, a psychologist, and a dietitian [1].

Food neophobia, which is a natural stage of development, requires neither treatment nor therapy if it runs its natural course. However, it requires education from a specialist and understanding on the part of the parent. Then, without reinforcing undesirable parental behaviors, this stage passes spontaneously. To some extent, the conceptualization of feeding disorders, feeding difficulties, and feeding behaviors in children under 3 years of age were tackled by Kerzner et al [5]. They were the first to include the feeding style used by parents as a possible cause of feeding difficulties and to draw attention to a very important aspect - the misperception of the child's developmental behavior, and treat it as a feeding disorder requiring the intervention of a specialist. This new insight allows both specialists and parents to distinguish between what requires intervention in the form of treatment or therapy and what is still the developmental norm [5].

Therefore, the aim of the study was to assess parents' awareness of food neophobia and related attitudes and behaviors. The essence of the study was to answer the following research questions:

1. Are parents' attitudes correct towards modern trends in child nutrition?
2. Do parents have a minimum knowledge of the problem of food neophobia and do they know what this phenomenon entails?
3. Is the problem of neophobic behavior present among the children of the parents surveyed?

Material and methods

Course of study

The study was carried out by questionnaire method, using the indirect survey technique using a web form (CAWI). A total of 224 adults (parents of preschool children) participated in the study. Due to significant data gaps or participants not meeting the study eligibility criteria, data from 203 correctly completed survey questionnaires were included in the final analyses. The study period covered the months of January-May 2022.

Before the actual study, a short pilot (30 participants) was conducted to test the validity and acceptability of the questions asked. The pilot found that 95% of the questions in the questionnaire were received correctly - the κ (Kappa) coefficient for 81% of the questions scored 0.87 - very good agreement; the remaining 14% $\kappa=0.71$ - good agreement. Questions reported as incomprehensible or problematic (5%; $\kappa=0.52$) were changed to those suggested by the pilot group or deleted.

Characteristics of the study population

The study group consisted mostly of mothers - 78.3% (n=159); fathers - 21.7% (n=44). The age of the respondents in the study group was 22-46 years. The largest group were people under 29 years of age - 46.8% (n=95) and people aged between 30 and 39 years - 38.9% (n=79). The majority of respondents had secondary education (46.8%; n=95), followed by higher education (39.8%; n=80). People over 40 years of age represented 14.3% (n=29) of the total study population. All study participants came from cities in the Silesian Voivodship (Poland).

Eligibility criteria

The subjects gave their informed consent to participate in the study and the questionnaire was made available only when approval to participate in this study was obtained. The group selection criteria took into account the fact that the respondents were of legal age, had at least one preschool child, and had no formal knowledge of behavioral determinants of nutrition (education or profession related to the subject of nutrition, treatment, and upbringing of children and adolescents).

The study was conducted by the Helsinki Declaration and the Act on the Medical and Dental Profession. A decision was obtained from the appropriate Bioethics Committee operating at the Medical University of Silesia in Katowice to conduct a study on parents' knowledge on expanding the diet of infants (PCN/CBN/0052/KB/101/22).

Research tool

The research tool was an anonymous questionnaire consisting of three parts: personal (containing data such as the respondent's age and gender, place of residence, education, number of children, type of feeding after birth, age, and anthropometric data of the last child; food neophobia awareness, where questions related to the ability to define the concept of food neophobia and factors shaping it were included. In the last part, a scale on neophobic behavior was used.

