

Translation from Polish



"Scheme financed from European Union funds and the national budget"

FINAL REPORT

EVALUATION OF THE "SCHOOL SCHEME"

DANAE

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1. Synopsis

The School Scheme in Poland is a continuation of the School Fruit, Vegetables and Milk Schemes. The School Scheme was implemented from school year 2017/2018, with dairy, fruit and vegetable products provided to primary school pupils as part of the related activities. Children who participate in the Scheme receive fruit, vegetables, milk and dairy products prepared directly for consumption free of charge at least 2-3 times a week during selected weeks of the school year.

In accordance with the EU guidelines, the School Scheme was subject to an evaluation of its effectiveness. The main objective of the evaluation was to answer the question: **Has the School Scheme been effective in terms of achieving its objectives, in particular in terms of increasing the consumption of fruit, vegetables, milk and dairy products and educating children about nutrition, or getting closer to achieving them?**

The answer to the above question is based on an analysis of the Scheme's monitoring reports, as well as on an analysis of the results of research carried out in the schools participating in the Scheme. The research was conducted in May and June 2021 and 2022. In addition, a control group of pupils from schools that did not join the Scheme was also studied.

When analysing the presented results, it is important to bear in mind that they relate to the effects of the Scheme, the implementation of which also coincided with the time of the pandemic and remote learning. This time had an impact not only on the ability to implement the scheme effectively in schools, but also on the formation of specific behaviours and eating habits at home. This in turn undoubtedly has influenced the results of the research obtained.

1.1. Findings – key results

The School Scheme is a large-scale project, the logic of which has been planned correctly. It is in line with the European Union policy directions in the area of nutrition. However, in its current form, the Scheme should be evaluated as moderately effective. It has not had the expected impact on changing the children's consumption of fruit and vegetables, nor has it increased their knowledge of nutrition which would be reflected in a change in their eating habits. The results of the evaluation showed that the scheme partially influenced the children's intake of vegetables and dairy products.

It can be concluded that the expected effectiveness of the scheme has not been achieved for several reasons:

- implementation of the intervention during the COVID-19 pandemic and the lack of impact on changing eating habits as a result of children staying at home
- reduction of the frequency of serving fruit and vegetables to children to twice a week due to budget limitations
- contextual factors, such as: insufficient parental involvement in older children's diet planning, inadequate formation of children's eating habits related to the assortment of school shops, and insufficient educational activities provided by the intervention.

Changes in the consumption of fruit, vegetables, milk and dairy products

→ Consumption of fruit and vegetables

- Total consumption of fruit and vegetables decreased by 8% after one year of participation in the Scheme. Fruit and vegetable consumption decreases with the age of the respondents, however, the decrease is lower in the case of third graders participating in the Scheme. This may indicate a small positive impact of the Scheme on this age group. Pupils in younger age groups consume more fruit and vegetables on school days, which may be related to the meals eaten at school and, in the case of first graders, to the products received as part of the fruit and vegetable distribution.
- Similar trends were observed for vegetable consumption. After one year of participation in the Scheme, vegetable consumption decreased by 9%. However, for this product group, it was noted that pupils who have participated in the scheme for 5 years eat 24% more vegetables than pupils who have participated for 3 years (for the control group, the difference in consumption was only 1%). Fifth graders consume significantly more vegetables at weekends than their peers in the control group. This may indicate a positive impact of the intervention on shaping eating patterns outside school only after 5 years of participation in the scheme.
- The analysis of fruit consumption confirms that it is more in line with children's taste preferences than vegetables. The majority of pupils consume more than the nutritional norm. Nevertheless, even within this product group, a decrease in fruit consumption was noted among older pupils. After one year of participation in the scheme, they consume 9% less fruit than before joining the scheme. In the 3rd grade, the pupils subject to the intervention eat more fruit than their peers in the control group, but in the 5th

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grade this relation is reversed (more fruit is consumed by the control group). It can be concluded that the Scheme contributes to slowing down the decline in fruit consumption among 3rd graders. However, on the basis of the research carried out, it is difficult to give a clear answer as to why it did not have such an effect in the 5th grade.

→ **Consumption of milk and dairy products**

With regard to the consumption of milk and dairy products, a decreasing trend with age can also be observed, with a rebound in the 5th grade. After one year of participation in the Scheme, children consume 8% less dairy products. By contrast, a change was observed among pupils participating in the scheme for 5 years. They consume 10% more dairy than 3rd graders. Intervention pupils consume significantly more dairy than their peers in the control group. It can therefore be assumed that the intervention has a positive impact on children's eating habits in terms of dairy consumption only after 5 years of participation in the Scheme. Analysis of dairy intake on and off school days showed that the intervention pupils in each case consumed more dairy than their peers in the control group.

→ **Children consuming the recommended daily portion of fruit and vegetables**

The recommended level of fruit and vegetable intake is 400g and this is met by nearly one in three participating children. However, the proportions of fruit and vegetable intake are the opposite of the recommended levels - pupils consume far more fruit than vegetables. This is undoubtedly related to the already mentioned children's food preferences and fondness for sweet taste. This is confirmed by an analysis broken down into two product categories. Pupils meeting the recommendations in terms of the intake of an adequate amount of vegetables represent only between 2% and 4% (depending on the studied group). In the case of fruit consumption, the percentages are close to 80%. In both cases, a decreasing trend with age was observed, with a rebound in the 5th grade. What is important, the percentages of pupils meeting the recommendations for fruit intake are significantly higher in the intervention groups, which may indicate the positive impact of the Scheme after 3 years of participation.

→ **Children consuming the recommended daily portion of milk and dairy products**

The percentage of pupils consuming the recommended portion of dairy decreases with age; however, those participating in the Scheme for 5 years show a slightly higher consumption. On average, one in 17 children consume dairy at the recommended frequency (3-4 servings per day). There are no differences between the participating groups, so it is reasonable to believe that the scheme does not affect the frequency of consumption of the recommended portions of dairy intake. However, the decreasing frequency with age in dairy intake progressed faster among the control group than among the intervention pupils, which may indicate a small positive effect of the intervention in this aspect.

Promoting healthy eating habits

→ **Children's attitude towards the consumption of fruit, vegetables, milk and dairy products**

The research indicates a slight change in children's attitudes towards fruit and vegetables. As mentioned earlier, due to taste preferences and a fondness for sweet taste - children prefer fruit to vegetables. After one year of participating in the Scheme, they are slightly more fond of strawberries, bananas and cherries – which indicates a broadening of their preference also for other fruits, not distributed during the Scheme. In the case of vegetables, the percentage of children liking carrots has increased.

It should be noted that the Scheme contributes to familiarising children with new tastes and instilling flavour preferences. On the one hand, this has to do with the regular distribution of fruit and vegetables and, on the other, with eating them with their peers, which increases the motivation to try new things. However, the Scheme does not affect children's preference for more challenging tastes - such as in the case of radishes and turnip. These vegetables are disliked and it has not changed under the intervention.

It can be concluded that the Scheme has contributed to increasing the percentage of children liking milk. However, it has not influenced predilection for natural yoghurts and kefir (probably also due to the challenging taste of these products).

It is worth noting that the formation of healthy habits should not be based solely on children's participation in the Scheme. It is also necessary among others to effectively enforce national provisions of law regarding the permissible assortment in school shops and vending machines.

→ **Knowledge of types of agricultural products**

There was no significant change in correctly identifying fruits and vegetables over the course of participation in the Scheme. The lack of change may have been due to the high baseline knowledge of the children in grade 0. The research reflected no change in the level of knowledge of the children as far as the production cycle of milk and dairy products is concerned. There was also no change in the awareness of organic products.

→ **Level of knowledge of the recommended number of portions of fruit and vegetables in the daily diet**

More than half of the children in the younger age groups know that they should eat 5 portions of fruit and vegetables per day. The Scheme had no effect on increasing the proportion of children indicating the correct answer. In the older age groups, children's knowledge of the recommended number of portions of fruit and vegetable consumption decreases and does not differ significantly from that of the control group.

Children are aware of the negative health effects of foods rich in salt, fat and sugar, but this does not translate into a change in eating habits. Their knowledge in this respect has not changed as a result of participation in the Scheme.

→ **Level of knowledge among children about the health benefits of consuming milk and other dairy products**

The percentage of children aware that drinking milk strengthens the bones increased among younger children (from 89% to 93%). Among older children there was no increase of knowledge related to health benefits related to consumption of milk and other dairy products. Change in the level of knowledge occurred only among youngest children.

→ **Evaluation of the Scheme by parents and schools**

Evaluation of the Scheme by parents and the school community is high. The main factors influencing parents' evaluation of the scheme consist in the fact that the received products are fresh and that children can gain knowledge about agricultural products and healthy habits.

1.2. Conclusions and recommendations

On the basis of the implemented research, there were four main problems identified and solutions recommended:

1. Educational activities carried out under the Scheme were given too little importance, which translates into low effectiveness of the Scheme's impact.

According to the research findings, pupils' knowledge, attitudes and behaviour in the area of healthy lifestyles, including nutrition, can change only when 40-50 hours per school year are dedicated to these topics. Due to the excessive curricular load in schools and the difficulty in implementing such a number of activities related to nutrition, it should be considered to implement them in the form of homework assignments. Preferably ones that also involve the

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parents and guardians of the pupils. In this way, educational activities will also extend to the children's home environment.

2. The distribution of fruit and vegetables and milk in schools needs to be modified.

The frequency of distribution of fruit and vegetables and milk in schools should be increased at least to the previously maintained 3 times a week, and the duration of distribution in schools should be extended as much as possible. The results of the research indicate an inversion in the proportions of fruit and vegetable intake, which is linked to an excessive share of monosaccharides in the diet. In the future editions of the Scheme, more emphasis should be placed on the correct proportions of fruit and vegetables in order to restore the correct order, i.e. 75% vegetables and 25% fruit of the full recommended intake.

3. Group of Scheme participants should be extended and the budget should be increased.

At present the intervention has been planned among children in grades I - V. This definition of the target group indicates selective nature of the intervention. In order to be effective in the long term, the intervention should be extended onto all primary school grades, while pre-schools and secondary schools should be considered as well. Such a change would require an increase of the budget allocated to the Scheme.

4. An insufficient scale of communication activities reaching the recipients was observed.

Given the scale of the project, it is worth implementing activities that would allow the Scheme to reach a larger audience of both pupils and their parents, for instance: engaging well-known influencers to collaborate on the promotion of the Scheme, creating profiles on popular social networks such as Instagram and TikTok, planning a campaign in traditional media, complemented by a targeted campaign on the Internet.

2. Introduction

2.1. Context data

Globally, for many years there has been an increased intake of energy-dense foods high in fats and sugars with a simultaneous lack of physical activity due to the increasingly sedentary nature of work and study, changing modes of transport and increasing urbanisation¹. According to the World Health Organisation's 2021 estimates, the number of obese people worldwide has tripled since 1975, and in 2016, more than 340 million children and adolescents aged between 5 and 19 were either overweight or obese². The increase in BMI³ is affecting increasingly younger age groups. Meanwhile, being overweight in childhood is associated with a higher risk of obesity in adulthood, as well as risk of premature death and disability. Obese children also have breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, and insulin resistance. Psychological consequences (self-esteem disorders and social exclusion by the peer group)⁴ are also significant.

Despite its huge prevalence, progressive obesity is a reversible trend. International studies show that a change in school eating habits and education on healthy eating are followed by a real change in the dietary preferences of children and adolescents⁵. Indeed, dietary and physical activity patterns are often the result of environmental and social conditions. The latter, on the other hand, can be effectively changed through appropriate policies in the areas of health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education. With this in mind, the European Union members have begun to implement strategies to combat excessive weight and obesity and other chronic diseases by improving nutrition and physical activity. These strategies include establishing the European Charter on

¹ WHO, Obesity and overweight, 2021, available on-line: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> [as at 2.12.2022 r.].

² Ibid.

³ BMI (Body Mass Index), a ratio developed by dividing body weight given in kilograms by the square of height given in metres. As BMI increases, so does the risk of cardiovascular disease, musculoskeletal disease, certain cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney and colon).

⁴ WHO, Obesity and overweight, 2021, available on-line: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> [as at 2.12.2022 r.].

⁵ Cf. Stockholm Obesity Prevention Program STOPP study: Marcus C., Nyberg G., Nordenfelt A., Karpmyr M., Kowalski J., Ekelund U.: A 4-year, cluster-randomized, controlled childhood obesity prevention trial: STOPP. *J. Obes.* 2009.

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Counteracting Obesity (2006)⁶ and the European White Paper - strategies for tackling nutrition, overweight and obesity-related health problems (2007)⁷.

In response to the growing epidemic of obesity among children and young people, the EU launched the *School fruit and vegetable scheme*, which was carried out in Poland from the 2009/2010 school year until the 2016/2017 under the name *Fruit and Vegetables at School* (in parallel with the existing *Milk at School* scheme). The scheme aimed to improve children's eating habits and, in particular, to increase the share of fruit and vegetables in their daily diet. As part of the Scheme, fruit and vegetables were distributed in primary schools⁸. The results of the five-year evaluation of this scheme in the school years 2011/2012-2015/2016 indicate that it has had a significant impact on the formation of healthy eating habits in children. **There was a strong increase in fruit consumption - by 30 g per day, i.e. 18%** (in the group of children not participating in the scheme - an increase of only 4%). **The total consumption of fruit and vegetables (on school days and weekends) was 19.5 g higher than in the group of children not participating in the scheme⁹**. However, children were still less likely to consume vegetables than fruit due to taste preferences (sweet taste preferred). Even though the children's consumption of fruit and vegetables did increase through participation in the scheme to 328 g per day, it was still below the level recommended by experts. It was therefore necessary to implement successive editions of the *Scheme* and ultimately to merge it with the *Milk at School Scheme* and transform it into the *School Scheme* ¹⁰.

2.2. "School Scheme" intervention objectives

The *School Scheme* started in 2017/2018 school year, with dairy, fruit and vegetable products provided to primary school pupils. Children who participate in the Scheme are provided with fruit, vegetables, milk and dairy products prepared directly for consumption free of charge at

⁶ The European charter for counteracting obesity: A late but important step towards action. Observations on the WHO-Europe ministerial conference, Istanbul, November 15-17, 2006, available on-line, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1852804/> [as at 5.12.2022].

⁷ White Paper on a Strategy for Europe on Nutrition, Overweight and Obesity related health issues, available on-line, <https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=celex%3A52007DC0279> [as at 5.12.2022].

⁸ Evaluation of the Fruit and Vegetables at School scheme, or how to effectively shape children's eating habits - the results of the five-year evaluation of the scheme in the school years 2011/2012 - 2015/2016. The most important results and conclusions, [in:] Report - Evaluation of the Fruit and Vegetables at School Scheme in Poland, Food and Nutrition Institute in Warsaw, Warsaw 2017.

⁹ Ibid.

¹⁰ EU School scheme (...)

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least three times a week during selected weeks of the school year. Among the products approved in Poland there are:

- apples (1 piece of at least 150 g net weight),
- pears (1 piece of at least 150 g net weight),
- plums (at least 150 g net weight per unit package),
- strawberries (at least 100 g net weight per unit package),
- juices/ fruit purees/concentrated fruit purees (at least 0.2 l or 100 g in the case of purees per unit package) - not in every school year covered by the scheme - applies to purees,
- carrots (at least 90 g net weight per unit package),
- radishes (at least 90 g net weight per unit package),
- sweet peppers (at least 90 g net weight per unit package),
- turnip (at least 90 g net weight per unit package),
- tomatoes (at least 90 g net weight per pack),
- milk (at least 0.25 l per unit package),
- cottage cheese (at least 150 g net weight per unit package),
- natural yogurt (at least 150 g net weight per unit package),
- natural kefir (at least 150 g net weight per unit package)¹¹.

The School Scheme also included educational and promotional activities aimed, among other things, at building awareness among parents and teachers of their role in the development of children's healthy eating habits. The promotional and educational tasks under the Scheme were in accordance with Commission Delegated Regulation (EU) 2017/40 of 3 November 2016, which indicates the need for educational activities under the *School Scheme* linked to its objectives of increasing children's consumption of selected agricultural products and promoting healthy eating habits among them. According to the provisions of the regulation, the educational activities carried out under *the School Scheme* aimed to "re-establish the link between children and agriculture and the diversity of EU agricultural products, in particular those produced in their region, and educate children on related issues such as healthy eating habits and their impact on public health, national dietary recommendations, local food chains, organic farming, sustainable food production and consumption and combating food waste"¹².

¹¹ Ibid.

¹² Commission Delegated Regulation (EU)2017/40 of 3 November 2016.

2.3. Objective and scope of the report

The following report summarises the results of research carried out to evaluate the effectiveness of the *School Scheme* implemented in Poland in the school years 2017/2018 to 2021/2022. There're three objectives in the "Guidelines for Member States on the evaluation of the implementation of the EU School Scheme":

1. To improve the quality of the implementation of the School Scheme by identifying areas for improvement (the strategy can be modified accordingly)
2. To promote transparency and accountability towards stakeholders and citizens (Member State reports to be published)
3. To provide evidence for consideration by EU policy makers for possible reforms of the Scheme.

The aim of the report is therefore to answer the question: **Has the School Scheme been successful in achieving its objectives, in particular in terms of increasing the consumption of fruit, vegetables, milk and dairy products and educating children about healthy eating habits, or getting closer to achieving them?**

The evaluation carried out is designed to assess two main aspects of the Scheme:

1. A sustainable change in children's eating habits by increasing the proportion of fruit and vegetables and milk and dairy products in their everyday diet, at the stage of development at which they form eating habits.
2. To propagate a healthy, balanced diet and increase public awareness thereof among children and their parents¹³.

In addition, the relevance of the Scheme (degree of solution to the diagnosed problems), consistency (with internal and EU policies) and EU added value (going beyond the expected effects)¹⁴ were evaluated within the scope of the research.

2.4. Description of the evaluation process

The evaluation process of the School Scheme was divided into four stages implemented between 2021 and 2023. Following the development of the research implementation concept (stage I), the first wave of the panel study (stage II) was conducted in the second semester of the 2020/2021 school year (June). In the second semester of the school year 2021/2022 (late

¹³ National strategy for the School Scheme carried out in Poland in the school years 2017/2018-2022/2023.

¹⁴ Guidelines for Member States on the evaluation of the implementation of the EU School Scheme (Ares(2018)5450792)

May/early June), the implementation of stage III of the study was commenced: the second wave of the panel study and the reference study. The collected quantitative results were entered into databases and statistically analysed. The qualitative results were subjected to coding and qualitative analysis.

3. Method

3.1. Evaluation concept and methods

This research uses a rigorous evaluation approach linked to the evidence-based policy paradigm, which emphasises the need for decision-making processes to be based on reliable data, obtained in a manner consistent with scientific standards.

The research used both quantitative and qualitative methods. Quantitative methods made it possible to measure indicators and also to answer the research questions. Qualitative methods described the context, explained causal mechanisms and were used to interpret the results.

The evaluation of the School Scheme was based on the results of two studies: a panel and a reference study. Additionally, data was collected on the daily intake of individual products - parents, together with their children, were asked to complete 3-day food diaries. In addition, parents of pupils were asked to complete a screener on eating habits and knowledge of healthy nutrition. Due to the low age of the children entering the panel study, some of the questions on frequency of consumption were asked to the parents.

The first wave of the panel study involved a total of 1049 children studying in 42 schools located in five voivodeships: Małopolskie [Lesser Poland], Podkarpackie [Subcarpathian], Pomorskie [Pomeranian], Śląskie [Silesian] and Świętokrzyskie. The screener, along with a food diary, was also completed by parents or legal guardians of the pupils. The research was carried out using the PAPI technique. Pupils took part in the study while at school, while parents received screeners and diaries to complete at home. In addition, 12 in-depth interviews on child nutrition were also conducted among the parents of selected pupils.

The next stage of the research consisted of two different types of study: a continuation of the panel study and a reference study. First, a study was implemented with the same pupils who had taken the study in the previous school year. As first-year pupils, they participated in the second wave of the panel study. In line with the research objectives, a retention rate of 75%

was achieved with 787 pupils and their parents participating in the study. In addition, 12 in-depth interviews and 2 group interviews with parents were conducted. Representatives of the school also took part in the study: educators, authorising officers and the management. The first two groups took part in qualitative interviews, while the principals completed an online survey.

The second type of research carried out involved a reference study. It consisted of a series of quantitative and qualitative studies on the intervention group (in schools participating in the Scheme) and the control group (in schools not participating in the Scheme). In the intervention group, a PAPI¹⁵ screener was completed by 250 pupils from 3rd grade and their parents, as well as 250 pupils from 5th grade and their parents. Twelve parents (half of the 3rd grade pupils and half of the 5th grade pupils) participated in the in-depth interviews. In addition, educators (10 interviews) and authorising officers (10 interviews) also participated in the interviews.

By contrast, in the control group 250 pupils from the 3rd grade and their parents and 250 pupils from the 5th grade their parents took part in the study. Twelve parents also participated in the qualitative study.

An online survey was also completed by all principals of the researched schools.

3.2. Evaluation questions, criteria and indicators

The main objective of the research was to **verify the effectiveness of the School Scheme** implemented during the 2017/2018 - 2021/2022 school years.

The indicators for the achievement of the objectives are¹⁶:

1. at least a 5% change in consumption over the research period (increase in total consumption: at home and at school)
2. at least a 10% increase in children's knowledge of the importance and recommended frequency of consumption of fruit, vegetables and milk

Specific objectives of the scheme, and the indicators that determine their effectiveness, include:

1. Increase in the number of children and young people participating in the scheme:

¹⁵ Pen and Paper

¹⁶ National strategy for the School Scheme carried out in Poland in the school years 2017/2018-2022/2023.

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- share (in percentage) of children participating in the Scheme in a given school year to the total number of children in the target group (and the number of children participating in the Scheme in a school year)
 - share (in percentage) of schools participating in the Scheme in a given school year to the total number of schools in the target group (and the number of schools participating in the Scheme in a school year)
2. To increase the amount of fruit and vegetables and milk and dairy products consumed by children and young people in the Scheme (at school and at home)
 3. To increase children's knowledge of a variety of agricultural products and healthy eating habits
- share (in percentage) of children covered by educational activities in the Scheme in a given school year to the total number of children in the target group (and the number of children covered by educational activities in a given school year)
 - expenditure on educational activities in a given school year.

The objective of the research was to answer the following evaluation questions, also addressed in the document "Guidelines for Member States on the evaluation of the implementation of the EU School Scheme" (Ares(2018)5450792):

- 1. To what extent has the School Scheme contributed to increasing children's overall consumption of fruit, vegetables and milk and dairy products, in line with national recommendations for a healthy diet for a given age group? (To what extent has the School Scheme increased children's consumption of fruit, vegetables, milk and dairy products?)**
- 2. To what extent has the School Scheme increased children's healthy eating habits? (To what extent has the School Scheme increased children's awareness of the variety of agricultural products and the health benefits of eating them?)**

3.3. Data sources and collection techniques

A number of research techniques were used in the course of the research. Quantitative techniques included: PAPI (Face-to-face Interviews using a paper screener) and CAWI (Online Surveys). Qualitative research included: IDI (Individual In-Depth Interviews) and FGI (Focus

Group Interviews). Complementary non-reactive research of legal documents, strategic documents, reports and reporting data was also carried out.

3.4. Problems or limitations and identified solutions

The distinctive nature of the evaluation of the School Scheme is related to the uniqueness of the intervention itself. In the course of the evaluation, it is not possible to assess whether the Scheme activities have a direct impact on the diet and portion sizes of fruit, vegetables and dairy products consumed by children. There are more influencing factors, as described later in this report.

In interpreting the results quoted below, it is also important to bear in mind the methodological and organisational constraints that accompanied the implementation of the research. Due to the fact that the first and second stages (concept development and the first wave of the panel study) took place in June 2021, i.e. at the end of the 2020/2021 school year, the method had to be adapted to the time needed to implement the study in schools. It was proposed to carry out the interviews by means of paper screeners (PAPI), which, in the case of studies carried out in the school environment, allows for efficient implementation without the need to collect additional personal data of the parents of the pupils involved (e.g. telephone numbers for CATI studies or email addresses for CAWI studies). However, this technique has some drawbacks, mainly related to the lack of control over the reliability of the incoming material, as well as the percentage of missing data.

Furthermore, when analysing the data presented below, it is important to bear in mind the characteristics of the groups of participating respondents. As indicated in section 3.1, the research design was based on the implementation of a panel and reference measurement. The same people took part in both waves of the panel study (first as grade zero pupils and then as first-graders). The reference study, on the other hand, was implemented at a single point in time and included different groups of pupils: intervention-treated 3rd and 5th graders and non-intervention-treated (control group) 3rd and 5th graders.

For the purposes of this evaluation and the need to compare the impact of the Scheme on pupils over time, these results were analysed at three levels. First: individual data were compared for children participating in the scheme in one, three and five years. Second: the results for first-grade pupils were compared with the results achieved by the same children one

year earlier. Third: pupils in grades three and five were compared to their peers attending schools not included in the Scheme.

4. Evaluation of the functioning of the School Scheme

4.1. evaluation of the intervention logic

In the table below, the model of the intervention that is the School Scheme is reproduced. For the reconstruction of the logic model, K. Olejniczak's theory is used, according to which the model should consist in a diagram allowing to describe the planned effects of the activities, the inputs, the activities themselves and the mechanisms which are supposed to lead to a positive effect¹⁷. The model should present a cause-and-effect sequence, starting with the bases on which the intervention plan was built, through the inputs, planned activities, outputs to the reaction of the recipients and finally to the effects which are to initiate lasting change.

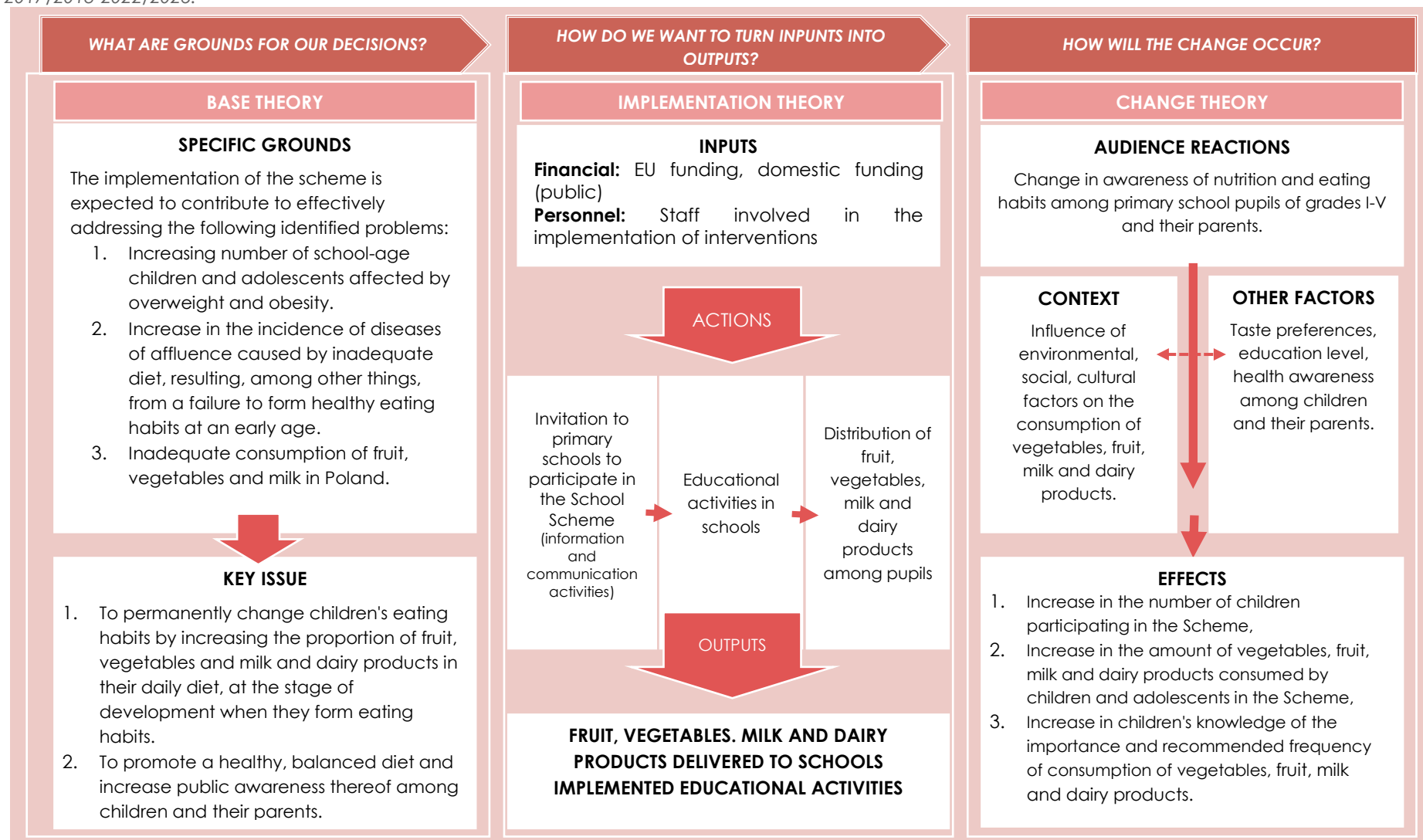
The provisions of the National Strategy for School Scheme implemented in Poland for the school years 2017/2018-2022/2023 were used to reconstruct the model. It allows to reconstruct the links between needs, objectives and actions.

As can be seen from the analysis, the overall intervention logic has been designed correctly, but needs some modifications. The problems in the area of health and eating habits of children and adolescents have been correctly diagnosed. Moreover, the assumptions of the intervention are consistent with the directions of the EU policy in the area of increasing the consumption of selected agricultural products and spreading healthy eating habits among children. The planned form of the intervention was aptly adapted to the diagnosed problems. Both the distribution of fruit, vegetables, dairy products and the planned educational activities should have an impact on changing eating habits and increasing awareness of nutrition. However, this impact proved to be insufficient (as described in more detail in section 6.1), and therefore the scope and intensity of individual activities related to the implementation of the Scheme should be changed. The following section of the report provides an evaluation of the individual scheme activities as well as a proposal for their modification.

¹⁷ K. Olejniczak, *Logical Models* [in:] *How to enhance organisational learning in government administration*, B. Lendzion et al. [available at:] https://www.euroreg.uw.edu.pl/dane/web_euroreg_publications_files/4499/jak_wzmacniac_organizacyjne_uczenie_sie_w_administracji_rzadowej.pdf

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Table 1. Reproducing the intervention logic model on the basis of the National Strategy for the School Scheme implemented in Poland during the school years 2017/2018-2022/2023.



Source: Own elaboration on the basis of K. Olejniczak: How to enhance organisational learning in government administration.

4.2. Scheme participants

When observing the level of pupils' participation in the School Scheme, one should start with the data from the annual monitoring of the Scheme's implementation available on the European Commission's website. The last available European data for the school year 2020/2021 indicate that Poland ranked fourth in terms of children's participation in the Scheme. According to the data for 2020/2021, 1,290,000 children (next year it was already 1 650 928 children) participated in Poland, while in Germany – the leader of the classification in the Scheme – 2,450,000 pupils took part. It should be added, however, that in Germany, it was not only primary school pupils who participated in the Scheme, but also pre-school pupils and secondary school pupils, who accounted for almost half of the participants. It should be noted that in Poland, the target group of the Scheme for School involved primary school pupils only, and thus has not been implemented in any other educational institutions than primary schools.

Analysing the participation of children in the Scheme in a comparative perspective between the different editions in each country, we've been observing a downward trend in the EU since 2020/2021¹⁸. In 2017/2018 - according to the European Commission – 20,280,000 children from EU countries participated, compared to 15,960,000 in 2020/2021¹⁹. A declining trend can also be seen in Poland, where there were 1,914,944 participants in 2017/2018 (representing 98% of all children studying in grades I-V in Poland). During the COVID-19 pandemic, this number decreased significantly and in 2020/2021 it was 1,292,356. After the pandemic, however, interest in the scheme increased again and in the school year 2021/2022 the number of children covered by the intervention was 1,650,928, representing 88% of all pupils attending grades I-V.

Either birth rate or other demographic factors, or the turnover of pupils in the course of schooling could have influenced the reduced number of pupils. The decrease in the school years 2019/2020 and 2020/2021, on the other hand, can be explained by the COVID-19 pandemic, as a result of which education in institutions was replaced by remote education. The COVID-19 pandemic and the lockdowns associated thereof have certainly obstructed sports activities and healthy eating habits. Participation in the Scheme due to remote learning

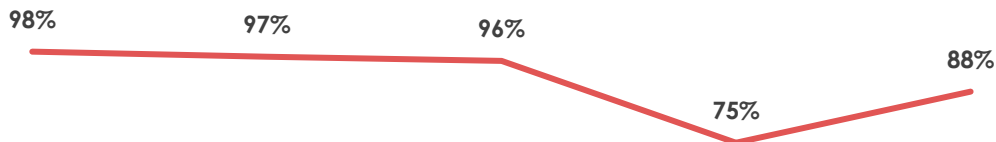
¹⁸ The comparison of Poland to other European countries participating in the Scheme, in this and other parts of the report, is made on the basis of data available as at the date of the report, i.e. up to the school year 2020/2021.

¹⁹ EU school fruit, vegetables and milk scheme: monitoring data, available online: <https://agridata.ec.europa.eu/>, [as at 5.12.2022].

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may also have been hampered and the Scheme may not have reached all pupils in the target group.

Diagram 1. Participation of primary school pupils in the Scheme for schools in Poland compared to all pupils in grades I-V attending primary schools in the country in a given school year²⁰



School year	School year	School year	School year	School year
2017/2018	2018/2019	2019/2020	2020/2021	2021/2022

Source: Own compilation based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

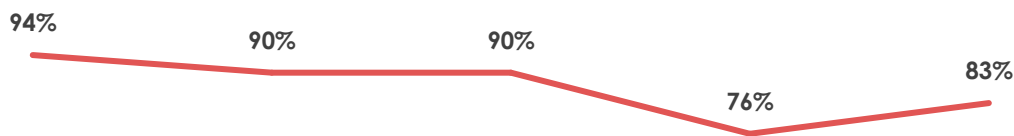
Looking at the primary schools participating in the Scheme in Poland, there are similar declines like in the case of the data for pupils. The report for the school year 2017/2018 shows that approximately 94% of primary schools in the country joined the School Scheme (i.e. approximately 94% of primary schools relative to all schools eligible to participate in the Scheme - in Poland these were primary schools). This percentage decreased slightly over the school years 2018/2019 and 2019/2020, while a large decrease was recorded in 2020/2021 - to 75.9% (nearly 11,000 schools against nearly 14,000 in the school year 2017/2018). Again, the COVID-19 pandemic and the associated changes in the education model for pupils in primary schools may have played a role. After the pandemic, interest in schools to participate in the

²⁰ Children from primary schools participating in the Scheme versus all children at this stage of education in Poland. In Poland, according to annual monitoring data, only primary schools participated in the School Scheme, so the data shows the share of primary school pupils participating in the Scheme compared to all children attending primary schools in Poland in a given school year. The reports on which the quoted data are based can be found at this link: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

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scheme increased again. In the school year 2021/2022, 83% of primary schools in Poland were already participating.

Diagram 2. Participation of primary schools in the School Scheme in Poland compared to all qualifying primary schools in the country²¹



School year	School year	School year	School year	School year
2017/2018	2018/2019	2019/2020	2020/2021	2021/2022

Source: Own compilation based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

According to EC data for 2020/2021, Poland ranked fourth in terms of the number of schools participating in the Scheme in the EU. As mentioned above, nearly 11,000 primary schools participated in this school year^{22, 23}. Meanwhile, in Germany, which also ranks first in this aspect, nearly 25,000 schools participated in the Scheme. As with the figures for the number of pupils in the Scheme, it should be borne in mind that in Germany secondary schools and pre-schools take part in the Scheme alongside primary schools²⁴. On the other hand, when analysing these

²¹ Primary schools participating in the Scheme versus all primary schools in Poland. In Poland, according to the annual monitoring data, only primary schools participated in the Scheme for School, so the data shows the share of primary schools participating in the Scheme in relation to all such establishments in Poland in a given school year. The reports on which these data are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

²² EU school fruit, vegetables and milk scheme: monitoring data, available at: <https://agridata.ec.europa.eu/>, [as at 5.12.2022]. Our country exceeded, among others: Portugal, Italy, Spain, Finland, Czech Republic, Hungary, and Austria.

²³ EU school fruit, vegetables and milk scheme: monitoring data, available at: <https://agridata.ec.europa.eu/>, [as at 5.12.2022]. Our country exceeded, among others: Portugal, Italy, Spain, Finland, Czech Republic, Hungary, and Austria.

²⁴ Ibid.

figures, it is worth bearing in mind that the number of schools of a certain type varies from country to country, which is related to the number of children from a given age group who can attend them. The latter aspect is influenced by birth rate. In view of the decline in the birth rate throughout the EU, it would be worthwhile (following the example of countries such as Germany) to extend the School Scheme to other year groups and higher levels of education, i.e. secondary schools, in order to diversify it somewhat and strengthen positive eating patterns.

The findings of the qualitative research also clearly indicate that the group of pupils who benefit from the scheme should be expanded. Currently, the scheme covers pupils in grades I-V. However, both parents and educators indicated that it would be worthwhile to extend the scheme to other grades, both older and younger. It has been observed that children in the younger grades do not understand why other pupils receive food while they don't. And the older ones, especially those who participated in the scheme in previous years, wish they could continue to receive fresh fruit, vegetables and dairy products to which they have become accustomed.

As WHO guidelines indicate, activities related to the promotion of healthy lifestyle should, as far as possible, include children from 0 to 19 years of age²⁵. **In conclusion, in order to form healthy eating habits, improve the effectiveness of the Scheme and achieve long-term effects, the group of participants should be extended to include the remaining primary school grades. It is also recommended that pre-school and secondary school pupils be included. Such a change requires an increase in the Scheme budget. In the current budgetary and economic situation (rising inflation), expanding and even maintaining the current target group and the unchanged budget will necessitate changes in the form of reducing the number of portions and shortening the implementation period of the scheme during the school year. These measures will, however, reduce the effectiveness of the scheme. In order to reverse this trend, it is necessary to allocate more budgetary resources for the Scheme.**

4.3. Functioning of fruit, vegetable and milk distribution in schools

In the first year of the Scheme, i.e. 2017/2018, pupils received fruit and vegetables at least four times a week and milk at least three times a week. In subsequent school years, the frequency of portions was reduced, and in the school year 2021/2022 it was only at least twice a week.

²⁵ https://cdn.who.int/media/docs/default-source/mca-documents/rmncah/redesigning-child-and-adolescent-health-schemes.pdf?sfvrsn=533aedce_1&download=true#page=39&zoom=100,0,0

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The number of weeks during which children received produce also changed in each year of the Scheme. Initially, the exact number of distribution weeks was specified: in the school year 2017/2018 it was 10 weeks per term, and in the school year 2018/2019 – 12 weeks per term. In subsequent years, also due to the Covid-19 outbreak, a more flexible approach was introduced, defining a range of the number of weeks of produce made available: in the school year 2021/2022 it was 10-12 weeks per semester (previously 9-12). The average portion of fruit and vegetables and milk did not change throughout the years of the Scheme²⁶.

The size of the Scheme budget available in subsequent school years has had an impact on the reduction of the number of portions received by participating pupils. It is reasonable to believe that such a significant reduction in the intensity of the distribution of produce in schools contributed to a decrease in the effectiveness of the Scheme's activities (more on this later in the report).

In 2017/2018 and 2018/2019, expenditure on product supply and distribution increased, from EUR 51,874,650 to EUR 53,039,739. By contrast, in 2019/2020 and 2020/2021, due to the COVID-19 outbreak and for a significant part of the year online schooling - this expenditure decreased to EUR 35,267,980 in the school year 2019/2020 and EUR 30,270,845 in the school year 2020/2021, respectively. It should be noted that until 2019/2020, national resources exceeded EU support for product supply/distribution costs in the Scheme²⁷. In the school year 2021/2022, as a result of renewed interest in participation in the Scheme after the COVID-19 pandemic, the level of expenditure increased again and amounted to EUR 41,806,110.

The distribution of products in the Scheme can be considered effective.

²⁶ The reports on which these figures are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

²⁷ The reports on which these figures are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

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Table 2. Expenditure on products supply/distribution (in EUR) in the years 2017-2022 in Poland

School year	Source of financing	Fruit and vegetables	Milk	Fruit, vegetables and milk consolidated	EU funds + national: School Scheme (total)
2017/2018	EU support	14 449 810	10 904 853	25 354 663	51 874 650
	National resources (public)	13 299 289	13 220 698	26 519 987	
2018/2019	EU support	13 372 856	9 997 967	23 370 823	53 039 739
	National resources (public)	13 530 686	16 138 230	29 668 916	
2019/2020	EU support	8 853 847	6 852 015	15 705 862	35 267 980
	National resources (public)	8 808 262	10 753 856	19 562 118	
2020/2021	EU support	11 734 604	10 140 685	21 875 289	30 270 845
	National resources (public)	3 287 570	5 107 986	8 395 556	
2021/2022	EU support	11 243 939	9 503 316	20 747 255	41 806 110
	National resources (public)	9 983 388	11 075 467	21 058 855	

Source: Own compilation based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

Looking at the supply of fruit and vegetables under the EU School Scheme, the figures for average servings of fruit and vegetables per member country show Lithuania leading the way, almost doubling the EU average (at 119.2) with a serving of around 200 g of fruit and vegetables. Poland came twelfth with an average of 120 g²⁸. However, it is worth mentioning that our country was followed by such countries as: Hungary, the Czech Republic, Estonia, France and Germany²⁹. Apples, pears, plums and citrus fruit were the most popular fruit served as part of the Scheme in each EU country³⁰. As far as vegetables were concerned, schools in individual EU countries most often provided children with carrots, tomatoes, cucumbers and

²⁸ EU school fruit, vegetables and milk scheme: monitoring data, available at: <https://agridata.ec.europa.eu/>, [as at 5.12.2022].

²⁹ Ibid.

³⁰ *The EU school fruit, vegetables, and milk scheme. Implementation in the 2020/2021 school year* (Implementation in 27 countries), European Commission Directorate-General for Agriculture and Rural Development.

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bell peppers. In the context of dairy products, milk (also lactose-free) and natural yoghurt predominated³¹. **In Polish schools, apples, pears, plums and strawberries were distributed, while as for vegetables: carrots, turnip, bell peppers, radishes and tomatoes. As for dairy products, it was most often milk (or lactose-free milk), cheese or cottage cheese, natural yoghurt, dairy products without added sugar, flavoured with fruit, nuts or cocoa^{32,33}. Products made available to children do not contain added fat, salt, sugar or sweeteners.** The type of fruit and vegetables and dairy products distributed in schools did not change in the Polish schools covered by the Scheme between 2017/2018 and 2021/2022, with the exception of the share of fruit puree, which was not made available in each year. The requirement to ensure priority for fresh and unprocessed products in the Scheme was maintained. As far as processed fruit and vegetable products were concerned, there were fruit juices available (and in the school year 2017/2018 also vegetable juices, including fruit and vegetable mixes). Using a simplified conversion rate: 1 litre of juice = 1 kilogram, processed products in this component accounted for between 8% and 13% of all distributed products.

In the case of dairy products, it was also primarily milk that was distributed. Processed products included in the Scheme (such as natural yoghurt, cottage cheese and kefir) accounted for between 11% and 23% of all products distributed in this component (using the simplified conversion rate of 1 litre of milk = 1 kg). The table below presents the quantities of products that were made available to children in each year of the Scheme.

Table 3. Portions of fresh and processed products made available to children in individual years 2017/2018-2021/2022.

		2017/2018	2018/2019	2019/2020	2020/2021	+donated to charities, etc ³⁴ .	2021/2022
Fresh fruit and vegetables	in kilos	18 127 431	17 771 707	11 173 454	7 519 922	1 246 710	12 237 771
	<i>Fruit</i>	10 984 910	10 922 795	6 948 924	4 296 566	825 617	6 404 620
<i>Vegetables</i>	in kilos	7 142 521	6 848 912	4 224 530	3 223 356	421 093	5 833 151
Processed fruit and vegetables	in kilos	0	0	0	0	0	0
	in litres	1 513 686	0	1 235 789	1 462 018	64 732	1 858 469

³¹ Ibid.

³² Ibid.

³³ The following section of this report presents detailed data on its implementation and effectiveness.

³⁴ Measures taken during the COVID-19 pandemic.

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Fruit juices	in litres	796 019	0	1 235 789	1 462 018	64 732	1 858 469
Vegetable juices (including fruit and vegetable mixes)	in litres	717 667	0	0	0	0	0
Milk	in litres	23 545 579	29 946 345	19 859 979	15 889 060	419 590	21 749 268
Cottage cheeses	in kilos	2 142 210	546 585	361 627	721 112	122 593	1 166 401
Yoghurts	in kilos	2 258 884	2 179 819	1 588 091	1 044 280	162 104	701 408
Other dairy products without added sugar	in kilos	2 773 669	1 160 344	756 925	762 131	125 039	698 337

Source: Own compilation based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

It is worth mentioning that there was no priority given to the purchase of local or regional products, organic products, short supply chains or other activities of this nature in any of the Polish editions of the Scheme³⁵. At the same time, in Poland, popular and region-specific products were made available – in this respect they can be treated as local products.

Details on the functioning of the distribution of fruit, vegetables and milk in schools are described on the basis of the quantitative and qualitative research carried out in the following section.

School principals rated the quality of the products supplied as definitely good (45%) and rather good (55%). Cooperation with suppliers was also rated as definitely good (75%) or rather good (25%)³⁶. Authorising officers confirmed that the products consumed in schools by children vary according to the seasons. This applies both to the products served in the Scheme and to the meals consumed in school canteens.

Local wholesalers are usually used as product suppliers on the basis of agreements signed with primary schools interested in participating in the Scheme. The products are delivered to the schools on specific days, at a time agreed between the school and the supplier. The frequency of deliveries varies from school to school, but fresh produce is usually delivered either daily or every other day. This frequency is viewed positively by the authorising officers, allowing the products to remain fresh.

³⁵ The reports on which these figures are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

³⁶ CAWI study carried out with the principals of the schools participating in the Scheme.

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We do not receive anything for a long time, we just bring everything every two days, so that everything is fresh, be it apples or pears, or when it comes to vegetables, so that they do not remain unused, bell peppers or turnip, so that everything does not wilt, just everything, carrots... so that after ordering I have two days and in two days the next delivery comes, so that everything is fresh. (IDI, authorising officer)

Cooperation with the supplier is based on an agreement signed by the principal but day-to-day contact is mainly carried out by the authorising officers. It is they who report irregularities and agree on the time of delivery of products. However, the authorising officers indicated that obstacles occur very rarely (non-compliance of the number of products received with the order, delayed delivery), and the cooperation with suppliers is assessed positively.

The parent also stated that the products their children received were mostly of good quality and fresh. nevertheless, attention was drawn to the way the products were packaged. Packing products in plastic films, while promoting healthy eating habits and organic food, can have ambiguous results. Storing products in plastic bags sometimes adversely affected their freshness and aesthetics.