This scale allowed us to ascertain a person's general predisposition towards neophobia. Each respondent was asked to determine their child's attitude to the statements listed on the scale according to a 5-point Likert scale with marginal marks 'Yes, always, 'Yes, it happens often', 'Yes, it happens sometimes, 'Yes, but it rarely happens' to 'No, never. The average of the responses formed the basis for determining the level of neophobia among respondents' children. The higher the score, the lower the basis for a finding of food neophobia. The scale included 9 questions of which 8 were scored from 1-5 points, while 1 was scored 0/3 points. The maximum number of points on the scale is 43 points. The interpretation of the scale was presented as follows: 8-20 points very high likelihood of food neophobia, 21-30 points high likelihood of food neophobia, 31-37 points possible occurrence of food neophobia, 38-43 points no predisposition to food neophobia. The reliability coefficient for the tool in the study sample was estimated at 0.84 α -Cronbach's level.

To avoid bot/fake responders, security features in the form of CAPTCHA codes were applied to the web form. In addition, the questionnaires were disseminated using discussion forums for parents available through widely available social media.

Statistical analyses

Statsoft Statistica 13.0 program was used in the statistical analyses. Chi test² with r-Pearson correlation coefficient was used in the statistical analyses. The level of statistical significance was estimated at $p=0.05$.

Results

The respondents were parents of 112 girls (55.2%) and 91 boys (44.8%). The age of children reported by parents was sorted into the following ranges: 0-2 years 13.3% (n=27); 3-4 years 51.7% (n=105); 5-6 years 35.0% (n=71). Children's height data were divided into three groups - children up to 98 cm, children 100 to 119 cm, and children 120 and over. After analysis, children up to 98 cm accounted for 18.7% (n=38), children 100 to 119 cm accounted for 57.2% (n=116) and children 120 and over accounted for 24.1% (n=49). A similar procedure was adopted for the grouping of children's body weight: children up to 10 kg, children from 11 to 20 kg, and children from 21 and more kg. In the study population, children up to 10 kg accounted for 6.9% (n=14), children 11 to 20 kg accounted for 61.1% (n=124) and children 21 and over kg accounted for 32.0% (n=65).

Based on the study conducted, it can be concluded that 77.3% (n=157) of the respondents believe that they know what food neophobia is. In addition, the vast majority of parents (68.5%, n=139) know at what age eating behaviors indicative of neophobia may occur in a child. However, there is a group of people (11.3%, n=23) who do not know at all what the phenomenon of food neophobia is related to.

Among the factors influencing the development of neophobia, parents mentioned mainly biological, environmental, and psychological factors 42.4% (n=86), only environmental and psychological factors (40.4%, n=82), or biological and environmental factors (6.8%, n=13). Again, there is a group of people (10.8%, n=22) who do not know in this regard.

Another part of the study looked at parents' behavior towards their children's nutrition. This included whether parents regulate the number of snacks consumed by their children (sweet and salty foods and drinks). It was shown that to a large extent parents pay attention to the snacks consumed by their children - 18.72% (n=38) do it always; 60.59% (n=123) do it often; 3.94% (n=8) do it occasionally; 1.48% (n=3) do not do it at all. It was also noted that 45.32% (n=92) of parents approve of their children snacking (rarely) between meals, 12.32% (n=25) sometimes, 3.94% (n=8) often and 0.99% (n=2) always. However, there is a group of parents (37.44%, n=76) who do not allow this behavior in their children (Table 1).

Table 1. Characteristics of parents' behavior towards their children's nutrition in the study group of children (N=203)

	Not		Yes. but it rarely happens		Yes. it happens sometimes		Yes. this often happens		Always	
	N	%	N	%	N	%	N	%	N	%
Do you control the number of sweets (sweets. biscuits) and salty snacks (sticks. crackers) that your child eats?	3	1.48	8	3.94	31	15.27	123	60.59	38	18.72
Do you pay attention to what drinks your child consumes?	2	0.99	8	3.94	20	9.85	124	61.08	49	24.14
Are you trying to develop good eating habits in your child by. among other things. eating healthily yourself?	3	1.48	10	4.93	31	15.27	125	61.58	34	16.75
Do you talk to your child about healthy eating habits?	4	1.97	11	5.42	35	17.24	120	59.11	33	16.26
Do you allow your child to snack between meals?	76	37.44	92	45.32	25	12.32	8	3.94	2	0.99
Do you let your child decide what to eat?	42	20.69	24	11.82	107	52.71	26	12.81	4	1.97
Do you give your child so-called rewards e.g. good behavior. eating everything from the plate. etc.??	137	67.49	33	16.26	22	10.84	10	4.93	1	0.49