In conclusion, the functioning of the product distribution in schools should be assessed as correct and without major concerns.

4.4. Implementation of the Scheme's educational activities

The Scheme also includes educational activities. In the first school year of the School Scheme, 45% of the funds allocated for the implementation of these activities were spent. In the following year, it was only 4%. The years 2019/2020 and 2020/2021 are the years most affected by the COVID-19 pandemic hence the amount spent on educational activities during this time was PLN 0.

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Table 4. Expenditure on educational activities under School Scheme in the years 2017-2022 in Poland

School year	Amount of funds allocated for the implementation of educational activities during the school year	Amount of funds spent on the implementation of educational activities during the school year
	(PLN net)	(PLN net)
2017/2018	908 950,00	404 930,08
2018/2019	4 185 249,39	178 861,79
2019/2020	5 408 825,92	0
2020/2021	3 211 751,62	0
2021/2022	3 009 562,06	2 683 200,00
total	16 724 338,99	3 266 991,87

Source: Compiled on the basis of data made available by National Support Centre for Agriculture.

Based on the data in the table above, it can be seen that for the first two school years, the funds allocated for educational activities were not properly managed and only 11% of the amount allocated for this purpose was spent. For objective reasons, the years 2019/2021 cannot be assessed in this respect. A significant increase in expenditures on educational activities was recorded in the school year 2021/22, after the pandemic – when as much as 89% of the budget was allocated to this objective.

The following educational activities were implemented under School Scheme over the period 2017-2022:

- ✓ setting up and maintaining school gardens and orchards,
- ✓ visits to farms, orchard networks, producer organisations, dairy companies, farmers' markets, warehouses where fruit and vegetables are sorted and packed, agricultural museums
- ✓ food preparation, cooking and tasting activities, workshops, laboratories,
- ✓ lessons, seminars, conferences, workshops,
- ✓ other activities: competitions, games, educational quizzes, themed days or weeks.

Selection of activities and the timing of implementation is at the discretion of schools, with the exception of the activities organised in 2021/2022 by National Support Centre for Agriculture, i.e. educational workshops on healthy nutrition and educational excursions to farms, the timing of which has been determined by the organisers.

Given the data in the table below, we can see that approximately between 330,000 and 450,000 pupils participated in activities related to the establishment and maintenance of school gardens and orchards, depending on the edition of the Scheme. Approximately 130,000 to 300,000 children participated in visits to farms, orchard networks, producer organisations, dairy plants, farmers' markets, warehouses where fruit and vegetables are sorted and packed, and agricultural museums. Approximately 900,000 to over 1.5 million children participated in food preparation activities. The figures are similar for activities such as competitions, games, educational quizzes or themed days or weeks (approximately 1 million to 1.8 million pupils)³⁷. However, it is worth noting that participation in each type of educational activity has been declining since the school year 2019/2020 - due to the COVID-19 pandemic and the associated restrictions, with a simultaneous return and increased interest from the school year 2021/2022/ It is noteworthy, however, that participation in educational activities under the School Scheme was characterised by relative constancy in the number of pupils involved in educational activities prior to the outbreak of the pandemic.

Irrespective of the edition of the Scheme, educational activities addressed topics such as: restoring the link between children and agriculture and the diversity of EU agricultural products, healthy eating habits, local food chains, organic production, sustainable production, food waste³⁸. These themes are in line with the implementation of the objectives set out in *Delegated Regulation (EU) 2017/40*. Thus, it can be considered that the choice of themes and the type of educational activities undertaken as part of the implementation of the *School Scheme* was in line with the assumptions contained in the strategic documents.

Table 5. Number of children covered by the educational activities of the School Scheme in the years 2017-2022 in Poland

Educational activities	Number of children covered by the educational activities of the School Scheme 2017-2022 in Poland					
	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Total
setting up and maintaining school gardens and orchards	386 877	453 297	382 441	339 176	456 545	1 561 791

³⁷ The reports on which these figures are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

³⁸ Ibid.

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visits to farms, orchard networks, producer organisations, dairy companies, farmers' markets, warehouses where fruit and vegetables are sorted and packed, agricultural museums	296 745	338 985	214 880	129 719	270 133	980 329
food preparation, cooking and tasting activities, workshops, laboratories	1 287 846	1 543 789	1 240 589	909 604	1 303 418	4 981 828
lessons, seminars, conferences, workshops	0	0	0	0	0	0
other activities: competitions, games, educational quizzes, themed days or weeks	1 526 647	1 816 234	1 335 312	1 025 888	1 377 123	5 704 081

Source: Own elaboration based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

As specified by teachers, a relatively large number of themed lessons and other educational activities on healthy eating are conducted in schools as part of Form Period, Biology or Natural Sciences. During such lessons, teachers focus not only on theoretical knowledge (talks, watching educational films together, learning songs about healthy eating), but also try to demonstrate and institute good habits through practice (making sandwiches and salads together, planting fruit and vegetables). Materials on healthy eating are also created together (leaflets, posters, articles in school newspapers), and themed competitions are organised. During the activities, children learn which products are healthy and high in vitamins and which should be avoided, as well as what to consider when shopping.

As the educators pointed out, such activities are extremely important, as children do not always learn about healthy eating at home. Parents are increasingly attentive to the

composition of the products they buy and try to prepare balanced meals, but there is still lack of attention to food in many households. In addition, the group absorption of information and its practical application by creating healthy meals together is, according to educators, one of the most effective ways to instil knowledge, learn new tastes and change habits. **It should be pointed out that both children and teachers are unaware of which activities are carried out within the Scheme and which stem from the core curriculum, as these activities are carried out in parallel. However, this is not a disadvantage, as the activities complement each other and consequently have the intended effect, i.e. promote healthy eating among the pupils and increase their knowledge on the subject.**

Educational activities on healthy eating principles are also increasingly targeted at parents. During meetings with parents, topics on healthy eating for children are discussed, such as which portions of fruit, vegetables and dairy products children should eat and which products they should avoid. Educators try to make parents aware of the products their children like to eat and how this can be changed. According to the in-depth interviews, **a greater number of educational activities for parents were conducted in the schools included in the School Scheme than in the control group.**

It is also worth mentioning that an increasing number of parents search for information on healthy diets on their own. As indicated by the in-depth interviews, parents obtain information on healthy nutrition mainly on the Internet, e.g. from food blogs or websites run by doctors and nutritionists. It is the Internet that they consider to be the most accessible, but also the most reliable source, as many nutrition experts speak there and the information obtained can be confirmed in several sources.

The range of educational activities carried out in schools can be considered correct, but insufficient. A study of more than 30,000 schoolchildren in the United States has shown that 15 hours of nutritional education increases children's general knowledge, while a minimum of 40-50 hours of education per school year can be expected to significantly increase knowledge, attitudes and behaviour³⁹. However, the scheme includes at least two accompanying educational activities per semester of the school year⁴⁰. In addition, the school is obliged to carry out tasks related to the core curriculum, which also includes education on healthy

³⁹ Institute of Medicine, Nutrition Education in the K-12 Curriculum: The Role of National Standards: Workshop Summary [available:] <https://www.ncbi.nlm.nih.gov/books/NBK202131/>

⁴⁰ Conditions for schools to participate in the School Scheme.

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lifestyles, including nutrition. What is worth mentioning is that educational activities can be carried out with the participation of parents, but this depends on their type and the organisational possibilities of the school. Since eating habits are largely determined by environmental factors - i.e. the knowledge, attitudes and behaviour of parents and carers - this group should also be more involved in educational activities.

Including such number of hours into the school curriculum would overburden the curriculum. Instead, nutrition education could be transferred to homework. It would also be important to plan it in such a way as to involve parents in these activities as well.

4.5. Evaluation of the Scheme's communication and information activities

As can be seen from the data cited in section 4.2, the Scheme reached almost all pupils in the target group in 2017/2018 (98%). In the following years, this percentage decreased slightly, while in 2020/2021, due to the COVID-19 pandemic and the change in the operation of schools, it dropped to 75%. In the last analysed year (2021/2022), the percentage of children participating in the Scheme increased again and reached 88%. The Scheme activities therefore reach the vast majority of pupils in the target group in Poland.

The Scheme for schools in Poland created a package of information materials and used a number of promotional tools to publicise the initiative. These include:

- ✓ posters displayed in schools and other appropriate places, e.g. at the premises of product suppliers, the National Support Centre for Agriculture,
- ✓ the Scheme website (<https://www.programdlaszkol.org/>),
- ✓ graphic materials (creation of the Scheme logo, labelling of leaflets, paper diaries for pupils and other promotional materials with the Scheme and EU logos),
- ✓ media campaign (TV, radio, Internet, newspapers), spots and short films (including "Diary of Crumps" cartoons), social media activities, press conferences, communication in social media, awareness campaign in on-line school registers⁴¹.

⁴¹ The reports on which these figures are based can be found at: https://agriculture.ec.europa.eu/common-agricultural-policy/market-measures/school-fruit-vegetables-and-milk-scheme/country/poland_en, [as at 10.01.2023].

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Table 5. Information and communication activities under School Scheme in the years 2017-2022 in Poland

Information, communication activities	2017/2018	2018/2019	2019/2020	2020/2021
posters displayed in schools	YES	YES	YES	YES
Posters displayed in other appropriate places	NO	NO	NO	YES
Internet website	YES	YES	YES	NIE
graphic materials	YES	NIE	NIE	YES
information campaign	YES	YES	YES	YES
other (e.g. web activities, e.g. social media communication – Facebook, YouTube)	NO	NO	YES	YES

Source: Own compilation based on "The EU school fruit, vegetables and milk scheme" annual monitoring report, school years: 2017/2018, 2018/2019, 2019/2020, 2020/2021 and on the basis of data made available by National Support Centre for Agriculture.

On the basis of the documentation analysis of the School Scheme and the information and promotion materials and campaigns prepared thereof, it can be concluded that the undertaken information, promotion and communication activities were consistent with the assumptions included in the strategic documents. The information materials are coherent and visually clear and contain the necessary labelling, including the Scheme and EU logotypes.

The School Scheme has a dedicated website, Facebook profile and YouTube page. The Scheme's profile is mainly aimed at schools and parents. Its content has a consistent design and is published regularly. The profile has 3,600 likes and 3,800 followers. **Given the nationwide scale of the Scheme and the number of children it reaches, it is worth taking action to improve these indicators.**

The Scheme's YouTube channel was created in 2016, has 13,900 subscribers and had 75 videos published. The content is divided into several categories (e.g. Crumps Diary, Crumps Musical Challenge, radio drama) with the most recent published five months ago. The most popular video is a 30-second spot promoting the 'School Scheme', which has been viewed 7.3 million times. The number of views for the other materials ranges from 1.5 million to 850. Most of the materials (in particular for the adventures of Crumps) have consistent visuals, are varied and adapted to different age groups of pupils. The channel makes good use of the playlist function, which organises the material. There is a lack of material aimed at parents and carers of pupils on healthy eating, which would allow the communication to reach this group as well. **It would**

also be worth considering embedding a video promoting the Scheme and the channel, which would be displayed immediately on entering the site - so that it becomes a showcase of what the Scheme is for users accessing the site.

Interviews with parents of children from schools which are part of the Scheme indicate that they have no knowledge of the Scheme. They only know that their children receive fruit, vegetables and dairy products during school, and they also recall that they had to give their consent at the beginning of the year. However, they state that they do not remember receiving any additional information about the Scheme or about healthy nutrition for their children.

I know that children had something at school, but we didn't get anything. (IDI, parents)

However, as they themselves indicated, this does not mean that the materials were not provided. It is likely that the information was given to them at the beginning of the year together with other educational materials and documents for the whole school year, but due to the multitude of brochures received and the time elapsed between the start of the school year and the time of the study, parents may not remember this. In addition, according to the interviews, caregivers do not tend to look at the posters hung in the school, nor do they read the materials posted on the school's website. They didn't encounter information about the Scheme outside the school either.

Given the above, the communication activities carried out should be considered correct, but insufficient and need to be disseminated on a larger scale.

It would be worthwhile to engage influencers popular among primary school pupils to promote the School Scheme and healthy eating. Using the Scheme as an example, popular video makers could produce materials to promote the Scheme as well as its objectives. Such materials could also be used on other social media.

It is also recommended to create accounts on other social media platforms popular with children and young people, e.g. Instagram and Tik Tok. The rules and regulations of these platforms indicate an age of 13 as the minimum age at which an account can be created. It can therefore be assumed that content shared on these platforms would not reach the audience defined as pupils of grades I-V. However, it would be worth thinking about reaching a broader group so that content related to healthy eating would reach older children.

In addition, for greater dissemination of information about the Scheme and the topic of healthy eating, it is worth considering the creation of multi-channel communication, taking into account leading media, including traditional media⁴². **Assuming that the communication is intended to reach a wide audience of different ages, campaigns on television could be complemented by a well-targeted digital campaign.**

4.6. Evaluation of the key arrangements and provisions for implementing the Scheme in schools

School Scheme was implemented from the school year 2017/2018 as a continuation of the *Fruit and Vegetables at School* and *Milk at School* schemes. The implementation of the School Scheme is based on the following national and European documents.

National documents (for the school year 2021/2022 - the last year covered by the evaluation):

1. Ordinance of the Minister of Agriculture and Rural Development of 23 August 2021 on the detailed scope of tasks carried out by the National Support Centre for Agriculture related to the implementation of the School Scheme on the territory of the Republic of Poland (Journal of Laws from 2021 item 157, as amended)
2. Ordinance of the Council of Ministers of 26 May 2021 on the amount of financial resources earmarked for the payment of national and EU aid in the framework of the financing of the School Scheme and the amount of financial aid rates for the implementation of activities under this scheme in the school year 2021/2022 (Journal of Laws from 2021, item 972, as amended)
3. Ordinance of the Minister of National Education of 31 August 2017 on the detailed manner of implementation in schools of accompanying measures of an educational nature, which serve the proper implementation of the School Scheme and disseminate healthy eating habits among children (Journal of Laws from 2017, item 1659, as amended),
4. the national strategy for the School Scheme implemented in Poland in the school years 2017/2018-2022/2023.

⁴² Data on the most popular media are published also in the Media Monitoring Institute reports: <https://www.imm.com.pl/rmf-fm-powraca-na-szczyt-najbardziej-opiniotworczych-mediow-w-polsce-na-podium-wirtualna-polska-i-rzeczpospolita/>

EU documents:

1. Regulation (EU) No 1306/2013 of the European Parliament and of the Council of 17 December 2013 on the financing, management and monitoring of the common agricultural policy and repealing Council Regulations (EEC) No 352/78, (EC) No 165/94, (EC) No 2799/98, (EC) No 814/2000, (EC) No 1290/2005 and (EC) No 485/2008 (OJ L 347, 20.12.2013, p. 549, as amended),
2. the Regulation (EU) 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products and repealing the 24 of Council Regulations (EEC) 922/72, (EEC)234/79, (EC) 1037/2001 (EC) 1234/2007 (OJ L 347, 20.12.2013, p. 671, as amended),
3. Commission Implementing Regulation (EU) 2017/39 of 3 November 2016 supplementing Regulation (EU) No 1308/2013 of the European Parliament and of the Council as regards Union aid for the supply and distribution of fruit and vegetables, processed fruit and vegetables, bananas and milk to educational establishments (OJ EU L 5, 10.01.2017, p. 1, as amended),
4. Commission Delegated Regulation (EU) 2017/40 of 3 November 2016 on rules for the application of Regulation (EU) No 1308/2013 of the European Parliament and of the Council as regards Union aid for the supply and distribution of fruit and vegetables, processed fruit and vegetables, bananas and milk to educational establishments (OJ EU L 5, 10.01.2017, p. 11, as amended),
5. Guidelines for Member States on the evaluation of the implementation of the EU School Scheme (document No. Ares (2018)5450792 of 24.10.2018).

The last evaluable edition of the School Scheme took place in the school year 2021/2022. In order for a school to participate - as in previous editions - it had to sign an agreement with suppliers of dairy products and fruit and vegetables. This agreement had to be submitted to the National Support Centre for Agriculture, which is the institution coordinating the implementation of the School Scheme in Poland⁴³. Schools participating in the Scheme were required, inter alia, to keep records of fruit and vegetables or milk and dairy products supplied and made available under the Scheme.

As indicated earlier, as part of the activities related to the School Scheme, dairy and fruit and vegetable products were provided to primary school pupils. The School Scheme also included

⁴³ Cf. <https://www.kowr.gov.pl/>.

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educational activities concerning a healthy diet and the origin of the products and promotional activities aimed, among other things, at building the awareness of parents and teachers concerning their role in the formation of children's good eating habits. The promotional and educational tasks under the Scheme were in line with Commission Delegated Regulation (EU) 2017/40 of 3 November 2016, which indicates the need for educational activities under the School Scheme linked to its objectives of increasing children's consumption of selected agricultural products and promoting healthy eating habits among them. According to the provisions of the regulation, the educational activities carried out under the School Scheme aimed to "re-establish the link between children and agriculture and the diversity of EU agricultural products, in particular those produced in their region, and to educate children on related issues such as healthy eating habits and their impact on public health, national dietary recommendations, local food chains, organic farming, sustainable food production and consumption and combating food waste"⁴⁴.

Financial aid for the implementation of measures related to the distribution of fruit, vegetables, milk and dairy products in accordance with the rules⁴⁵ was implemented on the basis of the fixed rate applicable to the component and the portions of the product made available to children. It should be noted that the rate of aid per portion is calculated each year for each component - in total for: fruit and vegetables (without specifying individual products) and for milk and dairy products. According to the National strategy, calculation of the rate is based on average retail prices of the products that have made up the portions over the past 5 years.

The rates set for the school year 2021/2022 were updated three times. Originally, they amounted to PLN 0.67 for a portion of fruit and vegetables and PLN 0.68 for a portion of milk and dairy products, while finally they amounted to PLN 0.82 for fruit and vegetables and PLN 0.96 for milk and dairy products. No negative impact of product price on quality was diagnosed.

The adopted simplified settlement system should be considered as a correct solution and treat it as a good practice. It allows for efficient accounting and its rules should be considered transparent. It would be necessary to reconsider the manner of determining the rate for products.

⁴⁴ Commission Delegated Regulation (EU) 2017/40 of 3 November 2016.

⁴⁵ Commission Delegated Regulation (EU) 2017/40 of 3 November 2016 supplementing Regulation (EU) No 1308/2013 of the European Parliament and of the Council.

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However, the prices of individual vegetables, fruit, milk and dairy products fluctuate considerably over time, influenced among others by the current economic situation in the country (for instance inflation). Average prices from 5 years cannot be adequate to the current market situation. Perhaps it would be more considerate to develop an average price used for calculation of the aid rate on the basis of prices from the last 12 months, instead of 5 years. It should also be noted that rates should be set on the basis of not only average prices of the products, but also current fuel prices affecting the cost of distribution and logistics (packaging, sorting, necessary personnel).

In the course of the research carried out, no administrative burdens requiring improvement were identified. Taking into account all the national and EU documents, according to which the School Scheme in Poland was implemented, it can be stated that the activities undertaken in order to implement it are coherent with the strategic documents both at the EU and Polish levels⁴⁶. As indicated in chapter 4.7, the coherence in the implementation of the Scheme is also evidenced by the involvement of public institutions at its various stages.

4.7. Evaluation of the actual involvement of the authorities and stakeholders in implementation of the School Scheme

Between 2017/2018 and 2021/2022, there were a number of public institutions involved in the implementation of the School Scheme at various stages; for instance ministries responsible for agriculture, health and nutrition, as well as education of children and young people. These institutions included:

- ✓ Ministry of Agriculture and Rural Development - a supervisory body responsible for the preparation of national legislation, involved in the planning, implementation and monitoring of the Scheme,
- ✓ Agency for Restructuring and Modernisation of Agriculture – a paying agency, involved in planning and implementation (in terms of making payments) and monitoring of the Scheme,
- ✓ National Support Centre for Agriculture - the Scheme administrator, involved in implementation of the Scheme as a task commissioned by ARiMR [Agency for

⁴⁶ It should be noted that due to the unavailability of certain documents, e.g. applications, information on administrative burdens, issues related to these matters could not be evaluated.

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Restructuring and Modernisation of Agriculture] (except for making payments), also participated in planning and monitoring of the Scheme,

- ✓ Ministry of Health, National Institute of Public Health - National Institute of Hygiene - National Research Institute (formerly the Food and Nutrition Institute) - involved in planning particularly with regard to the health aspect of the Scheme - recommendations concerning the selection of products distributed to children, frequency of distribution, educational activities, etc.,
- ✓ Ministry of Education and Science - involved in planning and implementation - in particular regarding the educational aspect of the Scheme, responsible for the preparation of the national law on educational activities at school.

All the above institutions were members of the inter-ministerial working group and participated in the regular meetings organised for this purpose.

In the implementation of the School Scheme, the Ministry of Agriculture and Rural Development, the Agency for the Restructuring and Modernisation of Agriculture and the National Support Centre for Agriculture were mainly responsible for planning, implementation, monitoring and supervision. Institutions from the educational and health sectors were mainly involved in activities of an advisory nature. **The involvement of the above-mentioned advisory bodies in the implementation of the scheme can be evaluated as average. In order to increase the effectiveness of the activities carried out under the School Scheme, it is necessary to place more emphasis primarily on educational activities concerning nutrition. Those implemented within the framework of the School Scheme seem to be insufficient and fail to have adequate impact on changing eating habits. It would therefore be necessary to modify the curricula in this area (see section 4.4), which would involve greater cooperation between the ministries from health and educational sectors.** The activities of the different institutions should be complementary in this respect.

In addition, it would be important for the Ministry of Health to be additionally involved in modifying and tightening regulations, as well as enforcing compliance of the permissible assortment of school shops and vending machines.

5. Answers to common evaluation screeners

For the purpose of this research, the fruit range included fresh fruit, dried fruit, fruit mousses, fruit included in smoothies and salads, and pure fruit juices. By contrast, the vegetable range included fresh vegetables, vegetables present in soups, vegetables stewed in dishes, as well as vegetables cooked as sides to dinner and vegetable juices.

For several reasons it was decided to expand the range of fresh fruit and vegetables to include processed products. Current dietary recommendations recommend 'hiding' fruit and vegetables in dishes (e.g. in soups, sauces, juices). In addition, the recommendations mention at least 300 g of vegetables in any form with a preference for raw. The inclusion of only raw vegetables and fruit would significantly distort the picture of the implementation of the dietary recommendations for children, which refer to vegetables and fruit in any form (without added sugar). In addition, some children may not tolerate many products in raw form and the dietary recommendations emphasise the need to include only cooked products in the menus, so suggesting only raw vegetables would again affect the reliability of the final results. Seasonality in the availability of some vegetables in Poland is also an important factor in favour of such approach. The cultural context, e.g. the custom of preparing and consuming pickles in this part of Europe, is also important. Analyses based solely on fresh produce would not be able to correctly reflect the diet of the citizens of our country.

The methodology used in the research made it possible to record changes in indirect as well as direct consumption altogether. In order to verify the impact of the Scheme on pupils' eating habits also outside school, a distinction between school and weekend days was included in the analyses.

In line with the recommendations of the National Institute of Public Health⁴⁷, only products without added sugar were included in the analysis of the consumption of milk and dairy products. The daily consumption of the following food groups was analysed: fruit, vegetables, and dairy products. A total data of 7,722 observation days were obtained, of which 4,722 (61.2%) were obtained from the panel study and 3,000 (38.8%) from the reference study.