As far as the promotion of healthy eating habits is concerned, parents mainly choose the path of promoting healthy eating habits in their child through their example - always done by 16.75%, n=34; often done by 61.58%, n=125. The remaining percentage does not use any methods supporting the formation of healthy eating habits in their child or does it selectively and occasionally. In addition, it was noted that parents in the area of formation of correct habits try to give the child a choice of what to eat. Such behavior is appropriate for 52.7% (n=107) of respondents. This phenomenon is also related to whether parents are willing to prepare a new meal if the child does not feel like eating the currently prepared one - here 23.65% (48) state that such behavior happens in their home. This is also reflected in the result that 56.65% (115) of parents do not allow their children to under-eat the meal they have prepared (Table 2).

Based on the prepared scale, predisposition to food neophobia was assessed (Table 3). In the study group, the range of scores was 21-43 points (with a maximum of 43 points), the mean was 36.02 ±4.23 points, and the median was 38 points. In the study group, no child scored several points indicating a very high probability of neophobia. A high probability is possible in 28 children (13.79%), a possible predisposition to the occurrence of food neophobia exists in 66 children (32.51%), while 109 children (53.69%) do not present a predisposition to food neophobia.

Table 2. Characteristics of neophobic behavior in the examined group of children (N=203)

	Not		Yes, but it rarely happens		Yes, it happens sometimes		Yes, this often happens		Always	
	N	%	N	%	N	%	N	%	N	%
When your child is reluctant to eat a prepared meal or does not like it, do you decide to prepare another one?	125	61,58	48	23,65	13	6,40	14	6,90	3	1,48
Do you allow your child to not eat everything on their plate?	115	56,65	36	17,73	21	10,34	23	11,33	8	3,94
Do you offer your child to try new foods/foods?	3	1,48	4	1,97	25	12,32	132	65,02	39	19,21
Do you try to ensure that your child has a varied menu and that their meals are varied?	0	0,00	4	1,97	24	11,82	135	66,50	40	19,70
Does it happen that your child does not trust new products/foods?	36	17,73	108	53,20	35	17,24	20	9,85	4	1,97
Does it happen that your child, not knowing what he or she is eating, refuses to eat it?	120	59,11	34	16,75	31	15,27	15	7,39	3	1,48
Is your child fussy about the products/foods you give them to eat?	127	62,56	30	14,78	30	14,78	12	5,91	4	1,97

When your baby finishes eating because he tells you he is full and hasn't eaten all of it, do you try to encourage him to eat more?	43	21,18	124	61,08	21	10,34	10	4,93	5	2,46
Does your child eat all the food you prepare for him/her?	15	7,39	3	1,48	29	14,29	135	66,50	21	10,34

Table 3. Predisposition to food neophobia among respondents' children according to the adopted neophobia scale N=203.

Range of mean	Level of food neophobia	Number of children n (%)
8 - 20 points	very high likelihood of food neophobia	0 (0%)
21-30 pts	high likelihood of food neophobia	28 (13.79%)
31 - 37 pts	possible predisposition to food neophobia	66 (32.51%)
38 - 43 pts	no predisposition to food neophobia	109 (53.9%)

Analyzing the results in terms of the risk of occurrence of food neophobia using the neophobia scale, no differences were observed in terms of gender ($p=0.11$), age of the examined children ($p=0.08$), and the number of children in the family ($p=0.61$). On the other hand, the relationship occurred between the education of the parent ($p=0.03$) and the fact of feeding with breast milk ($p=0.03$). The possibility of the occurrence of food neophobia was also confirmed by the analysis of the Neophobia Scale vs. the subjective opinion of the family whether the child is an immediate ($p=0.0000$). More often children of parents with higher education, children fed with breast milk for less than 6 months had a high probability of food neophobia (Table 4.).

Table 4. Interpretation of the neophobia scale taking into account different characteristics of the examined group of children, parents, and their families N=203

	Interpretation the scale of neophobia	No predisposition to food neophobia		Possible predisposition to food neophobia		High likelihood of food neophobia		Total	Pearson's Chi ² p=0.05
		N	%	N	%	N	%		
The whole group of children surveyed		109	53.69	66	32.51	28	13.79	203	
The sex of the children interviewed	Girl	66	58.93	35	31.25	11	9.82	112	p=0.11
	Boy	43	47.25	31	34.07	17	18.68	91	
Age of child tested	Less than 1 year	5	45.45	6	54.55	0	0.00	11	p=0.08
	1-2 years	7	43.75	7	43.75	2	12.50	16	
	3-4 years	66	62.86	26	24.76	13	12.38	105	
	5-6 years	31	43.66	27	38.03	13	18.31	71	

Parent's education	Basic	1	25.00	3	75.00	0	0.00	4	p=0.03
	Averages	60	64.52	24	25.81	9	9.68	93	
	Higher	32	41.56	29	37.66	16	20.78	77	
	Professional	16	55.17	10	34.48	3	10.34	29	
Number of children in the family	One child	28	45.16	24	38.71	10	16.13	62	p=0.61
	Two children	55	58.51	27	28.72	12	12.77	94	
	Three children	24	53.33	15	33.33	6	13.33	45	
	4 or more children	2	100.00	0	0.00	0	0.00	2	
Breast milk feeding	Not	10	71.43	3	21.43	1	7.14	14	p=0.03
	Yes. less than 6 months	27	39.71	26	38.24	15	22.06	68	
	Yes. more than 6 months	72	59.50	37	30.58	12	9.92	121	
Does the parent think the child is an eater	Not	107	58.79	60	32.97	15	8.24	182	p=0.0000
	Yes	2	9.52	6	28.57	13	61.90	21	

Discussion

In the past, the neophobic attitude towards food served to ensure the safety of humans, as omnivorous species, in an environment full of plants with toxic properties and dangerous bacteria that could reproduce in spoiled food [7]. In the modern world, neophobia is a mechanism necessary in the period of early childhood when the child gets to know the world also through the sense of taste, the attitude of distrust towards novelty protects the child from the danger of eating something potentially dangerous to health [8]. With the development of the child, biological instincts are masked by learned behaviors, therefore the neophobic attitude towards food begins to have negative effects, causing a reduction in the consumption of a variety of products, which may translate into diet quality [9]. Selective eating including food neophobia can lead to deficiencies in some key nutrients, especially vitamins and minerals [10]. In addition, the diets of children characterized by high levels of neophobia are poorly varied. Neophobic children eat less than the recommended amounts of vegetables, fruit, and dairy products [11]. Some studies indicate that neophobic children are less likely to meet the recommended standards of intake, especially about meeting the need for vitamin E [9]. In addition, children who eat only selected foods may not acquire certain eating skills promptly, especially if they eat only soft-textured foods [7]. When considering the negative health consequences of food neophobia, they should be considered in terms of lost potential health benefits resulting from a poor, poorly varied diet and, above all, eating too few vegetables and fruits compared to recommendations [9]. Food neophobia also gains importance in the context of the recently popularized concept of nutritional programming, understood as a long-term or life-long effect of a stimulus or signal affecting structures or functions of the organism at a critical period of development. It has been proven that the occurrence of factors such as malnutrition, deficiency, or excess of certain nutrients during so-called critical periods can reprogram the metabolism, thus leading to irreversible effects [12]. A review of publications shows that neophobic children have a very low intake of fruit and vegetables.