The data collected in the quantitative research were subjected to statistical analysis. In the case of food diaries, the distributions of the analysed variables describing the daily intake of

⁴⁷ www.ncez.pzh.gov.pl

the analysed food groups were examined. All distributions were statistically significantly different from the normal distribution ($p < 0.001$). This means that using the mean (arithmetic) value as a measure of central tendency, i.e. the centre of the distribution, is inappropriate. In such situations, the median, which is the middle value, is a more reliable indicator. It will be used in further analyses to compare and describe the results. However, the mean value is also presented in further analyses for the purpose of information. Due to the presence of outliers, individual cases of very high consumption of a particular product group (e.g. fruit), the averages are significantly higher than the median. At the analysis stage, the appropriateness of removing some of the outliers was checked; however, detailed analyses showed that this was not justified and would have constituted an excessive interference with the data.

The following section refers to the evaluation questions set out in the "Guidelines for Member States on the evaluation of the implementation of the EU School Scheme" (Ares(2018)5450792):

TO WHAT EXTENT HAS THE PROGRAMME FOR SCHOOLS CONTRIBUTED TO INCREASING CHILDREN'S OVERALL CONSUMPTION OF FRUIT, VEGETABLES, MILK AND DAIRY PRODUCTS, IN LINE WITH NATIONAL RECOMMENDATIONS ON NUTRITION FOR THE CONCERNED AGE GROUP?

Summary of findings

On the basis of the research, it can be concluded that the effectiveness of the School Scheme is insufficient. Some positive effects of the intervention can be observed for the consumption of vegetables and milk and dairy products. However, the Scheme has not been able to sufficiently prevent the general trend of declining consumption of fruit and vegetables with age.

This can be attributed primarily to three factors. First, the parents of younger pupils (and especially of pre-schoolers) attach more importance to their children's diet. It is also worth noting that younger children, more often than older children, are given fruit and vegetables as a snack. In the case of fruit, it is 43% of parents of pre-school pupils and 41% of parents of first graders who give their children such snacks. For grades 3 and 5, the percentage of indications is lower by ca. 10 points.

Second, older pupils make their own eating decisions to a greater extent and are more likely to reach for sweets and salty snacks than for fruit and vegetables. Such habits are not prevented by the selection actually available at school shops and vending machines.

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Snack breaks are of importance as well. The time allocated for consumption is largely determined by the nursery group supervisors. At the first stage of education, the breaks are predetermined, so some pupils explain that the breaks are too short to eat fruit and vegetables.

Total consumption of fruit and vegetables decreased by 8% after one year of participation in the Scheme. Fruit and vegetable consumption decreases with the age of the respondents, however, among third graders, the decrease is greater among non-participants in the Scheme. This may indicate a small positive impact of the Scheme on this age group. Pupils in younger age groups consume more fruit and vegetables on school days, which may be related to the meals eaten at school and, in the case of first graders, to the products received as part of the fruit and vegetable distribution.

Similar trends were observed for vegetable consumption. After one year of participation in the Scheme, vegetable consumption decreased by 9%. However, for this product group, it was noted that pupils who have participated in the scheme for 5 years eat 24% more vegetables than pupils who have participated for 3 years (for the control group, the difference in consumption was only 1%). Fifth graders consume significantly more vegetables at weekends than their peers in the control group. This may indicate a positive impact of the intervention on shaping eating patterns outside school only after 5 years of participation in the scheme.

The analysis of fruit consumption confirms that it is more in line with children's taste preferences than vegetables. The majority of pupils consume more than the nutritional norm. Nevertheless, even within this product group, a decrease in fruit consumption was noted among older pupils. After one year of participation in the scheme, they consume 9% less fruit than before joining the scheme. In the 3rd grade, pupils subject to the intervention eat more fruit than their peers in the control group, but in the 5th grade this relation is reversed (more fruit is consumed by the control group). It can be concluded that the Scheme contributes to slowing down the decline in fruit consumption among 3rd graders. However, on the basis of the research carried out, it is difficult to give a clear answer as to why it did not have such an effect in the 5th grade.

With regard to the consumption of milk and dairy products, a decreasing trend with age can also be observed, with a rebound in the 5th grade. After one year of participation in the Scheme, children consume 8% less dairy products. By contrast, a change was observed among pupils participating in the scheme for 5 years. They consume 10% more dairy than 3rd graders. Intervention pupils consume significantly more dairy than their peers in the control group. It can

therefore be assumed that the intervention has a positive impact on children's eating habits in terms of dairy consumption only after 5 years of participation in the Scheme. Analysis of dairy intake on and off school days showed that the intervention pupils in each case consumed more dairy than their peers in the control group.

The recommended level of fruit and vegetable intake is 400g and this is met by nearly one in three participating children. However, the proportions of fruit and vegetable intake are the opposite of the recommended levels - pupils consume far more fruit than vegetables. This is undoubtedly related to the already mentioned children's food preferences and fondness for sweet taste. This is confirmed by an analysis broken down into two product categories. Pupils meeting the recommendations in terms of the intake of an adequate amount of vegetables represent only between 2% and 4% (depending on the studied group). In the case of fruit consumption, the percentages are close to 80%. In both cases, a decreasing trend with age was observed, with a rebound in the 5th grade.

What is important, the percentages of pupils meeting the recommendations for fruit intake are significantly higher in the intervention groups, which may indicate the positive impact of the Scheme after 3 years of participation.

The percentage of pupils consuming the recommended portion of dairy decreases with age; however, those participating in the Scheme for 5 years show a slightly higher consumption. On average, one in 17 children consume dairy at the recommended frequency (3-4 servings per day). There are no differences between the participating groups, so it is reasonable to believe that the scheme does not affect the frequency of consumption of the recommended portions of dairy intake. However, the decreasing frequency with age in dairy intake progressed faster among the control group than among the intervention pupils, which may indicate a small positive effect of the intervention in this aspect.

Change in children's direct and indirect consumption of fresh fruit and vegetables (quantity and/or frequency)

THE LEVEL OF CONSUMPTION OF FRUIT AND VEGETABLES COMBINED

The effectiveness of the Scheme in changing children's fruit and vegetable consumption must be considered insufficient. The total consumption of fruit and vegetables decreased by 8% after one year of participation in the Scheme. The nature of data gathered over the years of

participation in the Scheme is ambiguous. Pupils in 5th grades consume slightly more fruit and vegetables than pupils in 3rd grades. Pupils in 3rd grades consume the least amount of fruit and vegetables of all the analysed groups, but the intervention pupils consume more fruit and vegetables than their peers in the control group (by 7%).

It can be concluded that the consumption of fruit and vegetables decreases with the age of the respondents, but in the case of third graders the decrease is lower for those participating in the scheme. In addition, pupils in preschool and first grades consume significantly more fruit and vegetables on school days than at weekends. This may be related to eating meals at school and, in the case of first graders, also receiving them as part of the Scheme. Nevertheless, participation in the Scheme has no effect on the level of fruit and vegetable consumption on school days and at weekends for pupils in 3rd and 5th grades.

Reduced parental attention and more freedom in the choice of products in the case of older children can be seen as factors contributing to this trend. Pupils from the first grades also have shorter breaks than pre-schoolers. In summary, it can be concluded that, in its current form, the School Scheme does not sufficiently address the trend of poor nutrition in children, which progresses with age. Also, insufficient educational activities and insufficient involvement of parents contribute to the lack of change in pupils' eating habits.

In the study group (n=2574), the average daily intake of fruit and vegetables was 322 grams (wave I and wave II of the panel study were included as independent observations). The presented data indicates that 50% of the children consumed 323 grams or less of fruit and vegetables per day. In the research group, more than a third (34.9%) of the respondents followed the recommendation of consuming a minimum of 400 g of fruit and vegetables per day. However, this is mainly due to the relatively high consumption of fruit rather than vegetables.

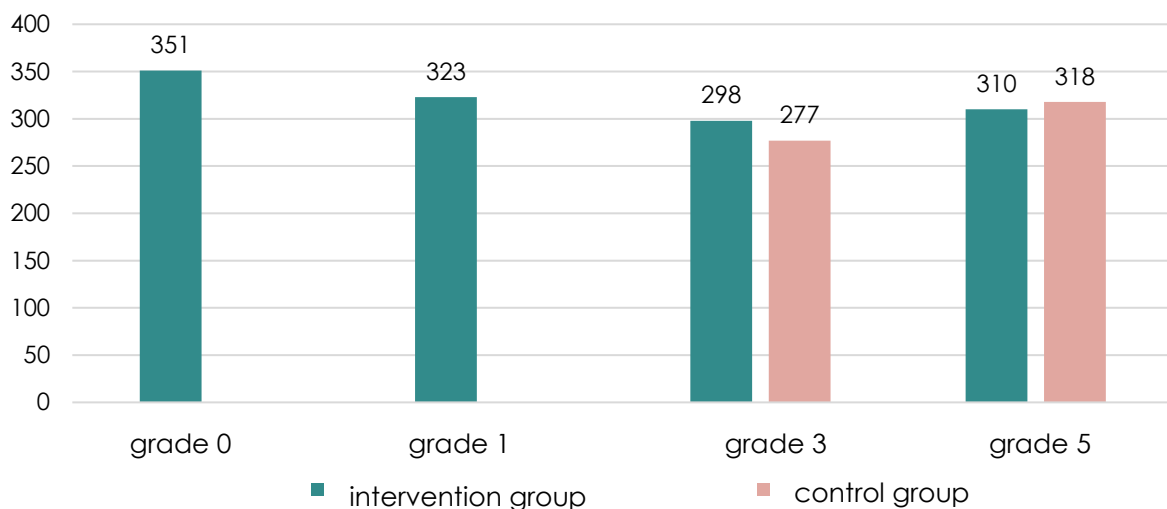
Table 6. Average daily consumption of fruit and vegetables in grams. Participants in the panel study were included separately for 1st and 2nd wave.

Measure	Value (g)
Median	322.67
Average	354.66
Standard deviation	210.01
Minimum	0.00
Maximum	1613.83

Valid N	2574
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Depending on the research group, the median average daily consumption of fruit and vegetables ranged from 277 to 351 grams per day. The results differed statistically significantly ($p < 0.001$). The highest consumption was observed in intervention grade 0 (panel study) with 351 grams. After one year (grade 1), a decrease to 323 g was observed. In contrast, values of 298 and 310 were obtained in grades 3 and 5 respectively, also under intervention. This compares with 277 g in 3rd grade and 318 g in the 5th grade in the control group (not under intervention). For both 3rd ($p = 0.220$) and 5th grade ($p = 0.727$), the differences found between the intervention and control groups were not statistically significant.

Diagram 3. Median average daily consumption of fruit and vegetables in grams by research group



Source: Quantitative research of parents – analysis of children's food diaries.

Analysis of the data by gender showed that in the panel study, the median average daily consumption of fruit and vegetables in the boys' group in grade 0 was 361 g. One year later (1st grade), a value of 344 g (a decrease of 5%) was obtained in the same group. By contrast, in the girls' group, results of 343 g (grade 0) and 305 g (1st grade) were obtained, indicating an 11% decrease.

In the reference study in the boys' group, the median average daily consumption of fruit and vegetables was obtained at 299 g in the 3rd and 309 g in 5th grade. In the control group it was 280 g and 303 g respectively. In the case of girls in the reference study, a median average

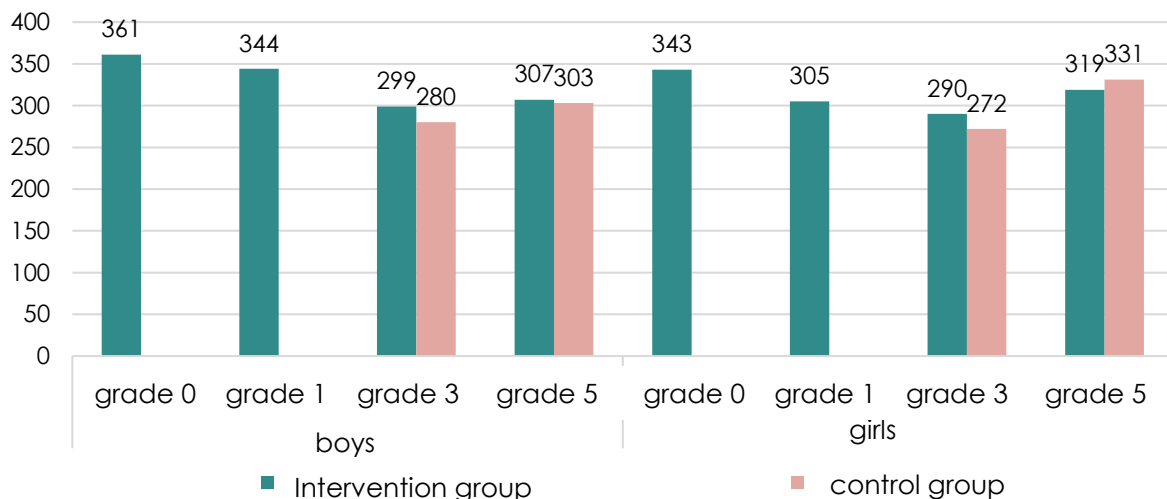
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consumption of 290 g in 3rd grade and 319 g in 5th grade was obtained in the intervention group, compared to 272 g and 331 g respectively in the control group.

Comparing the results obtained in the intervention groups in both the boys' and the girls' groups, there was a decrease in fruit and vegetable consumption in 1st and 3rd as compared to grade 0. However, in the 5th grade, both the boys' and girls' results were higher than in the 3rd grade.

The inclusion of gender in the analyses did not affect the evaluation of the effectiveness of the intervention. There were no statistically significant differences in either the 3rd (in the boys' group $p=0.317$, in the girls' group $p=0.529$) or 5th grade (in the boys' group $p=0.894$, in the girls' group $p=0.658$).

Diagram 4. Median average daily fruit and vegetable consumption in grams by research group and gender.



Source: Quantitative research of parents – analysis of children's food diaries.

Data describing pupils' daily diets were used to perform the analysis by weekday and weekend days. In the database, 58.6% of the dietary days concerned weekdays and 41.4% weekend days.

After taking into account the type of weekday and class, an average consumption of fruit and vegetables between 250 and 340 grams was observed, depending on the researched group.

Pupils in grade 0, as well as 1st and 3rd grades consumed more fruit and vegetables on weekdays than at weekends. The results in the research groups were statistically significantly different on weekdays ($p<0.001$).

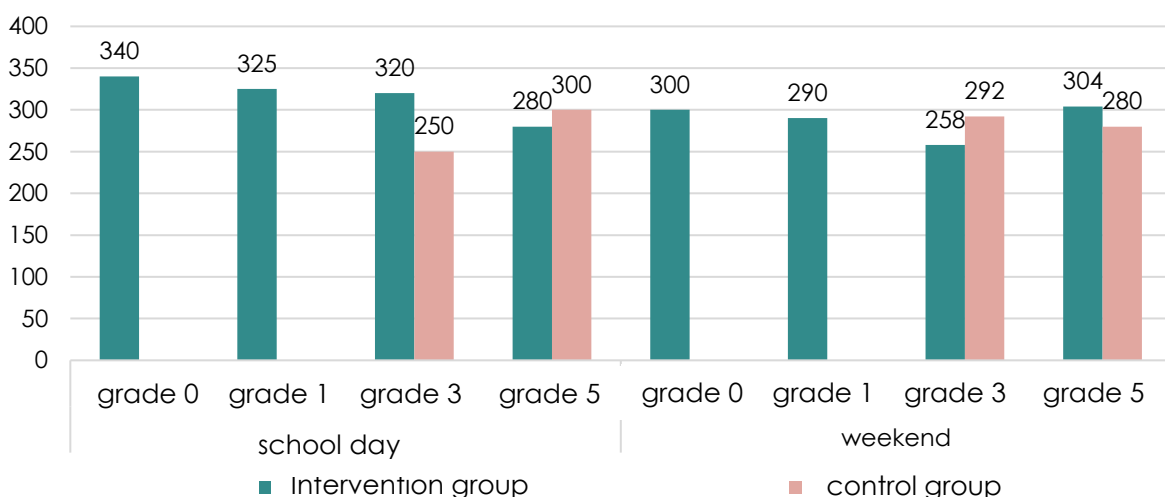
However, no statistically significant differences were observed on weekend days ($p=0.260$).

For both 3rd grades (weekdays $p=0.093$; weekend days $p=0.765$) and 5th grades (weekdays $p=0.462$; weekend days $p=0.483$), no statistically significant differences were observed between the intervention and control groups.

The highest values were on weekdays in grade 0 (340 g), while the lowest values were noted in the control group (without intervention) in the 3rd grade on weekdays as well. These pupils consume 70 g less fruit and vegetables than their peers in the Scheme. At weekends, the proportions are reversed - it is the pupils in the control group who consume 34 g more fruit and vegetables than the pupils in the scheme.

To sum up, statistically significant changes were found only in the total consumption of fruit and vegetables among grade 0 and first-grade pupils. They consume more fruit and vegetables on school days than at weekends. This may be related to the fact that they eat at school and, in the case of first graders, also receive fruit and vegetables as part of their participation in the Scheme. For 3rd and 5th grades, there were no significant statistical differences between fruit and vegetable consumption on school days and at weekends. It should therefore be concluded that participation in the Scheme does not affect them.

Diagram 5: Median daily fruit and vegetable consumption in grams by research group and type of day



Source: Quantitative research of parents – analysis of children's food diaries.

LEVEL OF VEGETABLE CONSUMPTION

After one year of participation in the scheme, there was a 9% decrease in vegetable consumption. This is more pronounced in boys than in girls. In the intervention group, there was a significant increase in vegetable consumption between pupils participating in the Scheme for 3 years versus 5 years (by 24%). In the control group, there was only a 1% increase in the consumption between the 3rd and the 5th grade. The differences in vegetable consumption between the intervention group and the control group are not statistically significant. However, when analysing the data by gender, it was observed that vegetable consumption is higher among boys in the 5th grade participating in the Scheme than among their peers in the control group.

Pupils consume more vegetables on school days than at weekends. However, this is not related to the distribution of vegetables in schools, as there were no differences between the intervention group and the control group. Nevertheless, differences between the groups were noted for vegetable consumption at weekends. Among those in the 5th grade, the intervention pupils consumed significantly more vegetables than their peers (in the 3rd grade, the trend was reversed). It can therefore be assumed that the intervention has a positive impact on eating behaviour outside school only after 5 years of participation in the scheme.

The analysis of children's vegetable consumption also indicated insufficient effectiveness of the Scheme. After one year of participation in the Scheme, there was a 9% decrease in children's vegetable consumption.

In the study group (n=2574), the average daily vegetable consumption was 95 grams (1st and 2nd wave of the panel study was included as independent observations). **The presented data demonstrates that 50% of the children consumed 95 grams or less vegetables per day and only 25% of the children consumed 150 grams or more vegetables per day, which does not constitute even 2 portions of the recommended servings.**

Table 7. Average daily consumption of vegetables in grams among Participants of the Panel study, were taken individually for 1st and 2nd waive.

Measure	Value (g)
Median	95,33
Average	110,70
Standard deviation	79,39

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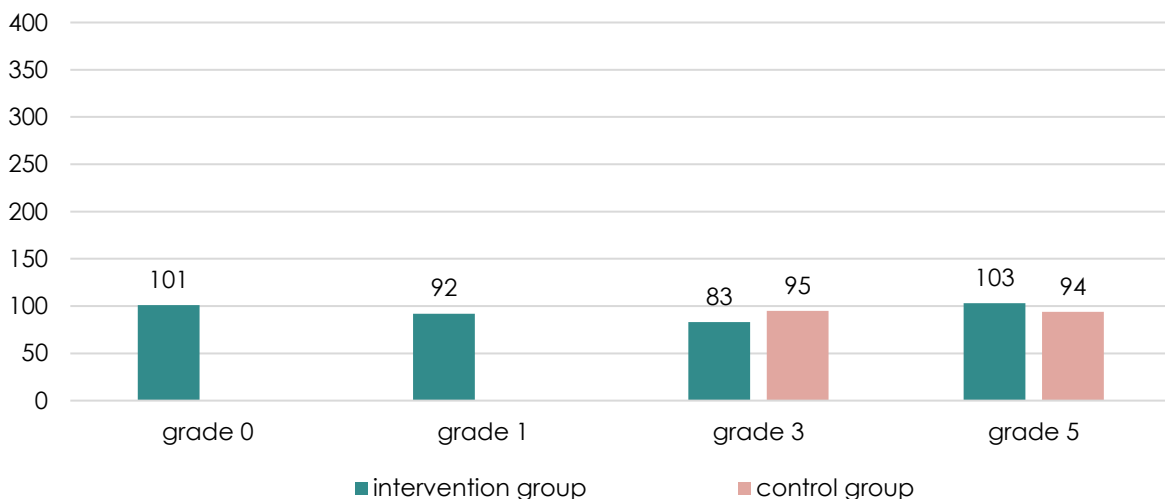
Minimum	0,00
Maximum	519,33
Valid N	2574

Depending on the research group, the average daily consumption of vegetables ranged from 83 g to 103 g. The differences were statistically significant ($p < 0.05$). **In the panel study, an average daily vegetable consumption of 101 g was reported in children in grade 0, with a decrease to 92 g (by 9%) after one year of follow-up. This means that 50% of children in the 1st grade consumed less than 92 g of vegetables per day.**

In the reference study, the intervention 3rd graders consumed on average around 83 g of vegetables per day and the 5th graders - 103 g. There was a 24% increase in vegetable consumption between pupils who participated in the Scheme for 3 years and those who participated for 5 years. This compares to 95 g and 94 g in the control group respectively - there was therefore a 1% difference in vegetable consumption between the 3rd and 5th graders.

For both 3rd ($p = 0.058$) and 5th grades ($p = 0.188$), the observed differences between the intervention and control groups were not statistically significant.

Diagram 6. Median average daily vegetable consumption in grams by research group



Source: Quantitative research of parents – analysis of children's food diaries.

When analysing the data by pupil gender, a decrease in vegetable consumption was noted after one year of participation in the Scheme. In the group of boys in grade 0, the median average daily consumption of vegetables was 102 g. One year later, a value of 86 g was

obtained in the same group. The difference was statistically significant. In the girls' group, the results were 100 g (grade 0) and 96 g (grade 1).

In the reference study, in the intervention group among boys, the average daily consumption of vegetables was 88 g in the 3rd grade and 102 in the 5th grade. There was a 16% difference in the consumption between boys participating in the scheme for 3 years and those participating for 5 years. This compares with 97 grams and 80 grams respectively in the control group (without intervention). This means that 5th grade pupils consume 18% less vegetables than 3rd grade pupils.

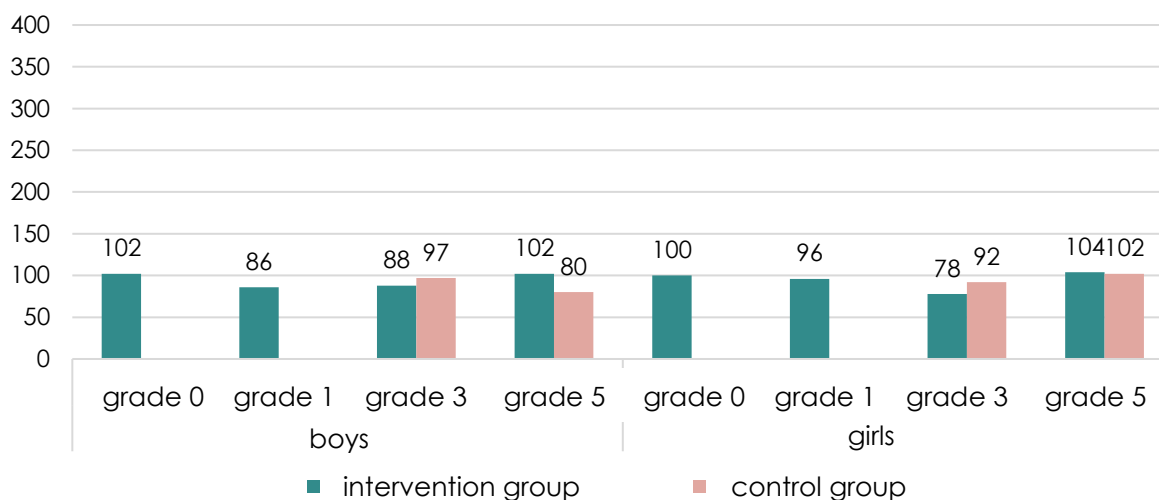
The intervention group of girls in the 3rd grade achieved 78 g and in 5th grade - 104 g. Thus girls, after 5 years of participation in the Scheme, consume 33% more vegetables than those in the 3rd grade. The control group consumed 92 g in the 3rd grade and 102 g in the 5th grade (a difference of 11%).