Most epidemiological studies prove the health-promoting effects of fruit and vegetable consumption [4]. Consumption of these products in the recommended amounts of 5 portions per day, reduces the risk of ischemic heart disease and stroke (by 30%), as well as lowers blood pressure, and reduces the risk of cataracts, asthma, and bronchitis in children and some cancers [13]. Of particular note are brassica vegetables, which contain sulforaphane, which has anti-cancer effects due to its high antioxidant activity [12]. In addition, an increase in the consumption of vegetables, in particular, can help children to maintain a healthy body weight. Neophobia is a big problem in the case of children with allergies or intolerances, and those who suffer from diseases in which it is necessary to follow a diet. These children are forced to follow a diet, and their attitude manifesting itself in reluctance to try new products hinders the introduction of dietary recommendations, which may have an impact on the course of the disease [11]. It is particularly noteworthy that a proper diet is not able to completely compensate for the previously lost opportunities for optimal physical and mental development until later in life. The assessment of the level of neophobia is important from the point of view of reducing the risk of the impact of a poor diet on the occurrence of diet-related diseases, as well as the possibility of modifying this attitude through nutritional education of children and parents [13].

A practical approach to the identification of feeding difficulties, by taking a very broad view of aspects related to organic and behavioral factors, makes it easier for professionals working in this area to correctly identify and classify the feeding problems with which anxious parents come to the practice [5].

The source of food neophobia can be traced back to evolution when a neophobic attitude protected mammals from consuming potentially poisonous food [14]. As an omnivorous species, to survive, humans had to distinguish between safe and poisonous food [15]. Although nowadays this ability has lost its value, it can still be observed in children around 2 years of age (sometimes earlier), when unfamiliar foods or foods served differently than before cause anxiety in the child, and a relative preference for familiar foods is evident [16].

Although neophobia is genetically determined, it is above all environmental factors that underlie individual differences in taste preferences [15]. The genetic factors influencing food choice have to do with taste receptors, which can influence the differential perception of sweet, umami, or bitter tastes, depending on differences in individual genes [16]. Thus, some children tolerate bitter-tasting green vegetables such as broccoli or cabbage more, others will not be bothered by them, and some will reject these foods at the mere sight of them [16].

Food preferences are highly variable, with the result that aversion to eating new foods and those less accepted may be reduced in the child. This is influenced by several different factors, which include the diet during pregnancy and lactation [17], or the mode of exposure and its repetition [16]. These are important factors that may indirectly influence feeding difficulties and the course of food neophobia, which, depending on individual characteristics, may proceed unnoticed.

One of the most important factors in the whole process of feeding is the feeding style used. As shown in the study by Meijing et al [18], the following factors mainly influenced the course of neophobia: urging the child to eat with a definite refusal from its side, unpleasant emotions during the meal (e.g. nervousness of the parent, stress, crying of the child), high level of neophobia in the mother. Similar conclusions were reached by de Oliveira Torres et al [19] in a systematic review of the literature, stating that the level of neophobia in children is influenced, among others, by the eating habits of parents, the inborn preference of children for sweet and salty taste, the inadequate consistency to the child's psychomotor skills, parental pressure during meals, failure to read signals concerning hunger and satiety, monotony in child nutrition and others.

The factors influencing food neophobia are very diverse. On the one hand, it is a natural stage in development; on the other hand, some factors can influence the perpetuation of inappropriate behaviors [18]. Therefore, if neophobic behaviors do not go away, and become more severe, appropriate intervention should be undertaken. As in the case of eating disorders, the patient should be managed by a team of specialists that should include, among others, a pediatrician/gastroenterologist, a clinical dietician, a neurologist, a psychologist, and a sensory integration therapist, a feeding therapist [19].