In conclusion, in the intervention group, a decrease in vegetable consumption was observed among boys between grades 0 and 1. In the case of girls, the differences were much smaller. In the older grades, there was a higher result in the 5th grade as compared to the 3rd grade in both the intervention group of boys and girls. In the control group, there was an increase only in the case of girls, while a decrease was recorded among boys.

When gender was included in the analyses, a statistically significant difference was found among boys in the 5th grade ($p < 0.05$) between the intervention and control groups. **Higher average vegetable consumption was observed in the intervention group.** Among girls in the 5th grade, the difference was not statistically significant ($p = 0.883$). In the 3rd grade, among both boys ($p = 0.153$) and girls ($p = 0.175$), the differences were not statistically significant either.

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Diagram 7. Median average daily vegetable consumption in grams by study group and gender



Source: Quantitative research of parents – analysis of children's food diaries.

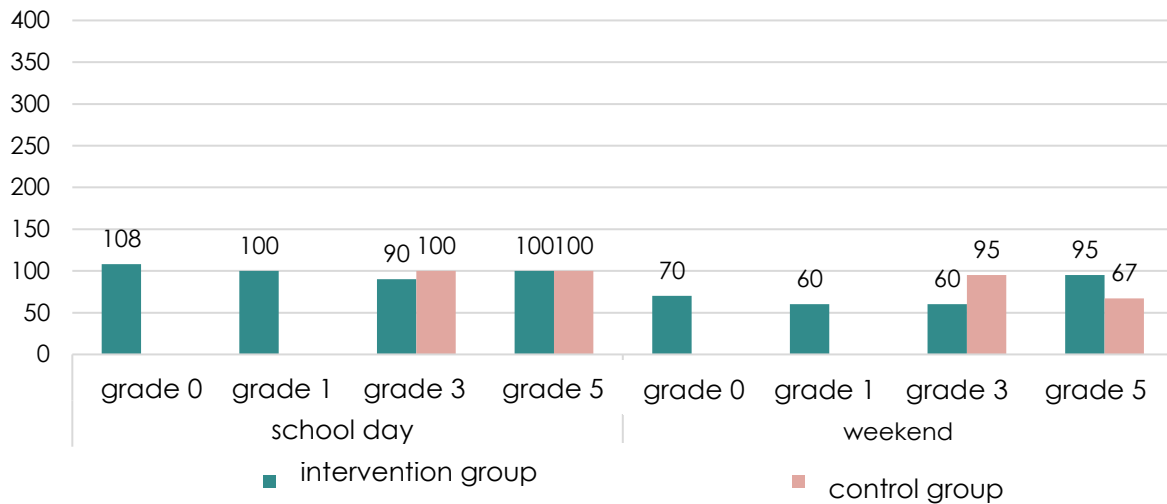
Pupils, regardless of which group they belong to, consume more vegetables on school days than on weekends. The average daily consumption of vegetables varied between 60 and 108 grams, depending on the type of day and grade. The results in the research groups were statistically significantly different on weekdays ($p < 0.001$) and at weekends ($p < 0.05$).

The highest values were on weekdays in grade 0 (108 g), while the lowest values were in the intervention group in 1st and 3rd grades on weekends.

For both grades 3 ($p < 0.05$) and 5 ($p < 0.05$), statistically significant differences were observed on weekend days. For the 3rd grade, higher average vegetable consumption occurred in the control group (difference of 35 g, consuming 58% more vegetables than in the intervention group). In the 5th grade, the proportions are reversed, with pupils in the intervention group consuming 28 g more produce (i.e. 29% more). No statistically significant difference was observed on weekdays (3rd grade $p = 0.336$; 5th grade $P = 0.333$).

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Diagram 8. Median average daily vegetable consumption in grams by study group and gender and type of day



Source: Quantitative research of parents – analysis of children's food diaries.

Level of fruit consumption

After one year of participation in the scheme, there was a 9% decrease in children's fruit consumption. In the case of 3rd grade pupils, the intervention children consumed significantly more fruit than their peers in the control group. It can therefore be concluded that, despite the general trends associated with a decrease in fruit consumption with age, it is slower in the intervention group. In the 5th grade, fruit consumption is higher among the pupils in the control group and it is impossible to diagnose the reason for this on the basis of the research.

No differences were recorded between fruit consumption at weekends and on weekdays. It is therefore not possible to conclude that the scheme has a positive impact on fruit consumption on and off school days.

In the research group (n=2574), the average daily fruit consumption amounted to 213 grams (1st and 2nd wave of the panel study was included as independent observations). **The results indicate that 25% of the children consumed 120 grams or less of fruit and the same percentage of children showed a consumption of 330 grams or more. This consumption pattern indicates that the fruit consumption recommendations were met for almost 75% of the respondents** (if we consider the minimum recommended amount of fruit per day, i.e. ¼ of 400 g of fruit and vegetables).

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Table 8. Average daily fruit consumption in grams. Panel participants were included separately for the 1st and 2nd wave.

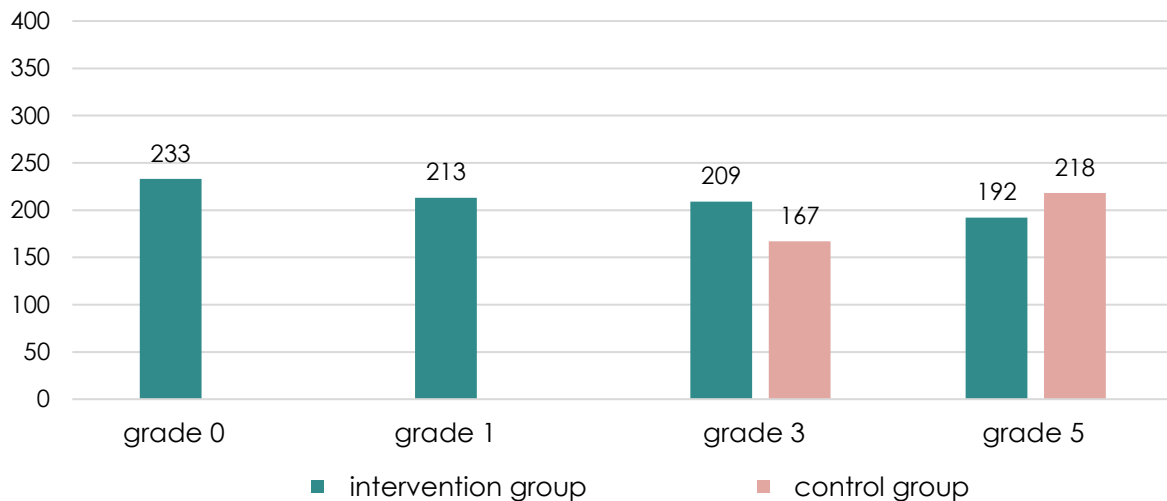
Measure	Value (g)
Median	213,33
Average	243,95
Standard deviation	181,09
Minimum	0,00
Maximum	1403,33
Valid N	2574

Depending on the research group, the average daily fruit consumption ranged from 167 g to 233 g. The differences were statistically significant ($p < 0.001$). In the panel study, the median average daily fruit consumption of 233 g was obtained in grade 0. After one year in this group (grade 1), the result was 213 g. Thus, after one year of participation in the Scheme, there was a 9% decrease in children's fruit consumption. The difference proved to be statistically significant ($p < 0.01$). However, both results still indicate sufficient and even higher than recommended fruit consumption. Presumably, the inclusion of 100% fruit juices in the fruit pool may have contributed to the increased consumption.

A decrease in fruit consumption was also observed in all intervention grades compared to grade 0. This is in line with the general trend associated with reduced fruit and vegetable consumption in older children. They are freer to choose the products they eat. They are therefore more likely to reach for salty and sweet snacks than for fruit. Among all the analysed groups, the lowest daily consumption of fruit was in the 3rd grade, which was not included in the intervention (167 g). By contrast, the non-intervention 5th grade achieved an average daily fruit consumption of 218 g.

In the case of the 3rd grade ($p < 0.05$), the differences noted were found to be statistically significant. The intervention group had a higher average fruit consumption compared to the control group. Pupils in the control group consumed 20% less fruit than those in the intervention group. The differences observed in the 5th grade ($p = 0.216$) proved to be statistically insignificant.

Diagram 9. Median average daily fruit consumption in grams by study group.



Source: Quantitative research of parents – analysis of children's food diaries.

In a panel study in a group of boys in grade 0, the median average daily fruit intake was 243 g. One year later, a value of 223 g was obtained in the same group (a decrease of 8%). However, the difference was not statistically significant ($p=0.148$). In the girls' group, the results were 225 g (grade 0) and 200 g (grade 1) - a decrease of 11%. The differences were statistically significant ($p<0.01$). Thus, a decrease in fruit consumption with age can be observed especially with regard to girls. Boys were characterised by a higher fruit consumption compared to girls, but in both cases the consumption was sufficient.

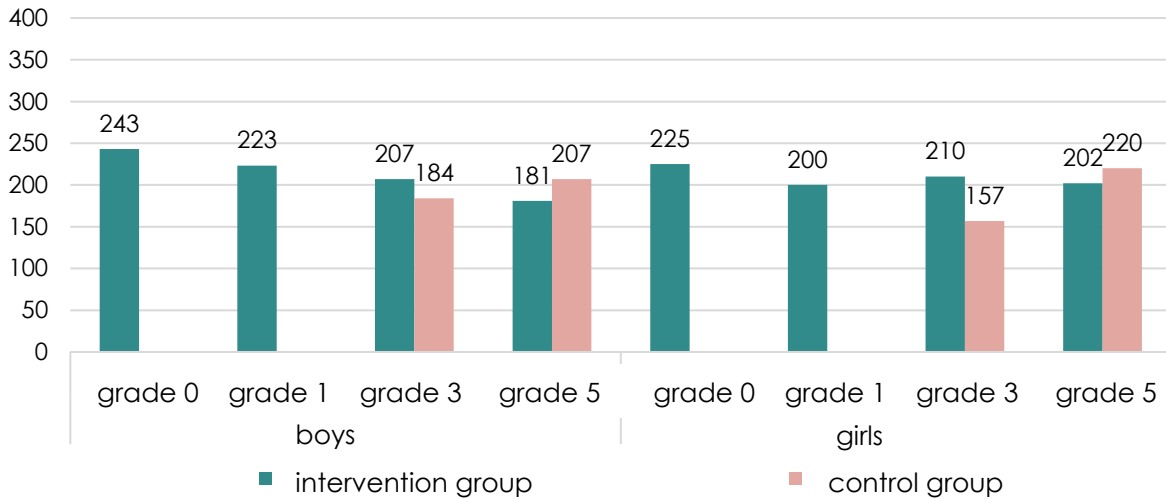
In the reference study, the intervention group of boys obtained a median average daily fruit consumption of 207 g in the 3rd grade and 181 g in the 5th grade. By contrast, in the control group, higher consumption was recorded in the 5th grade (207 g) than in the 3rd grade (184 g).

In the intervention group of girls, the average daily fruit consumption was 210 g in the 3rd grade and 202 g in the 5th grade. In the control group, it was 157 g and 220 g, respectively.

After adjusting for gender, the observed differences between the intervention group and the control group proved to be statistically insignificant in both the 3rd grade (in the boys' group $p=0.154$, in the girls' group $p=0.205$) and the 5th grade (in the boys' group $p=0.400$, in the girls' group $p=0.403$).

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Diagram 9. Median average daily fruit consumption in grams by study group and gender.



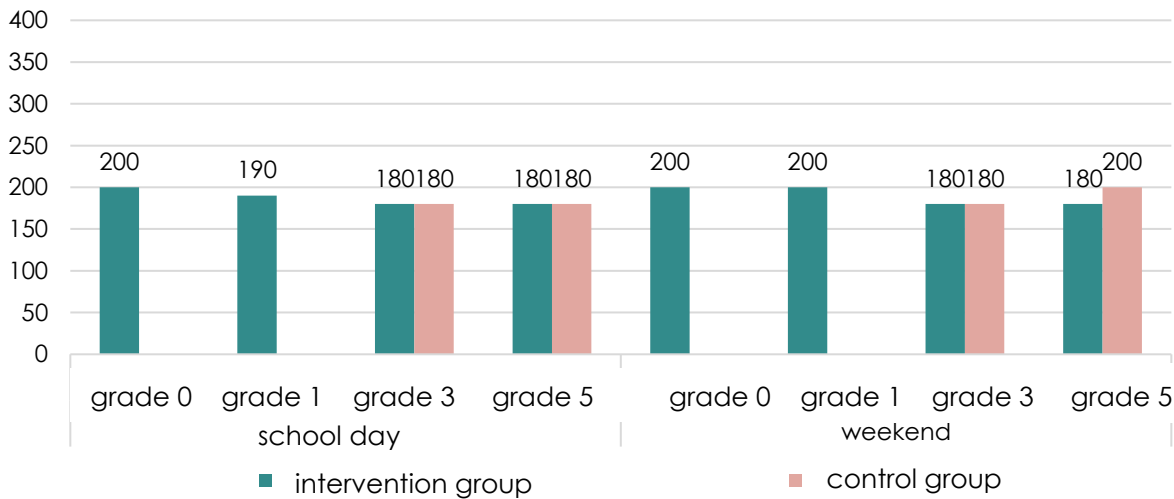
Source: Quantitative research of parents – analysis of children's food diaries.

No differences were observed in the average consumption of fruit on weekdays and at weekends. For fruit, the average daily consumption varied between 180 and 200 grams depending on the type of day and grade. The results in the research groups were statistically significantly different on weekdays ($p < 0.01$). In contrast, no statistically significant differences were observed on weekend days ($p = 0.191$).

Despite identical median fruit consumption in the intervention group and the control group in the 3rd grade (180 g each), statistically significant differences were observed in the distributions on weekdays ($p < 0.05$). On weekends, the difference was not statistically significant ($p = 0.711$). In the 5th grade, neither weekday ($p = 0.273$) nor weekend ($p = 0.763$) differences were significant.

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Diagram 10. Median average daily fruit consumption in grams by study group and type of day.



Source: Quantitative research of parents – analysis of children's food diaries.

Change in direct and indirect consumption of milk by children (quantity and/or frequency)

A decrease in dairy consumption with age was observed among the researched pupils. Children mainly consume it for breakfast - milk with cereal or as a snack. However, they are most likely to consume fruit yoghurt.

An 8% decrease in dairy consumption was observed among pupils participating in the Scheme for one year. Between pupils participating in the scheme for 3 years and those participating for 5 years, there was an increase in dairy consumption of 16 g, i.e. 10%. The change in dairy consumption was observed among pupils participating in the Scheme for at least 5 years. Intervention pupils consume significantly more dairy than their peers in the control group. It can therefore be assumed that the intervention has a positive effect on children's eating habits in terms of dairy consumption only after 5 years of participation in the Scheme.

Dairy consumption is higher on school days than on weekends. In any case, it is the intervention pupils who consume more dairy than those in the control group. With regard to dairy consumption at weekends, it should be noted that the intervention pupils consume significantly more dairy products than their control group peers. This may indicate a positive impact of the Scheme on dairy consumption on school days, as well as a positive effect on the pupils' eating habits outside school.

In the research group (n=2574), the average daily dairy consumption was 177 grams (1st and 2nd wave of the panel survey was included as independent observations). The first quartile [Q₁] fell at a value of 90 grams and the third quartile [Q₃] at 270 grams. Only 5% of the respondents met half of the recommendations for the supply of milk and dairy products (the current recommendations are 4 portions of milk or milk equivalents).

Table 9. Average daily dairy consumption in grams. Panel participants were included separately for the 1st and 2nd wave.

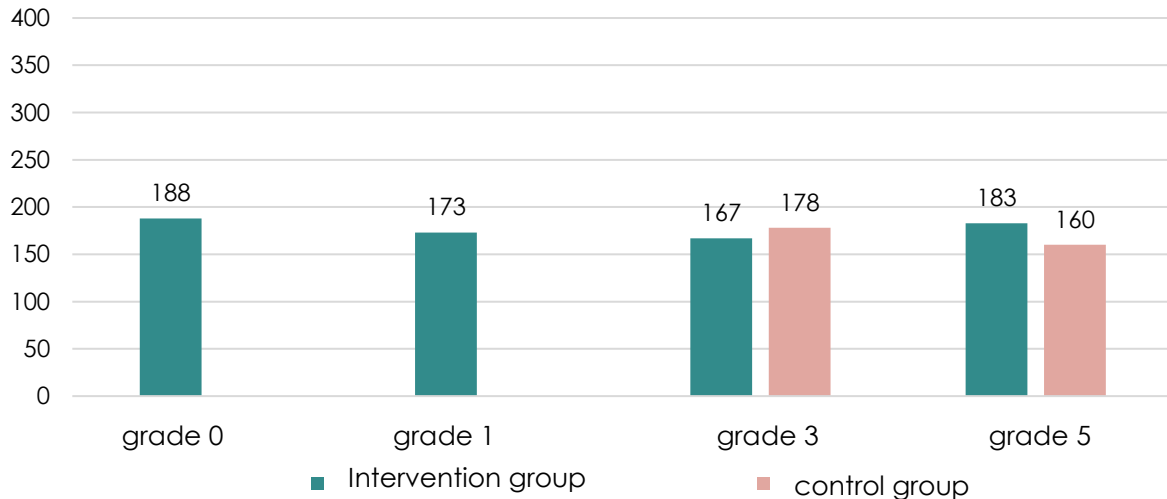
Measure	Value (g)
Median	176,67
Average	197,00
Standard deviation	142,08
Minimum	0,00
Maximum	1003,33
Valid N	2574

Depending on the research group, the average daily dairy consumption ranged from 160 g to 188 g. The differences were statistically significant ($p < 0.05$). In the panel study, grade 0 obtained a median average daily dairy consumption of 188 g. After one year in this group (grade 1), the result was 173 g.

In the reference study, a median mean daily consumption of dairy amounted to 167 g in the 3rd grade and 183 g in the 5th grade in the intervention group. In the case of the control group, these values were 178 and 160 grams, respectively.

As far as the 3rd grade is concerned ($p < 0.707$), the differences between the intervention and control groups were found to be statistically insignificant. On the other hand, in the 5th grade ($p < 0.05$), the differences noted proved to be statistically significant. **The intervention group had a higher average consumption of dairy products compared to the control group. Pupils participating in the Scheme for 5 years consumed 14% more dairy than their peers in the control group.**

Diagram 11. Median average daily dairy consumption in grams by study group.



Source: Quantitative research of parents – analysis of children's food diaries.

In the panel study in a group of boys in grade 0, the median average daily dairy consumption was 186 g. One year later, a value of 172 g was obtained in the same group. There was therefore an 8% decrease in the consumption and the difference was statistically significant. In the girls' group, the results were 188 g (grade 0) and 177 g (grade 1).

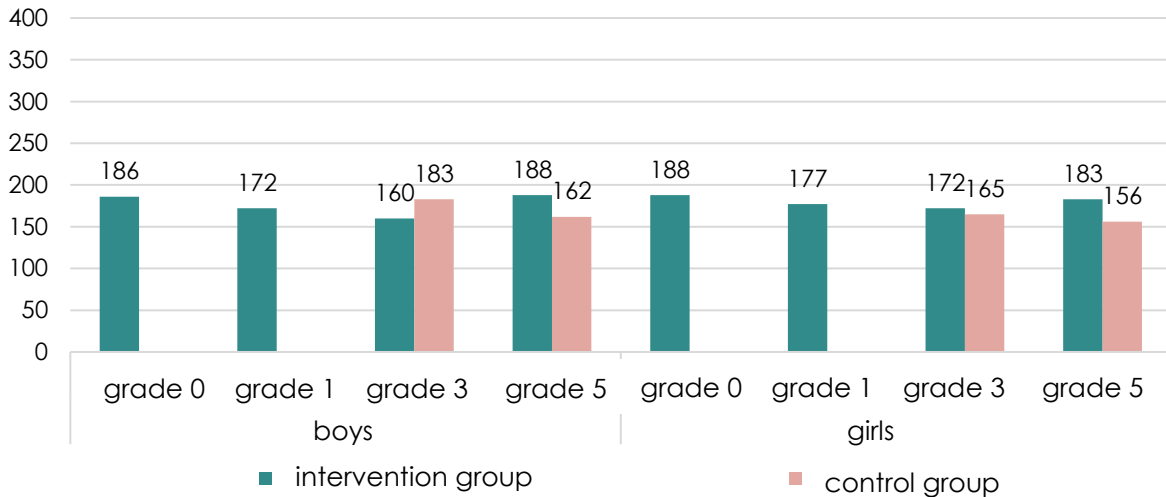
In the reference study, the median average daily consumption of dairy products in the intervention group of boys was 160 g in 3rd grade and 188 g in the 5th grade. In the control group, it was 183 g and 162 g, respectively.

The intervention group of girls achieved an average daily dairy consumption of 172 g in the 3rd grade and 183 g in the 5th grade. The corresponding control groups amounted to 165g and 156g, respectively.

After adjusting for gender, only statistically significant differences between the intervention and control groups were observed among boys in the 5th grade ($p < 0.05$). **The intervention group had a higher average dairy consumption compared to the control group.** For the group of girls in the corresponding grades ($p = 0.179$), the differences were not statistically significant. Also, in the 3rd grade, no significant differences were observed in either the boys' group ($p = 0.227$) or the girls' group ($p = 0.434$).

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Diagram 12. Median average daily dairy consumption in grams by study group and gender.



Source: Quantitative research of parents – analysis of children's food diaries.

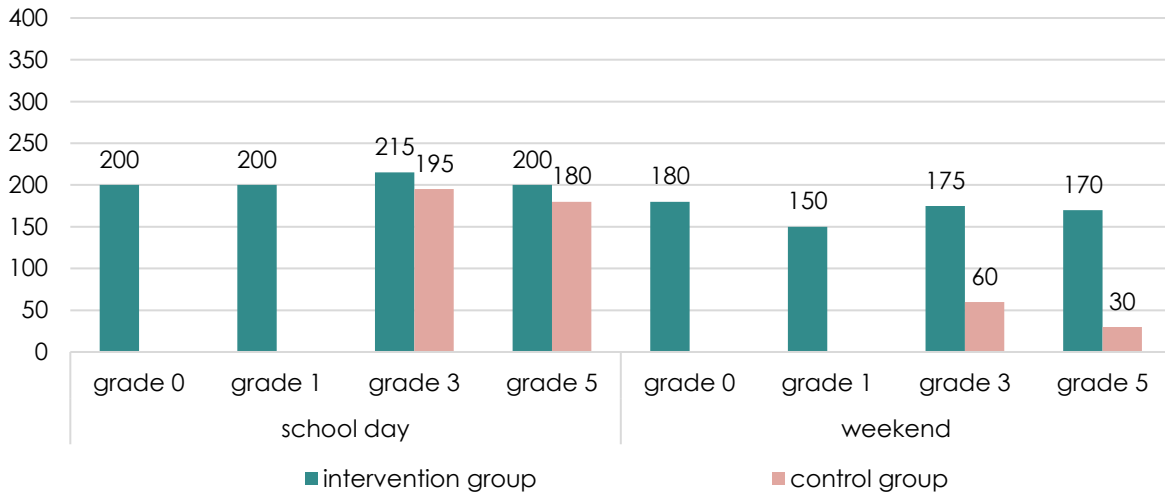
Based on the results, it can be concluded that the average consumption of dairy products is higher on weekdays than on weekends. The average daily consumption of dairy products varied between 30 and 215 grams depending on the type of day and grade. The results in the research groups were statistically significantly different on weekend days ($p < 0.01$). On weekdays, the differences were not statistically significant ($p < 0.112$).

The highest values of average daily dairy consumption were observed on weekdays among the intervention 3rd graders (215 g). By contrast, the lowest values were observed in the control group in the 5th grade on weekends (30 g).

Differences between the intervention and control groups were statistically significant for the 5th grade at weekends ($p < 0.01$). Higher dairy consumption occurred in the intervention groups. For weekdays, the differences were not statistically significant ($p = 0.070$). The results were not statistically significantly different ($p = 0.303$ and $p = 0.414$, respectively) for the 3rd grade on both weekends or weekdays.

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Diagram 13. Median daily dairy consumption in grams by study group and type of day



Source: Quantitative research of parents – analysis of children's food diaries.

Change in the percentage of children consuming the recommended daily portion of fruit and vegetables

The current recommendations for children and adolescents recommend a minimum of 400 g of fruit and vegetables per day, in the proportions of $\frac{3}{4}$ vegetables (minimum 300g) and $\frac{1}{4}$ fruit (minimum 100g). 80-100 g of fruit is presumed as one serving, which can be replaced with a glass of pure fruit juice.

Nearly one in three children met the standards for the recommended consumption of fruit and vegetables combined (400 g). The differences observed were statistically significant ($p < 0.01$). Unfortunately, the proportion of fruit and fruit juices is too high in relation to the recommendations. The share of those meeting the recommendation of fruit and vegetable consumption was highest among the pre-school pupils, and then in each subsequent group participating in the intervention for one year, three years and five years, it was getting lower. The share meeting vegetable consumption recommendations was also increasingly lower with a slight rebound in pupils participating in the Scheme for 5 years. This difference turned out to be statistically insignificant so there can be no positive impact of the Scheme. In the case of fruit, the share of respondents meeting the recommendations for fruit also showed a decreasing trend with a rebound in 5th grade. Importantly, the share of pupils meeting the recommendations for fruit consumption are slightly higher in the intervention groups, which

may indicate a positive effect of the Scheme after 3 years of participation (the differences are statistically significant).

Table 10. Percentage of children meeting recommended amounts of fruit and vegetable consumption.

Consumption limit		Intervention group				Control group	
		Grade 0	Grade 1	Grade 3	Grade 5	Grade 3	Grade 5
Fruit and vegetables	>=400g	39,0%	35,5%	31,6%	31,6%	26,8%	34,8%
vegetables	>=300g	3,3%	2,5%	2,0%	4,0%	3,6%	2,8%
fruit	>=100g	84,5%	82,5%	78,0%	81,2%	70,4%	80,0%

The share of children meeting the norms in this respect among the participants for one year is 35.5%, a decrease of 3.5 percentage points from the previous measurement. For 3rd graders, the share is higher in participating pupils than in their control peers and amounts to 31.6% (4.8 percentage point difference). For 5th graders, the trend is the opposite, with 34.8% of pupils in the control group meeting the recommended nutritional standards, which is 3.2 percentage point higher than for pupils in the intervention.

The share of pupils meeting the recommendations for vegetable consumption (300 g) is very low, ranging from 4% in the 5th grade to 2% in the 3rd grade. The differences were not statistically significant ($p=0.717$). After one year of participation in the Scheme, the share of those meeting the recommendations decreased by 0.8 percentage points and was 2.5%. It is worth noticing that the recommended consumption of vegetables in grade is met by 4% of the Scheme participants compared to 2.8% of their peers in the control group. Due to the lack of statistical significance, there can be no positive effect of the Scheme here.

Most pupils consume more fruit than the nutritional standards. The consumption recommendation (100 g) is met by almost 80% of the participating pupils. The differences between the groups were statistically significant. **Admittedly, after one year of participation in the Scheme, the percentage of those meeting the standards decreased by 2 percentage points. However, for the 3rd and 5th grades included in the Scheme, the group of those meeting the recommendations is higher than for the control group - by 7.6 and 1.2 percentage points respectively), which may indicate a positive effect of the Scheme on increasing the group of those meeting the fruit consumption recommendations.**

As parents pointed out, children's nutrition varies according to the age of the child, making the meals of individual family members also different. The nutrition of children starting school

education is particularly problematic, with a significant proportion of them eating only selective foods and being particularly reluctant to eat vegetables. This behaviour is not unusual, as children go through different stages. There are periods of increased appetite and receptiveness to new tastes, as well as periods of refusal to eat foods from certain categories. This is due to natural changes in the child's development, which usually pass spontaneously after a certain time. It is therefore important to form positive eating habits from the early stages of childhood. Developing healthy habits in terms of snacks will continue to have positive effects later in life. It is therefore important for the Scheme to reach the widest possible audience from the early school years onwards. This is confirmed by interviews conducted with parents, who indicated that the diet of older children (generally children attending grade seven and above) is much more varied than that of children in the early school years. Therefore, despite the educational measures implemented and the increase in children's knowledge of nutrition, the effects of a varied diet rich in fruit and vegetables may not be visible in the short term. As the results of the research indicate, some changes are significant only after five years of participation in the Scheme, which constitute the whole participation period. The habits that have just been developed need to be secured at least until the end of primary school and preferably until the end of the next stage of education. On the other hand, the activities carried out must have an intensity that guarantees the effectiveness of the intervention (sufficiently high frequency (at least three times a week) and duration of the scheme).

Change in the proportion of children meeting the health and nutrition recommendations of national authorities regarding the consumption of drinking milk and other dairy products (without added sugar, flavourings, fruit, nuts or cocoa, and in line with the nationally recommended levels of fat and sodium for the target age group)

The current nutritional standards state that 3-4 portions of dairy products should be consumed by school-aged children daily. Such frequency of consumption covers calcium requirements specified for children aged 4-9 years on the level of 1,000 mg/day and for older children and adolescents (10-18 years) on the level of 1,300 mg/day (calculated as 3-4 glasses of milk or substitutes per day). Gram analyses were used in the research. Due to the differences between different dairy products, e.g. milk and cheese, a limit of 500 g was adopted by assuming a hypothetical diet that would include a glass of milk (250 g), a pot of yoghurt (150 g) and a portion of cottage cheese (100 g).

The proportion of pupils consuming the recommended portion of dairy decreases with age, with slightly higher consumption reported in those participating in the Scheme for 5 years. Importantly, the share of pupils meeting the standard for dairy consumption is higher in the intervention groups than in the control groups. However, the differences between the groups are not statistically significant, so it is not possible to indicate the impact of the Scheme.

On average, one in 17 pupils consumes dairy products at the recommended frequency. There were no differences between the groups participating in the research, so it is reasonable to believe that the Scheme has no impact on the frequency of consumption of the recommended portions of dairy.

Thus, there is a decrease in the frequency of dairy consumption among pupils with age, but this is somewhat slower in the intervention group than in those who did not receive the intervention. This may be related to the positive effects of the Scheme. Pupils in the intervention group consume slightly more servings of milk and dairy products than their peers in the control group.

In the analysed group, 500 g of dairy products were consumed by 3.7% of the pupils. The differences between the groups were not statistically significant ($p=0.440$). The share of children meeting the recommendations fell by 0.7 percentage points after one year of participation in the Scheme. It is noteworthy, however, that in both grades 3 and 5, a higher share of those complying with the dairy consumption requirements is found in the Scheme group than in the control group.

Table 11. Share of children meeting recommended amount of dairy consumption.

Consumption limit		Intervention group				Control group	
		Grade 0	Grade 1	Grade 3	Grade 5	Grade 3	Grade 5
ff dairy	>=500g	4,4%	3,7%	3,6%	4,4%	2,4%	2,0%

Since the dietary standards mainly refer to the recommended number of servings of dairy products that school-age children should consume (as far as grammages are concerned, these should be analysed for each type of product separately) - in responding to this research question, it was also decided to analyse the results of screeners conducted with parents and their declarations regarding the frequency of consumption of each type of product by pupils. They were asked to indicate on an 8-point scale how often their children consume portions of

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the following types of products: natural yoghurt, natural kefir, milk (e.g. cow's, goat's, apart from vegetable drinks), cottage cheese.

No statistically significant differences were observed among the aforementioned product types separately, for the different groups included in the research. **In the case of natural yoghurts and natural kefirs, neither product is given to children more than twice a day. This situation applies both to children not included in the Scheme and to those participating in the Scheme for one, three and five years, as well as to the control groups.** The exception is cottage cheese, which was indicated as being given more than 2 times a day 0 grade pupils (i.e. before joining the Scheme).

For the frequency of milk consumption by pupils, there were also no significant differences between the Scheme groups, with a share of between 2 and 4% parents indicating that their children consumed milk more than twice a day. The Scheme therefore had no impact on the number of portions of milk or dairy products consumed by children.

In order to estimate the segment of children who consume milk or dairy products in total, the frequencies of product consumption on a weekly basis were summed. Then it was verified what share of children consume dairy products at least 3 times a day on a weekly basis. Regardless of the research group, it was between 5% and 8% of the respondents. **This means that, on average, one in 17 pupils consumes dairy products at the recommended frequency. Importantly, there were no differences between the groups here, which means that the frequency of consumption of the recommended dairy portions was not influenced by the Scheme.**

The average consumption of milk and dairy was 1.34 portions per day and the median was 1.14 (meaning that half of the children had a higher frequency and half a lower frequency). Slight differences were observed between the groups. For the pupils participating in the panel study, the difference is small (mean at 1.36 before the scheme and 1.32 after one year of participation). For pupils participating in the Scheme for three and five years, a difference between the intervention group and the control group is noticeable. 3rd graders participating in the Scheme consume 1.37 portions of dairy per day, while their peers in the control group consume 1.25. In the case of 5th graders, those participating in the Scheme consume 1.25 portions per day, while those in the control group consume 1.19. **Although the number of**

portions consumed is insufficient, it is slightly higher in the case of intervention pupils, which may indicate a small positive impact of the Scheme.

TO WHAT EXTENT HAS THE SCHOOL PROGRAMME MADE HEALTHY EATING HABITS MORE WIDESPREAD AMONG CHILDREN? (TO WHAT EXTENT HAS THE SCHOOL PROGRAMME INCREASED CHILDREN'S AWARENESS OF THE VARIETY OF AGRICULTURAL PRODUCTS AND THE HEALTH BENEFITS OF EATING THEM?)

Summary of findings

There is no doubt that the presence of vegetables in every meal and the presence of fruit in the child's daily diet is associated with the development of positive eating patterns⁴⁸. In addition, the consumption of fruit and vegetables at an appropriate level has the effect of reducing the consumption of products rich in fats and sugar.⁴⁹.

The research carried out indicates a slight change in children's attitudes towards fruit and vegetables. As mentioned in an earlier section, due to taste preferences and a predilection for sweet tastes - children prefer fruit to vegetables. After one year of participating in the Scheme, they are slightly fonder of strawberries, bananas and cherries - indicating a broadening of their preference also for other fruits not distributed during the Scheme. For vegetables, the share of children liking carrots has increased.

It should be noted that the Scheme contributes to familiarising children with new tastes and developing taste preferences. This has to do, on the one hand, with the regular distribution of fruit and vegetables and, on the other, with eating them with peers, which increases motivation to try new things. However, the Scheme does not affect children's preference for more challenging flavours - such as radishes and turnip. These vegetables are disliked and this does not change under the intervention.

It can be concluded that the Scheme has contributed to an increase in the share of children liking milk. However, it did not influence the taste for natural yoghurts and kefirs (probably also due to the demanding taste of these products).

⁴⁸ Lee H.A., Hwang H.J., Oh S.Y., Park E.A., Cho S.J., Kim H.S., Park H. Which Diet-Related Behaviors in Childhood Influence a Healthier Dietary Pattern? From the Ewha Birth and Growth Cohort. *Nutrients*. 2017;9:4. doi: 10.3390/nu9010004

⁴⁹ Galinski G., Lonnie M., Kowalkowska J., Wadolowska L., Czarnocinska J., Jezewska-Zychowicz M., Babicz-Zielinska E. Self-Reported Dietary Restrictions and Dietary Patterns in Polish Girls: A Short Research Report (GEBaHealth Study) *Nutrients*. 2016;8:796. doi: 10.3390/nu8120796

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It is worth noting that the formation of healthy habits should not only be based on children's participation in the Scheme. It is also necessary to change the regulations on the acceptable assortment in school shops and vending machines and to effectively enforce the restrictions that already exist.

As a result of the Scheme, the share of children considering fruit and vegetables to be healthy has not changed. After one year of participation in the Scheme, children have learned that fruit juices are also healthy.

More than half of the children in the younger age groups know that they should eat 5 portions of fruit and vegetables a day. The Scheme had no effect on increasing the proportion of children indicating the correct answer. In the older age groups, children's knowledge of the recommended number of portions of fruit and vegetable consumption decreases and does not differ significantly from that of the control group.

Children are aware of the negative health effects of foods rich in salt, fat and sugar, but this does not translate into any change in eating habits. Knowledge in this respect has not changed as a result of participation in the Scheme.

There was no significant change in correctly identifying fruit and vegetables over the course of participating in the Scheme. The lack of change may have been due to the high baseline knowledge of the children in grade 0. There was no change in the level of knowledge of children knowing the production cycle of milk and dairy products. Nor was there change in the awareness of organic products.

The scheme has therefore not increased children's knowledge as much as expected. On the one hand, this fact may be related to the already high baseline knowledge of the grade 0 pupils. It should be noted that pupils, as well as their parents, have an elementary knowledge of healthy eating; nevertheless, it does not influence their eating habits.

It can be concluded that the educational activities carried out within the Scheme were insufficient. As indicated above, at least 40 to 50 hours of nutrition-related activities⁵⁰ are needed for children to have any effect and change their eating habits as a result of this education. In addition, parents and guardians of pupils should also be involved.

⁵⁰ Institute of Medicine, Nutrition Education in the K-12 Curriculum: The Role of National Standards: Workshop Summary [available at:] <https://www.ncbi.nlm.nih.gov/books/NBK202131/>

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Evaluation of the Scheme by parents and the school community is high. The main factors influencing parents' evaluation of the Scheme include the fact that the produce received is fresh and that children can gain knowledge about agricultural products and healthy habits through participation in the scheme.

Changing children's attitudes towards the consumption of fruit, vegetables, milk and dairy products in line with national recommendations on nutrition in the target age group

Both younger and older children liked fruit to a similar degree. There was little change in food preference after one year of participation in the Scheme, while there were no significant differences recorded between attitudes towards individual products in the children in the intervention group and the control group. The slight differences in the change in attitude towards fruit may be due to the overall positive attitude towards fruit and its sweeter taste.

One year into the Scheme, the children were slightly fonder of strawberries, bananas and cherries. This may indicate that, in addition to the fruit distributed through the Scheme, children have also broadened their preferences to other fruits. As for vegetables, they are less liked by children. After one year of participation in the Scheme, the share of children liking carrots has increased. It appears that in the case of vegetables with more demanding flavours (such as radish or turnip), distributing them at school will not make children grow fonder of them. However, the Scheme is certainly conducive to familiarising children with new tastes. It is also important that children can eat the products in a group of peers and are more willing to experience new tastes.

A similar situation applies to dairy products. After one year of participating in the Scheme, the share of children indicating milk as one of their favourite products increased from 46% to 61%. And yet, children were not convinced by natural yoghurts and kefir - probably due to their demanding taste.

Fruits such as strawberries, apples, cherries, bananas, pears, peaches, plums and oranges are most liked by the children in the youngest group. Before joining the Scheme, the average preference level for these products was between 3.3 and 3.8 (on a scale of 1 to 4). **After a year of joining the Scheme, there was a slight change in children's attitudes towards the consumption of strawberries, bananas and cherries: the children liked these fruits more.** Among the older children in 3rd and 5th grades, strawberries, apples, bananas, oranges, cherries, pears, peaches and plums were most liked. In the group covered by the School Scheme, the average

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preference level for these products was between 3.4 and 3.9, whilst among the children not covered by the Scheme the average preference level was the same, however excluding cherries. The Scheme group liked cherries more than the control group.

In the group of younger children, only four vegetables were liked (mean level was 3 and above). These comprised of: carrots, tomatoes, cabbage and bell peppers (mean level of preference was 3.0 to 3.4 before the Scheme). With that said, after joining the Scheme, children preferred carrot, which was distributed during the Scheme in schools. Younger children disliked vegetables such as cauliflower, radish, beetroot and turnip.

Older children liked carrots, tomatoes and bell peppers (the average preference level was between 3.0 and 3.4 among the children in the Scheme). They disliked radishes, cauliflower, cabbage, beetroot and turnip. Changing children's attitudes towards vegetables can be hindered by the taste. The vegetables liked by the children are rather sweet tasting (e.g. carrots). Children did not like spicy vegetables (e.g. radishes).

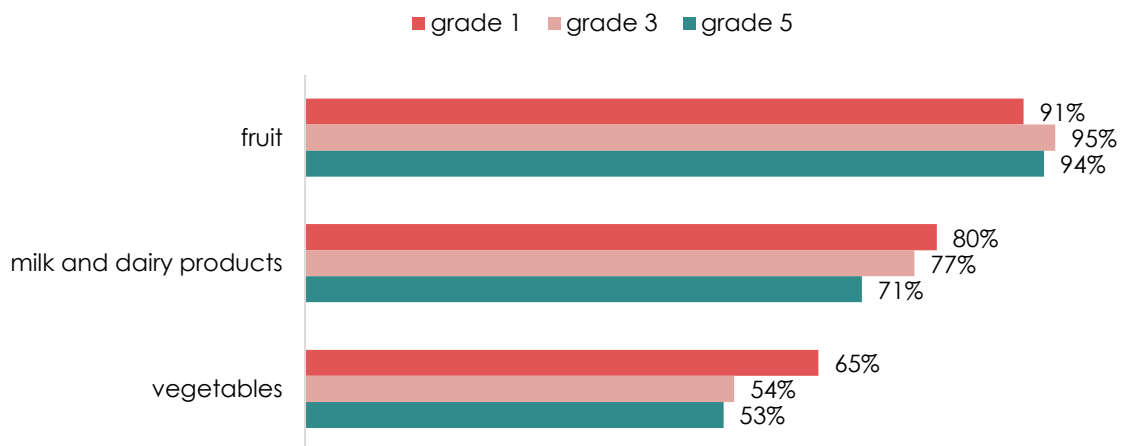
It is worth noting that distributing vegetables with flavours that children find too demanding does not change their attitude towards vegetables. This was the case with radishes and turnip. However, it can be said that the scheme enables children to become familiar with the taste of vegetables and to develop a taste preference. This is certainly facilitated by eating vegetables within a group. As the results of the teacher survey show - the influence of the group at school age is of great importance.

Analysing the dietary preferences for dairy and dairy products, it can be concluded that children like milk and cottage cheese. Younger children liked milk more after joining the Scheme. The level of indicating milk among the favourite drinking products increased by 15 percentage points from 46% of the responses in the 0 graders, to 61% of the responses after one year of participation in the Scheme. **Products such as natural yoghurt and kefir were unlikely to be liked by the children. Older children had similar dietary preferences.** In this group, however, no significant differences were observed between the intervention group and the control group. The share of children who liked and enjoyed drinking milk a little fluctuated around 91%-95% (children under intervention for 3 years: 95%, for 5 years: 91%, control group: 3rd grade: 92%, 5th grade: 93%). It can therefore be concluded that, in this group, the scheme did not affect the liking of milk.

However, it is worth noting the differences in preference for natural yoghurt. In the group of children who joined the Scheme it was liked in contrast to the children who did not participate in the Scheme. The observed patterns may be related to the taste preferences of the children, who prefer sweet tastes (e.g. milk) but not sour tastes (e.g. kefir). **Once again, however, it can be considered that the Scheme allows the children to get to know different tastes and build preferences based on experience rather than beliefs.**

Another question asked to the pupils confirms that fruit is the most liked group of products they receive as part of the Scheme. 91% of 1st graders and 94% of 3rd and 5th graders would like to receive it more often. About three in four respondents indicated that they would like to receive milk and dairy products more often (80% of 1st graders and 74% of 3rd and 5th graders). Vegetables are least popular with 65% of younger pupils and 54% of older pupils, who would like to receive them at school more often.

Diagram 14. Would you like to receive at school more often...



Source: Panel study of pupils in grade 1 (n=787), reference study of grades 3rd and 5th grades – intervention (n=500).

According to the in-depth interviews conducted with educators, the consumption of fruit and vegetables can also be indirectly influenced by the length of the break. In most of the described schools, lunch break lasts 20 minutes (less often it is 15 minutes). Some schools introduce two or three lunch breaks, during which the children, divided into rounds, go to the canteen to eat lunch. Other meals (e.g. sandwiches) are eaten by the children during the other breaks, which usually last 10 minutes. If, during the break, pupils need to change rooms,

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want to use the toilet or do another activity, there is not enough time to eat their meal. Accordingly, some teachers extend the meal time for young children (grades 1-3). Due to lack of time, older pupils tend to choose quick snacks that can be held in their hand and not require washing hands afterwards (e.g. a candy bar).

Children's eating habits can be indicated by the meals they eat, such as lunch. As indicated by parents, children mostly eat sandwiches, mainly cheese, less often cold cuts. There's also fruit (seasonal or year-round such as apples or bananas), fruit mousses or cookies in lunch boxes. The educators were of a different opinion. They indicated that children often bring (or buy from vending machines or the school shop) sweets, buns, croissants and sweet drinks. Some children have energy drinks at school. **Parents' declarations regarding eating habits therefore do not coincide with teachers' observations. Perhaps this is related to parents' lack of knowledge regarding what their children actually eat at school.** Older children in particular can buy certain products themselves and not eat those prepared by their parents as part of their lunch. It cannot be ruled out that the parents' answers were related to a desire to emphasise socially expected attitudes. By participating in an interview about the children's diet and the household as a whole, they may have wanted to emphasise positive eating habits, which is not reflected in actual behaviour.

It should be pointed out that eating habits are influenced not only by educational measures and standards passed on by parents, but also by access to food, including salty and sweet snacks. Although the range of products that can be sold in schools has been defined by law⁵¹ by the Ministry of Health, it still leaves considerable room for the sale of unhealthy products. Moreover, it is not adequately enforced in all schools. According to the Ordinance, products with excessive sugar and fat content can be sold in educational institutions and thus the regulations allow the sale of fruit yoghurts, confectionery (with high sugar and unfavourable fat content), which does not support the formation of proper eating habits. According to the law, products sold at school must meet standards of: 15 g of sugar in 100 g/ml of the product, while in dairy products it is 13.5 g of sugar in 100 ml. These standards are far too high and need to be lowered. It should be remembered that portions of ready-to-eat products are usually larger than 100 g/ml. A high sugar supply leads to a lowering of the sensitivity threshold for sweet taste,

⁵¹ Ordinance of the Minister of Health of 26 July 2016 on groups of foodstuffs intended for sale to children and adolescents in institutions of the educational system and the requirements to be met by foodstuffs used as part of the collective nutrition of children and adolescents in these institutions.

leading children to seek ever sweeter snacks. The risk of tooth decay is of high importance⁵². Furthermore, paragraph 1, section 1 (20) of the Act allows the sale of 'other' products - which gives a lot of room for freedom.