In the process of diagnosis related to feeding difficulties, the use of the Montreal Children's Hospital Feeding Scale (MCH-FS) may be helpful [20]. The child feeding-related MCH scale is the first scale of its kind to be used for screening children with feeding challenges, both for prevention and diagnosis [19]. It can be used as a very good tool to identify possible feeding difficulties in children from 6 months to 6 years of age. The MCH scale consists of 14 questions addressing issues related to the course of the meal, appetite assessment, meal duration, problems within the orofacial sphere, or the parent's perception of the child's correct weight and height [20]. Each question is answered on a 7-point Likert-type scale [21]. The score obtained after an appropriate conversion of points (there is no Polish version) allows for interpreting difficulties on three levels: mild difficulties, moderate difficulties, and severe difficulties [21].

In practice, the following may also be helpful: Food Neophobia Scale for Children (FNCS) [22] used to determine the level of food neophobia in young children, or the Food Situations Questionnaire (FSQ) [23] used for self-assessment of food neophobia in children aged 7 to 12 years. However, these have not been translated into Polish. Regardless of the reasons, a child with food intake difficulties should be surrounded by a full dietary assessment. The assessment should take into account the dynamics of the nutritional status, the current nutritional value of the diet, and the nutritional and medical history. The MCH scale can be used for the interview and the interview can be expanded to include the child's questions based on the problem initially described.

A high prevalence of food neophobia and pickiness was previously reported among children aged 3 to 7 years in a study by Hafsrud G..s et al [24] In particular, a high prevalence of picky eating and food neophobia was previously reported in China (59%) and the United States (60%), respectively [25]. In contrast, a study conducted in the Netherlands showed a very low prevalence of pickiness (5.6%) among 4-year-old children [27]. The study by Kozieł-Kozakowska et al. conducted among Polish children aged 2.5-7 years demonstrated low neophobia in 12.3% and high neophobia in 10.8% of the examined children [28].

In the meta-analysis by Torres et al [29], the prevalence of food neophobia was present in 10 (53%) of the analyzed studies and ranged from 12.8% to 100%.

In our study, taking into account the Neophobia Scale, 13.78% (n=28) of children aged 1-6 years may be at risk of developing food neophobia. At the same time, in our study, assessed according to the subjective opinion of the family whether the child is immediate, the results of the Neophobia Scale were also confirmed. Even though in the study we did not define when a child is considered an immediate.

In the case of food neophobia in the child, education delivered in an empathetic and guilt-free manner to the parent may be sufficient. Parental behavior is very often driven by a concern for the child's health, and this should be borne in mind when guiding the parent. If an eating disorder or feeding difficulties are suspected to be due to an organic cause, consultation with individual specialists is necessary.

Strengths and limitations

The strength of the research conducted is undoubtedly the large study group in which the questionnaire was administered. Research on food neophobia is still a research gap and a niche. Therefore, in the opinion of the authors, it is helpful to deepen the research on this topic. As for the issues of weaknesses of the conducted work, they certainly concern the technique used in conducting the survey. Indirect surveys are still a controversial issue in the scientific world, but there is no shortage of studies that confirm their effectiveness. In addition, it should be emphasized that the authors have made great efforts to ensure that the final results of the study are characterized by high reliability. The use of a pilot study, validation of the questionnaire, support of the study with a standardized scale, and precautions against data falsification effectively minimized the systematic error.

CONCLUSIONS

The research carried out allows the following conclusions to be formulated, which also answer the research questions posed earlier:

1. Parents' attitudes to child nutrition are correct. It can be seen that the respondents do not show any major deviation from modern trends in the nutrition of the youngest.
2. Based on the assessment of the awareness of food neophobia, it should be stressed that this is shown at a normal level. Parents mostly know what food neophobia is related to.
3. The study did not reveal any child behaviors reported by parents that could indicate a very high probability of the presence of food neophobia in their children. Moreover, the results of the questionnaire of the neophobia scale indicate that this problem in the studied population concerns about 10% of the examined children.

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