According to the qualitative research, most schools have vending machines. Mostly snacks and drinks are sold there. Among the products offered, unhealthy items predominate - sweets, chocolate croissants, salty snacks, sweet drinks. Some schools have vending machines offering only hot drinks - including coffee, tea, hot chocolate. Some schools also have a school shop, but, as the educators pointed out, mainly unhealthy food is offered there as well. Apart from sandwiches or water, jellies, crisps and candyfloss are sold. The assortment in the vending machines and in school shops has, to the knowledge of the interviewed school staff, hardly changed over the last three years.

The educators indicated that there are some schools where neither shops nor vending machines are in operation. The resignation is the result of the desire to reduce the consumption of unhealthy products. To the same end, some teachers agree with their pupils on limits to the use of the school shop or vending machines. However, this is only possible with young children, who are constantly supervised by an educator.

[...] I'm just horrified by the products that are available in our shop for example. We try to fight it but somehow fail to. Candyfloss, jellies, chewing gum, it's just terrifying. (IDI, educator)

There are interesting products already existing on the market that are well formulated and do not contain sugar. There is also an increasing emphasis on the preparation of food, drinks and snacks as alternatives to buns or ready-made fruit yoghurts, hence the current Regulation needs to be modified.

A change in the share of children aware of how many portions of fruit and vegetables they should eat each day, a change in the share of children who know the food pyramid (or other national dietary guidelines), a change in terms of the share of children who are aware of the negative health effects of foods rich in salt, fat and sugar

⁵² May CE, Dus M. Confection Confusion: Interplay Between Diet, Taste, and Nutrition. *Trends Endocrinol Metab.* 2021 Feb;32(2):95-105. doi: 10.1016/j.tem.2020.11.011. Epub 2020 Dec 28. PMID: 33384209; PMCID: PMC8021035.

Participation in the Scheme has not affected the children's knowledge that fruit and vegetables are healthy, which was already high in the grade 0 children. However, knowledge that fruit juices are also healthy has increased.

More than half of the children in the younger age groups know that they should consume 5 portions of fruit and vegetables per day. The scheme had no effect on increasing the share of children indicating the correct answer. In the older age groups, children's knowledge of the recommended number of portions of fruit and vegetable consumption decreases significantly and does not differ significantly from that of the control group.

Children are aware of the negative health effects of foods rich in salt, fat and sugar, but this does not translate into a change in eating habits. Knowledge in this respect has not changed as a result of participation in the Scheme.

Younger children were asked whether the indicated products were healthy. Almost every vegetable and fruit was recognised by the children as healthy. The children mostly identified the products (apple, tomato, pear, carrot, plum, strawberry, turnip, bell pepper, radish) as healthy. After joining the Scheme, the percentage of indications remained the same. There was a significant difference in the evaluation of the processed product, that is pure fruit juice. Before joining the Scheme, only 82% of the children in grade 0 indicated that fruit juice was healthy; this rate increased to 89% after the participation in the Scheme. This is a statistically significant difference. **It can be concluded that, regardless of participation in the Scheme, children know that fruit and vegetables are healthy. The scheme allowed children to gain knowledge that processed products (e.g. juices) can also be healthy.**

Diagram 15. Percentage of fruit and vegetables deemed by children as healthy



Source: Panel study of grade 0 and 1 pupils (n=787).

Children were asked how often they should eat fruit and vegetables. **Before joining the Scheme, 59% of respondents in the younger group of children indicated that they should eat 5 portions a day.** After one year of participation in the School Scheme, this percentage was 56%. The difference between these measurements was not statistically significant, meaning that the children's knowledge in this area had not changed.

Among older children, the share was significantly lower. Among the third-grade children included in the Scheme, nearly 18% indicated that 5 portions of fruit and vegetables should be consumed daily. This is significantly more indications than in the group of children in 5th grade, where the rate reached 8%. The percentages of children not participating in the Scheme indicating 5 portions per day were 15% and 11% (3rd and 5th grades respectively). Children's knowledge of the recommended number of portions of fruit and vegetable consumption is decreasing and does not differ significantly from that of the control group.

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The younger children indicated before joining the Scheme that the most vitamins were in fruit and vegetables (98%). This percentage remained the same after one year of participation, which is certainly related to the high baseline rate.

Pupils in and grade 0 and later first grade were asked to identify healthy products. The list included fast food, salty snacks, sweets and fizzy drinks as well. A small share of children indicated these product categories as "healthy". Most of these children indicated pizza: 7% in grade 0 and 6% in the 1st grade. The percentage of other indications ranged between 2 and 4%. There were no significant differences between the groups – both before and after one year of participation in the Scheme, children are aware of the negative health effects of products containing salt, fats and sugars.

Older children were asked which products were best to reach for when they felt hungry. Around 5% of pupils pointed out fast food and salty snacks, regardless of the research group. This can be considered a low percentage. However, it does not translate into children's eating habits - around 94% of them (regardless of the group) indicated that they sometimes eat fast food. Three out of five pupils reach for sweet drinks and nearly 9 out of 10 sometimes eat salty snacks (also regardless of the research group). **It can be concluded that participation in the scheme has not affected the knowledge of the harmfulness of products such as salt, fats and sugars, as this is relatively high regardless of the intervention provided.** Importantly, the scheme also did not fundamentally affect the eating habits of the pupils - despite the declared knowledge of the harmfulness of the different product groups, the majority of pupils still sometimes reach for them.

The change in the children's knowledge of the health benefits of drinking milk and other dairy products without added sugar, flavourings, fruit, nuts or cocoa and according to the nationally recommended fat and sodium levels for the target age group

The percentage of children aware of the effect of drinking milk on bone strengthening increased among younger children (from 89% to 93%). In the case of older children, there was no increase in knowledge related to the health benefits of drinking milk and other dairy products. The change in knowledge occurred only among the youngest children. It can be concluded that the educational activities carried out under the Scheme were insufficient to bring about a significant change in the knowledge of the health benefits of drinking milk and other dairy products.

As the qualitative research indicates, the educational activities carried out at school and the changes in nutrition at home are making children increasingly aware of the foods they eat, and which products are the healthiest and provide the most vitamins. Importantly, knowledge is adapted to the age of children. Young children learn that unhealthy food can cause stomach aches and bad teeth. Older children, on the other hand, learn which foods have the most nutritional value and are healthiest for the body. It is also worth pointing out that older children have a better understanding of the direct impact of food on development and also on appearance - weight, skin or hair condition.

Also, quantitative data show that children have a high knowledge of the benefits of consuming milk and other dairy products. Prior to the scheme, 92% of children indicated that milk was healthy. On the other hand, 86% of children in grade 0 indicated that natural yoghurt was healthy. After joining the scheme, children's knowledge did not change significantly. Nearly 93% of children, after joining the scheme, indicated that milk was healthy and 86% of children considered natural yoghurt to be healthy. There was a change in knowledge regarding the health benefits of drinking milk. **Before joining the Scheme, 89% of the children indicated that their bones were strong and healthy as a result of drinking milk, after joining the Scheme this figure reached 93%, a change that was statistically significant. It can be concluded that before joining the Scheme, the children had a basic knowledge of the health benefits of drinking milk and this provides a good basis for developing knowledge at a later stage.** However, there are noticeable gaps in knowledge of nutritional norms in relation to the frequency of consumption of milk and dairy products. Only 39% of children before joining the Scheme indicated that dairy products should be consumed 3-4 times a day, after joining the Scheme this figure did not increase and was 34%.

Older children, in 3rd and 5th grades, were asked which products contained the most calcium. Only 16% of the children in 3rd grade included in the Scheme correctly indicated that cheese contained the most calcium. Among children not included in the Scheme, this percentage was 13%. Only 8% of the older children in the Scheme indicated the correct answer. In the control group, this was 11%. No statistically significant differences were observed between the research groups.

Change in the knowledge of the type of agricultural products (change in the number of fruits and vegetables recognised by children, change in the percentage of children who know the production cycle of milk and cheese, change in the number of children who are aware of organic products)

Over the course of the Scheme, there was no significant change in correctly identifying fruit and vegetables. The lack of change may have been due to the high baseline knowledge of the children in grade 0. However, the children's knowledge of milk and dairy products is slightly lower. The younger children were able to identify the animal that makes the production of yoghurt possible (they knew it was made from milk). Most of the older children know that yoghurt bacteria are needed to make yoghurt, with a significantly lower percentage of children in the 3rd grade knowing the correct answer than in the control group. More than half of the parents indicated that children's awareness of organic products is increasing as a result of the School Scheme. However, there was no difference between the indications of parents whose children have been participating in the Scheme for one, three or five years. Thus, there was no change in this respect according to the length of time of the Participation in the Scheme.

As indicated by school staff, children are getting better at identifying agricultural products. In the quantitative survey, children correctly identified fruit and vegetables. For each fruit (plum, apple, strawberry, banana and pear), the percentage of children correctly identifying the products was a minimum of 90% (between 91% and 97%). The children identified vegetables correctly. Most of the vegetables (turnip, bell peppers and carrots) were correctly assigned by a minimum of 90% of the children (93% to 97%). The exceptions were tomato (88%) and radish (86%) where the rates were the lowest. A high knowledge of not only the type of products, but also the possibilities of their use is identified. This is evident, among other things, in the talks during the form period and in the joint creation of meals (sandwiches, salads). Children know which vegetables to add to which salads and which products are best combined.

In contrast to the high knowledge of fruit and vegetables, the children's knowledge of milk and dairy products is somewhat lower. Children, irrespective of their age group, know that a starter containing yoghurt bacteria is necessary to make yoghurt. In the younger grades covered by the Scheme, 67% of the children gave the correct answer. A slightly higher proportion of children not included in the Scheme gave the correct answer of 80%. Among the older children included in the Scheme, this rate reached 70%, while it was 67% in the case of older children not included in the Scheme.

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Almost all children in the youngest grades (99%), both before and after joining the Scheme, knew that a cow is needed to produce natural yoghurt.

One in two parents declares that, as a result of participating in the Scheme, their child pays attention to whether the consumed products are organic. The answers "definitely yes" and "rather yes" were given by 52% of parents of 1st graders, 52% of parents of 3rd graders and 53% of parents of 5th graders.

Evaluation of the effects of education activities on parents (family perception of the importance of healthy eating habits) and on the school community

Evaluation of the Scheme by parents and the school community is high. The main factors influencing parents' evaluation of the Scheme are that the received produce is fresh and that children can gain knowledge about agricultural products and healthy eating habits through participation in the scheme.

The vast majority of researched principals rated the level of difficulty involved in joining the Scheme as very easy or rather easy (73%). They do not perceive any problems with the implementation of the research in schools (93%). According to the principals, the Scheme is rated very or rather well by 95% of pupils' parents (40% and 55% respectively). 45% of the research school representatives are of the opinion that the evaluation of the Scheme is increasing, and the percentage of parents who do not agree with their pupils' participation in the Scheme is marginal. According to the principals, the Scheme is also popular with pupils. 40% declared that it is evaluated very well, while 55% said that it is evaluated rather well.

Parents of participating pupils evaluated the Scheme very well. The idea of giving their children fruit, vegetables, milk and dairy products was rated as definitely or rather good by 96% of parents of first graders and 95% of parents of third and fifth graders.

Table 12. How do you rate the idea of giving vegetables, fruit, milk and dairy products to children at school?

	Panel study	Reference study
	After the Scheme (grade I)	Under the Scheme (intervention)
Definitely good	67%	67%
Rather food	29%	28%

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Rather bad	2%	2%
Definitely bad	1%	0%
I don't know / hard to say	2%	3%
Valid N	786	499

As mentioned earlier, also during the in-depth interviews, both parents and educators indicated that the Scheme develops good habits and that the children consume more fruit and vegetables and drink milk more often. This helps to meet the daily consumption requirements for these products. It was also pointed out that **the children in the group motivate each other to eat the products they receive, so that they are more likely to eat the fruit or vegetable than if they had received it at home. The educators are of the same opinion. Another strength of the scheme, according to the parents, is the high frequency of food delivery (the recommended frequency to ensure the effectiveness of the Scheme is at least three times a week).**

As indicated by the quantitative survey, the average evaluation for the idea of providing fruit, vegetables, milk and dairy products to children at school was at 3.96, with a maximum rating of 4. Parents evaluated the expected benefits that the Scheme for School could bring highly. The fact that the scheme would allow children to gain more knowledge about agricultural products and healthy eating habits was evaluated best ($M = 3.68$). The possibility that the Scheme could make the child pay attention to whether the consumed products were organic was rated lowest ($M = 3.06$). The relatively low average may be related to the fact that this aspect involves purchasing decisions that young children do not make. The evaluation of the scheme does not differ by the length of time children have participated in the Scheme.

Table 13. Evaluation of the Scheme by parents of children from 1st, 3rd and 5th grades.

Evaluated aspect	Median (M) (maximum grade 4)	Standard deviation (SD)
Evaluation of the idea of giving vegetables, fruit, milk and dairy products to children at school	3,96	0,29
Does your child eat fruit more often thanks to the School Scheme	3,61	0,84
Does your child eat vegetables more often thanks to the School Scheme	3,35	1,00

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Does your child consume milk/ dairy products more often thanks to the School Scheme	3,51	0,92
Does your child have greater knowledge of agricultural products and nutrition thanks to the School Scheme	3,68	0,76
Does your child pay more attention to whether the consumed products are organic thanks to the School Scheme	3,06	1,09
Does your child pay more attention to food waste thanks to the School Scheme?	3,40	0,99
Does the School Scheme make your child more willing to play sports	3,40	0,96
Is your child reducing their consumption of sweetened products (drinks, confectionery) thanks to the School Scheme	3,26	1,03
Evaluation of products distributed to children at school	3,90	0,44

The evaluation of the Scheme is not linked to the length of time the children participated in. Parents rate it in a similar way regardless of whether their children have participated in the Scheme for one, three or five years. **Two factors significantly influence a more positive evaluation of the idea of giving children vegetables, fruit, milk and dairy products at school. The most significant is that the products the children receive are fresh⁵³. The biggest benefit of participating in the Scheme, according to parents, was that through the scheme, their children have more knowledge about agricultural products and nutrition benefits⁵⁴.** The main benefit of the Scheme is that it increases children's knowledge of nutrition. According to the scheme, the products distributed to children through the Scheme should be consumed at school, something that teachers should emphasise. However, some teachers, in order to reduce the risk of food waste, tell children that they can take home the uneaten food (even though this is not in line with the Scheme and should not happen) or pass it on to their peers. In this way, children learn not to waste food and how to put uneaten and perhaps unwanted food to a different use, e.g. milk can be turned into cocoa, fruit into a smoothie or vegetables into a salad. Shaping such attitudes can also help to reduce food waste, both for children and their families. This is

⁵³ B = 0,24, p < 0,01.

⁵⁴ B = 0,05, p = 0,02.

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because it was repeatedly pointed out that children are eager to share their knowledge with their parents and siblings.

However, in order for children to enjoy eating fruit and vegetables, the received products should be fresh. **During the qualitative research, the majority of parents indicated that the fruit and vegetables received under the Scheme were of good quality, and that stale or squashed produce was rare and could be due to poor storage by suppliers, the school or the children.** However, there were some parents who indicated that the quality of the produce had deteriorated over the course of the Scheme. According to their declarations, the fruit and vegetables are off (e.g. 'woody' carrots, hardened turnip). It can be presumed that in some cases the loss of quality may have been due to non-compliance with the rules of the Scheme, i.e. the child not eating fresh fruit or vegetables and storing such a portion in the backpack for many hours at room temperature. Some parents also complained about the way the fruit and vegetables were packaged. This is because they are most often placed on trays and these are tucked into plastic bags. On warm days, vegetables and fruit dry out or rot. On the basis of the parents' statements, it can be concluded that the way the products are packaged can have a negative impact on the formation of environmental behaviour. Hence, there is no correlation between the Scheme evaluation and paying attention to whether the consumed products are organic. The other factors (presented in the table above) do not significantly increase the evaluation of the School Scheme.

6. Conclusions and recommendations

6.1. Scheme effectiveness

According to the National Strategy of the School Scheme implemented in Poland during the school years 2017/2018-2022/2023, the indicators for the achievement of the objectives should be⁵⁵:

1. at least a 5% change in consumption over the research period (increase in total consumption: at home and at school)
2. at least a 10% increase in children's knowledge of the importance and recommended frequency of consumption of fruit, vegetables and milk

Based on the research carried out, it can be concluded that the effectiveness of the School Scheme is insufficient. Some positive effects of the intervention can be observed for the consumption of vegetables, milk and dairy products. However, the Scheme has not been able to adequately prevent the general trend of the consumption of fruit and vegetables declining with age and therefore requires some modifications.

The achievement of the indicators set out in the National Strategy is as follows:

- During the course of the research, an increase in total consumption (at home and at school) was observed in only some of the product groups. At least a 5% increase was observed in the consumption of vegetables and dairy among older children.
- There was no increase in children's knowledge of the importance and recommended frequency of consumption of fruit, vegetables and milk.

The following section refers to the specific objectives of the scheme and the indicators that determine their effectiveness:

1. **Increase in the number of children and adolescents participating in the scheme:**
 - **share (in percentage) of children participating in the Scheme in a given school year to the total number of children in the target group (and the number of children participating in the Scheme in a school year)**

⁵⁵ National strategy for the School Scheme implemented in Poland in the school years 2017/2018-2022/2023.

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The percentage of primary school pupils participating in the Scheme, out of all pupils attending primary schools in the country in a given school year, fell from 98% in the 2017/2018 school year to 88% in the 2021/2022 school year. The reduced number of pupils may be a result of the birth rate, as well as the COVID-19 pandemic, as a result of which the share participating in the Scheme decreased significantly in the 2020/2021 school year, with a rebound in the following school year.

- **share (in percentage) of schools participating in the Scheme in a given school year to the total number of schools in the target group (and the number of schools participating in the Scheme in a school year)**
- Looking at the primary schools participating in the Scheme in Poland, there are similar declines as to the data for pupils. The report for the 2017/2018 school year shows that approximately 94% of primary schools in the country joined the School Scheme (i.e. approximately 94% of primary schools relative to all schools eligible to participate in the Scheme - in Poland these were primary schools). This share decreased slightly over the 2018/2019 and 2019/2020 school years, while a significant drop was recorded in 2020/2021 - to 76% (nearly 11,000 schools against nearly 14,000 in the 2017/2018 school year). Again, the COVID-19 pandemic and the associated changes in the education model of pupils in primary schools may have played a role. In the last analysed school year (2021/2022), the share of schools participating in the Scheme increased to 83%.

2. To increase the amount of fruit and vegetables and milk and dairy products consumed by children and young people in the Scheme (at school and at home)

The results obtained in the research are inconclusive. On the one hand, the grades included in the research differed significantly in terms of average consumption of all the analysed product groups (vegetables, fruit, dairy products); on the other hand, in some cases these differences proved to be statistically insignificant. To a large extent, this is due to the fact that the diets of the individual pupils were very different, which makes comparisons difficult. It is noteworthy, however, that where statistically significant differences were observed between the intervention and control groups, a higher consumption of the analysed product groups occurred among the intervention pupils, which indicates the partial effectiveness of the Scheme.

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Some positive effects of the intervention can be observed for the consumption of vegetables and milk and dairy products.

The most important findings related to the change in consumption of fruit, vegetables, milk and dairy products are the following:

- After one year of participation in the scheme, the consumption of fruit, vegetables and dairy products has decreased among children.
- Pupils in younger age groups consume more fruit and vegetables on school days, which may also be related to the meals eaten at school and, in the case of first graders, to the products received as part of the fruit and vegetable distribution.
- The total consumption of fruit and vegetables increased by 4% among pupils participating in the Scheme for 3 years and 5 years. There was also a significant difference between the amount of fruit and vegetable consumption among the pupils in the 3rd grade in the Scheme and their peers in the control group, where the consumption was 21g lower (by 7%).
- There was a significant difference between vegetable consumption among those who have been participating in the scheme for 3 years and those who have been participating for 5 years. The older children consumed 20 g more vegetables (24%). Meanwhile, in the control group, a 1% decrease in the consumption was observed in the case of older children.
- There was an increase in dairy consumption of 16 g (i.e. 10%) among pupils participating for 3 years and those participating for 5 years. Importantly, the 5th grade 5 pupils had a 23 g (14%) higher dairy consumption than their peers in the control group.

In conclusion, the Scheme in its current form does not adequately prevent the downward trend in the consumption of fruit, vegetables, milk and dairy products that progresses with the age of children. This trend is linked to less parental attention paid to older children's diets, greater freedom in dietary choices in older children and shorter school breaks. Some changes are seen in vegetable and dairy consumption among children in their last year of participation in the Scheme (in the 5th grade), which supports the need to extend the scheme to the following years, at least until the end of primary school, and preferably also to secondary schools.

3. To increase children's knowledge of a variety of agricultural products and healthy eating habits

- **share (in percentage) of children covered by educational activities in the Scheme in a given school year to the total number of children in the target group (and the number of children covered by educational activities in a given school year)**

The share of pupils who were covered by educational activities against all pupils in grades I-V attending primary schools in a given school year. In 2017/2018, the share ranked at 179% (meaning that some children participated in more than one educational activity), in the following year the share was 215%, then 173%, and in the following year it dropped to 139% (due to the COVID-19 pandemic and related restrictions) to reach the level of 182% in the last reporting school year. Detailed data on the number of children covered by educational activities in each school year is included in section 4.4.

- **expenditure on educational activities in a given school year**

The total expenditure on educational activities implemented under the Scheme amounted to: 3,266,991.87 which represents 45% of the funds allocated for this purpose. A detailed breakdown of expenditure by school year is presented in section 4.4.

6.2. Main conclusions

The School Scheme is a large-scale project, the logic of which has been planned correctly. It is in line with European Union policy directions in the area of nutrition. **In its current form, the Scheme should be evaluated as moderately effective.** It has not had the expected impact on changing the children's consumption of fruit, vegetables, milk or dairy products, nor has it increased their knowledge of nutrition which would be reflected in a change in their eating habits. The results of the evaluation showed that the Scheme partially influenced the children's consumption of vegetables and dairy products.

One in three respondents followed the recommendation for a total consumption of fruit and vegetables of more than 400 g per day. Unfortunately, the implementation of this recommendation was due to an excessive share of fruit and fruit juices in the diet, relative to the recommendations. The Scheme has not significantly increased fruit consumption, however, fruit consumption was reported to be at a sufficient level in all research groups.

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Only a small proportion of pupils met the standards for the recommended portions of consumption of these products. The share of those consuming at least 300 g of vegetables oscillates around 2-4% depending on the group, while in the case of dairy, the share of those consuming at least 3 portions of dairy per day is 5-8% depending on the group.

The Scheme has not had an impact on achieving the consumption of milk and dairy products at the recommended level. Research on the frequency of consumption of milk and dairy products by pupils confirm an insufficient supply of these products in their daily menu. Only the group of fifth-grade pupils subjected to the intervention showed a higher consumption of dairy products compared to the control group, but the amounts were still not satisfactory.

The implementation of the Scheme coincided with the COVID-19 pandemic, which greatly affected the reorganisation of schoolwork, with a significant decrease in the percentage of pupils and institutions participating in the Scheme. The fact of children staying at home also influenced the formation of specific eating habits. One of the mistakes that parents make is to serve their children the same meals as the rest of the adult family. In doing so, they do not pay attention to the excessive amounts of salt, fats and sugars they introduce into the child's diet. The pandemic is undoubtedly one of the factors affecting the effectiveness of the intervention, and the last year of the Scheme has not been sufficient to achieve the expected changes in children's diets.

The change in the frequency of distribution of fruit and vegetables in schools to twice a week in the 2021/2022 school year is also quite significant. The results of the evaluation of the previous Fruit and Vegetables at School Scheme indicated the need to expand the target group (from grades 0-3, to 1-5), as well as to increase the number of portions of produce made available under the fruit and vegetable component (from 60 g to 90 g). These changes were expected to increase the already small impact of the Scheme on children's vegetable consumption.

Due to the economic situation in the country and high inflation, the Scheme budget necessitated changes in the assumptions of the School Scheme in the form of a reduction in the number of portions given to children. It should be noted that changes in the intensity of the Scheme may also have influenced its moderate effectiveness.

The reasons for the Scheme's low impact on the consumption of vegetables, fruit and dairy products can also be traced to contextual factors that were not offset by the educational activities carried out not only among children, but also among their parents.

Research has shown that parents attach less and less importance to their children's diet as they get older. While with pre-schoolers they have a large influence on what they eat, with older children their influence decreases. In addition, younger children often eat balanced meals at school. Older children, on the other hand, are increasingly making their own food decisions. They are more likely to reach for salty snacks, fast food and sweets. School shops and vending machines do not help to foster good eating habits. This has to do with insufficient legal regulations in this area.

In any case, it was grade 0 pupils who consumed most of the product categories surveyed (fruit/vegetables/milk and dairy products). In addition to those already mentioned, the reason for the drop in the consumption may also be attributed to the fact that snack breaks in the first grade are shorter than in the grade 0, where pupils' working hours and breaks are usually flexibly determined by group supervisors. This is also pointed out by pupils.

Children's awareness of the variety of agricultural products and the benefits of eating them was high even before joining the Scheme. There has therefore been no change in this respect. Instead, the Scheme has contributed to children liking strawberries, carrots and milk. In addition, after one year of participation in the Scheme, the children liked bananas and cherries more, which means that the Scheme may have influenced the expansion of the range of liked products also to include products that were not distributed in schools. However, the activities carried out did not have an impact on changing preferences for products with more demanding tastes for children (such as radishes, turnip, natural yoghurt and kefir). In addition, achieving a change in eating habits also depends on children's openness to new tastes. This openness increases among older children (sixth grade and above), i.e. those no longer participating in the Scheme. Participation in the Scheme alone may therefore not be enough of an intervention to change food preferences formed since early childhood. It is worth mentioning here the results of the research indicating that the Scheme was effective in increasing the consumption of vegetables and dairy products only among pupils in the fifth grade, who, according to the current assumptions, will not be included in the intervention from the following year on.

The range of educational activities carried out in schools can be considered correct, but insufficient. Results associated with a significant increase in knowledge, attitudes and

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behaviour can be expected after a minimum of 40-50 hours of education per school year⁵⁶. Current educational activities also involve parents and carers of children to a limited extent, and it is largely up to them to instil knowledge and healthy habits.

In order to increase the effectiveness of the Scheme's activities for schools, it is necessary, above all, to place greater emphasis on educational activities concerning nutrition. It would therefore be necessary to modify the curricula in this area, which involves greater cooperation between the Ministries of Health and Education. What is more important, without a wider inclusion of the home environment in the activities, the activities carried out at school will not have the expected effects - especially in the long term.

Despite the great importance of the School Scheme in terms of changing eating habits and attitudes towards a healthy lifestyle, there is still much to be done. Indeed, child obesity in Europe remains high, as shown by the latest WHO data from a total of 33 European countries⁵⁷. The figures indicate that one in three European children aged seven to nine is overweight or obese. The WHO report also expresses that 87% of children play outdoors for only an hour a day⁵⁸. At the same time only 43% of children consume fruit every day, while 34% consume vegetables⁵⁹. According to WHO data, Poland ranks 8th in terms of overweight and 10th in terms of obesity among children aged 7-9 years⁶⁰. Data collected by the WHO also indicates that by 2025, there will have been 26% obese adult women and 30% obese adult men in our country⁶¹. In turn, the 2021 report of the Supreme Audit Office indicates that there are still many areas for improvement in the Polish healthcare system when it comes to tackling obesity in children and adolescents⁶². **From the point of view of the data quoted and the analyses carried out, the continuation of the School Scheme appears to be extremely necessary and recommended.**

⁵⁶ Institute of Medicine, Nutrition Education in the K-12 Curriculum: The Role of National Standards: Workshop Summary [dostęp:] <https://www.ncbi.nlm.nih.gov/books/NBK202131/>

⁵⁷ WHO European Childhood Obesity Surveillance Initiative (COSI) Report on the fifth round of data collection, 2018-2020.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Report issued in March 2021 to mark World Obesity Day by the World Obesity Federation working with WHO, available online: <https://www.worldobesity.org/news/covid-news-digest-obesity-and-covid-19-march> [as at 8.12.2022].

⁶² Cf. *Availability of prevention and treatment for children and young people with metabolic disorders resulting from obesity and civilisation diseases*, Supreme Audit Office, Rzeszów Branch, 2021.

6.3. Recommendations

Based on the analysis of the executed School Scheme, we recommend modifying and increasing the intensity of some of the activities carried out under the Scheme:

1. Intensification of educational activities under the Scheme.

According to the research findings, pupils' knowledge, attitudes and behaviour in the area of healthy lifestyles, including nutrition, can change only when 40-50 hours per school year are dedicated to these topics⁶³. Due to the excessive curricular load in schools and the difficulty in implementing such a number of activities related to nutrition, it should be considered to implement them in the form of homework assignments. Preferably ones that also involve the parents and guardians of the pupils. In this way, educational activities will also extend to the children's home environment.

Children are particularly keen to participate in practical activities related to nutrition – planting vegetables, preparing meals and eating them together. This is particularly true for younger children, as qualitative studies have shown that it is in a group of peers that they are more willing to try new tastes. It is therefore worthwhile to increase the number of practical, group-oriented activities.

The inadequate consumption of vegetables and dairy products calls for increased educational measures regarding the importance of these product groups in the diets of children and young people, as well as the development of mechanisms to motivate them to create appropriate eating patterns. The target audience for educational schemes should include parents and/or guardians.

In view of the high popularity of cheese in the diet of children and adolescents, it is important that for the educational message on the contribution of milk equivalents in the diet to emphasise the recommended amount of cheese (30 g as a serving of dairy product). Substituting milk and fermented dairy drinks with too much cheese carries the risk of increasing the proportion of saturated fatty acids in the diet, as well as energy derived from fat.

⁶³ Institute of Medicine, Nutrition Education in the K-12 Curriculum: The Role of National Standards: Workshop Summary [available at:] <https://www.ncbi.nlm.nih.gov/books/NBK202131/>

In addition, due to the high popularity of juices in children's and young people's menus, emphasis should be placed on the possibility of replacing just 1 portion of fruit per day with a glass of fruit juice (preferably cloudy).

Also, not all parents are educated on nutrition. It would therefore be worthwhile to increase the number of activities aimed at parents. As parents do not receive, or do not remember having received printed materials, it would be worthwhile to replace them with short talks or visual materials presented, for example, at so-called 'parent-teacher meetings'.

2. The distribution of fruit and vegetables and milk in schools needs to be modified.

The lack of implementation of the recommendations for a daily consumption of at least 400 g of fruit and vegetables and 3-4 portions of milk and dairy products confirms the need to continue the School Scheme, with greater emphasis on the share of vegetables from different groups (orange, green and dark purple) and fermented milk products.

Given the current economic situation and the increase in the price of milk and dairy products, special attention should be paid to education on the importance of these products in children's development and the continuation of the Scheme at school also in the frame of distribution of milk and dairy products.

The frequency of distribution of fruit and vegetables and milk in schools should be increased at least to the previously maintained 3 times a week, and the duration of distribution in schools should be extended as much as possible. This change will require appropriate budgeting that takes into account the economic situation in the country.

The results of the research indicate an inversion in the proportions of fruit and vegetable intake, which is linked to an excessive share of monosaccharides in the diet. In the future editions of the Scheme, more emphasis should be placed on the correct proportions of fruit and vegetables in order to restore the correct order, i.e. 75% vegetables and 25% fruit of the full recommended consumption.

In order to reverse the negative trend, more emphasis should be put on understanding the determinants of vegetable, milk and dairy product consumption. A solution to increasing the pool of vegetables in children's menus could include more vegetable or mixed fruit and vegetable juices.

3. Expansion of the Scheme audience and increase in the Scheme budget.

Taking into account the formation of nutritional behaviour in the early years of a child's development, it is worth planning a long-term educational scheme aimed at children as early as pre-school age and their parents and/or carers. The schemes should shape the features of a pro-healthy lifestyle, taking into account diet and physical activity. At this point in time, the intervention has been planned among children in grades I - V. This definition of the target group indicates selective nature of the intervention. In order to be effective in the long term, the intervention should be extended to all primary school grades. Such a change would require an increase in the budget allocated to the Scheme. In the current budgetary and economic situation (rising inflation), extending or even retaining the current target group with an unincreased budget will necessitate changes in the form of reducing the number of portions and shortening the implementation period of the Scheme during the school year. In turn, these measures will reduce the effectiveness of the Scheme. In order to reverse this trend, it is necessary to allocate more budgetary resources to the Scheme.

4. Intensification of communication activities targeting different audiences.

A dedicated website, a YouTube profile and a Facebook page have been created to communicate the activities of the Scheme. Given the scale of the project, it is worth implementing activities that would allow the Scheme to reach a larger audience of both pupils and their parents. Parents know that children receive vegetables, fruit and dairy products at school, but they do not know under which Scheme this is happening.

It is worth engaging influencers popular with primary school children to promote nutrition. Using the School Scheme as an example, popular video makers could produce content promoting the Scheme and nutrition.

It is also recommended to create accounts on other social networks popular with children and young people, e.g. Instagram and Tik Tok. Assuming that the communication is intended to reach a wide audience of different ages, campaigns on television, for example, could be complemented by a properly targeted online campaign.

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Appendix 10. IDI guide for parents of 3rd and 5th grade pupils (control group)

Appendix 11. FGI discussion guide for parents – group subject to intervention

Appendix 12. IDI guide for tutors

Appendix 13. IDI guide for school representatives / intendants

ENTER CODE HERE



What do you like to eat?

Screener for Grade Zero Pupils



QUESTION 1



What do you like to eat and drink most?

Please colour your favourite products.

1. SWEETS



2. CRISPS



3. APPLE



4. POPCORN



5. PEAR



6. PLUM



7. STRAWBERRY



8. CARROT



9. PIZZA



10. BELL PEPPER



11. RADDISH



12. SOUP



13. TOMATO



14. TURNIP



15. MILK



16. YOGHURT



17. KEFIR



18. JUICES, FRUIT PUREES



19. COTTAGE CHEESE



20. SWEET DRINKS

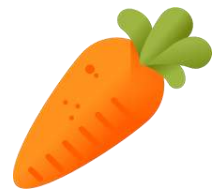
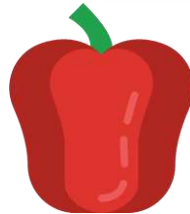


QUESTION 2



Tony made large shopping at the farmer's market. Can you help Tony place his shopping into correct baskets? Please place fruit into the red basket and vegetables into

the green basket. Please connect products with the correct basket. Fruit with the red one and vegetables with the green one.



QUESTION 3



Please circle products which are healthy for you.



1. TURNIP



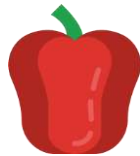
2. TOMATO



3. CRISPS



4. SWEETS



5. BELL PEPPER



6. MILK



8. CARROT



9. POPCORN



7. APPLE



10. FIZZY DRINK



11. PURE FRUIT JUICE



12. STRAWBERRY



14. PLUMS



15. NATURAL YOGHURT



16. RADDISH



13. PIZZA



17. WATER



18. PEAR




QUESTION 3A







Please complete the sentence by circling the correct picture:


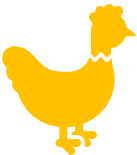


1. There are most vitamins in...

			
PIZZA	FRUIT AND VEGETABLES	SWEETS	CHEESE

2. My bones are strong and healthy thanks to...

			
CHIPS	SWEETS	FRUIT JUICES	MILK

3. In order to make natural yoghurt you need...



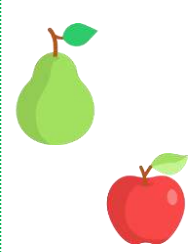
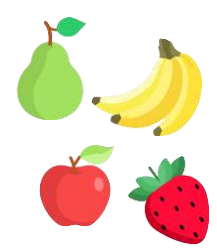

			
COW	HEN	ZEBRA	RABBIT

QUESTION 4



How often should you eat fruit and vegetables?



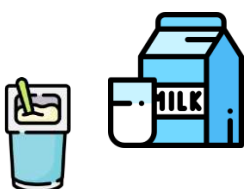

Please circle the correct answer.

				
Never	Several times a week	1-2 times a day	3-4 times a day	5 times a day

QUESTION 5

How often should you drink milk and eat dairy products?

Please circle the correct answer.















































			
Never	Several times a week	1-2 times a day	3-4 times a day

QUESTION 6



Do you like to eat fruit?

Please mark next to each picture how much you like or don't like this fruit. If you have never eaten it, please mark a cross.

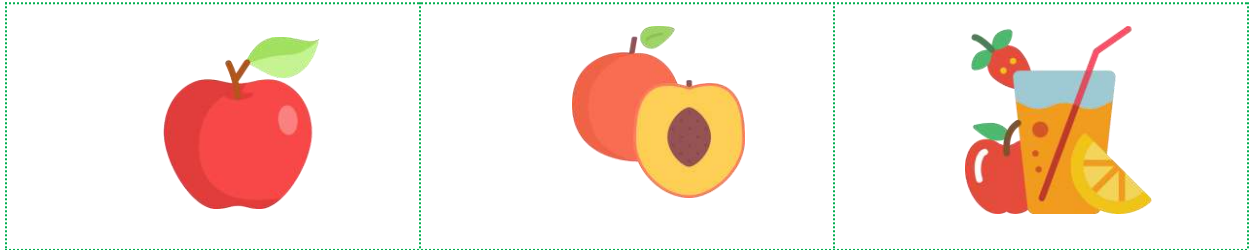
	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3 					
4 					
5 					
6 					
7 					
8 					 

QUESTION 7



In what form do you like to eat fruit most?

Please circle the correct picture.



WHOLE

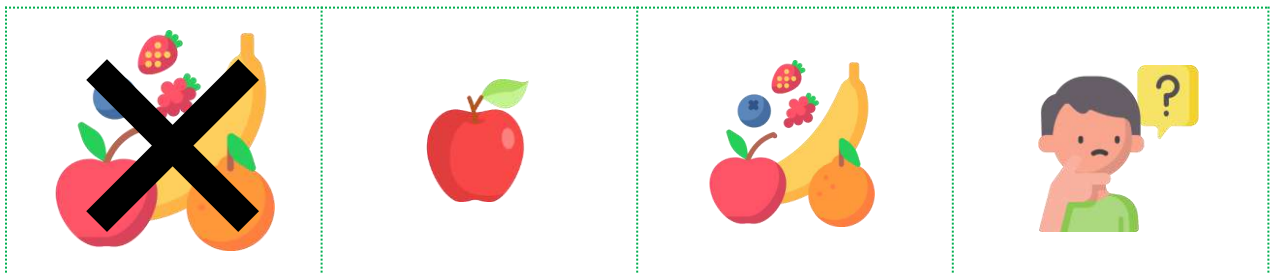
SLICED OR CHOPPED

I LIKE FRUIT JUICES

QUESTION 8

Do your parents eat fruit?

Please circle the correct answer.



No, they don't

Yes, sometimes

Yes, every day

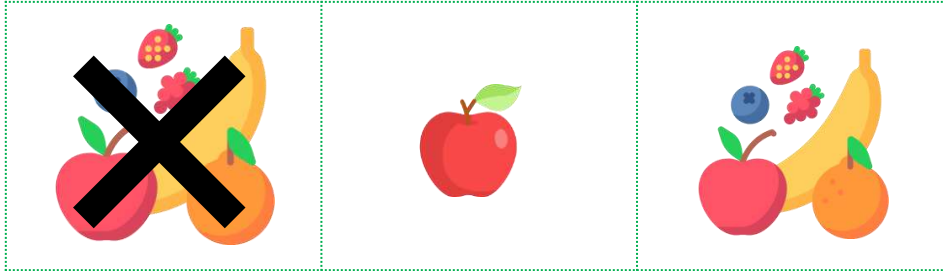
I don't know

QUESTION 9



Do your parents offer you fruit?

Please circle the correct answer.



No

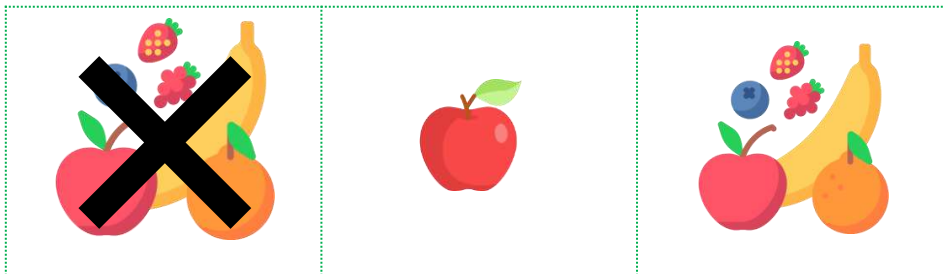
Yes, sometimes

Yes, every day

QUESTION 10

Is there fruit in your home?

Please circle the correct answer.



No

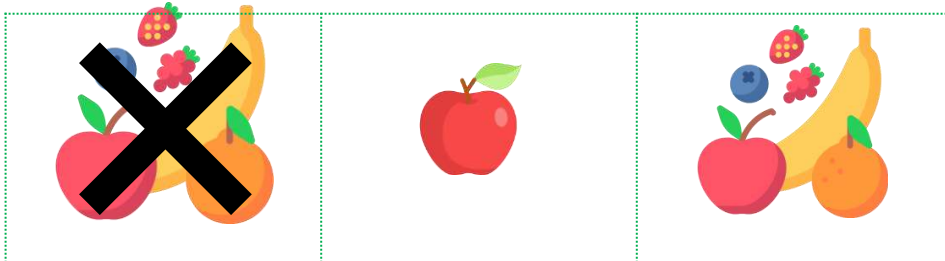
Yes, sometimes

Yes, every day

QUESTION 11

Do your parents tell you that it is important to eat fruit?

Please circle the correct answer.



No

Yes, sometimes

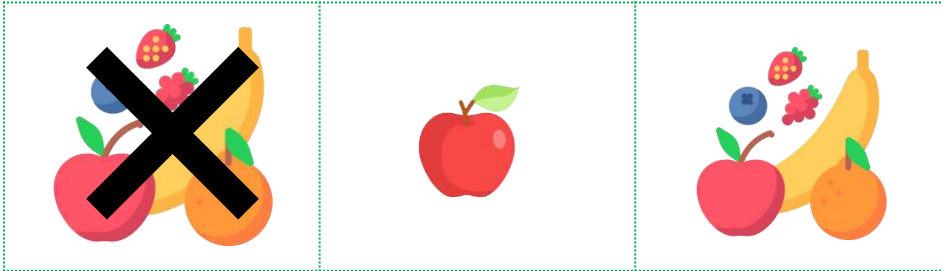
Yes, every day

QUESTION 12



Do you bring fruit to preschool for lunch or as a snack?

Please circle the correct answer.



No






Yes, sometimes

Yes, every day

QUESTION 13

Why don't you eat fruit?

Please underline the correct answer.

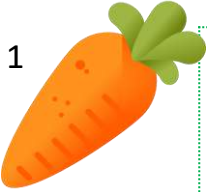

















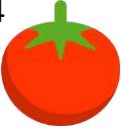





























-  1. It takes too much time
-  2. My friends don't eat it either
-  3. I'd rather have something sweet
-  4. Food breaks are too short
-  5. I like fruit and I eat it

QUESTION 14



Do you like to eat vegetables?

Please mark next to each picture how much you like or dislike this vegetable. If you have never eaten it, please mark a cross.

	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3 					
4 					
5 					
6 					
7 					
8 					

QUESTION 15



In what form do you like to eat vegetables most?

Please circle the correct picture.

WHOLE

SLICED OR
CHOPPED

I LIKE
VEGETABLE
JUICES

I LIKE SALADS

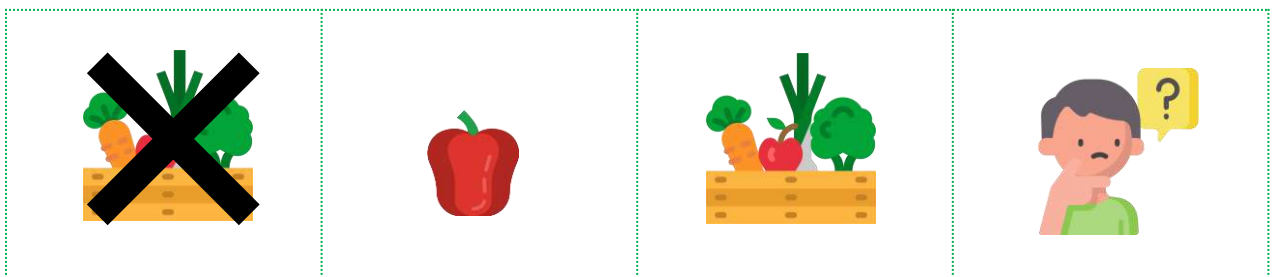
I LIKE COOKED
VEGETABLES (E.G.
IN A SOUP)



QUESTION 16

Do your parents eat vegetables?

Please circle the correct answer.



No, they don't

Yes, sometimes

Yes, every day



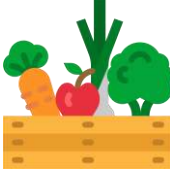
I don't know

QUESTION 17



Do your parents offer you vegetables?



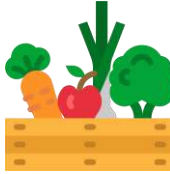
Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 18

Are there vegetables in your home?



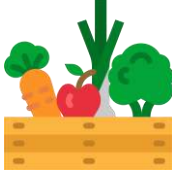
Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 19

Do your parents tell you that it is important to eat vegetables?

Please circle the correct answer.




		
No	Yes, sometimes	Yes, every day

QUESTION 20



Do you bring vegetables to preschool for lunch or as a snack?






Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 21

Why don't you eat vegetables?

Please underline the correct answer.

























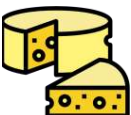





-  1. It takes too much time
-  2. My friends don't eat them either
-  3. I'd rather have something sweet
-  4. Food breaks are too short
-  5. I like vegetables and I eat them

QUESTION 22



Do you like to drink milk and eat dairy products?

Please mark next to each picture how much you like or dislike this product. If you have never eaten it, please mark a cross.

	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3  Natural Yoghurt					
4  Fruit Yoghurt					
5 					

QUESTION 23






Do your parents offer you milk and dairy products?

Please circle the correct answer.

			
No	Yes, sometimes	Yes, every day	I don't know

QUESTION 24

Is there milk and dairy products at home (yoghurt, kefir, cream cheese)?

		
No	Yes, sometimes	Yes, every day

QUESTION 25

Do your parents tell you that it is important to drink milk and eat dairy product?

		
No	Yes, sometimes	Yes, every day

QUESTION 26



Do you eat breakfast before leaving for preschool?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 27

Do you eat breakfast at preschool?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day



What do you usually have for lunch at preschool?

Please circle the products that you most often have for lunch.



1. SANDWICHES



2. VEGETABLES



3. SALTY SNACKS



4. SWEETS,
BARS



5. DAIRY SNACKS



6. FRUIT



7. DRINKS



8. BUNS, COOKIES



8. PURE
FRUIT JUICE

QUESTION 29



Do you eat fast foods (pizza, chips, hamburger)?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 30

Do you drink sweet, fizzy drinks (e.g. orange soda, coke) at home or at the preschool?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 31



Do you drink sweet, non-fizzy fruit drinks, (e.g. Kubuś, Tymbark) at home or at preschool?

Please circle the correct answer.



No

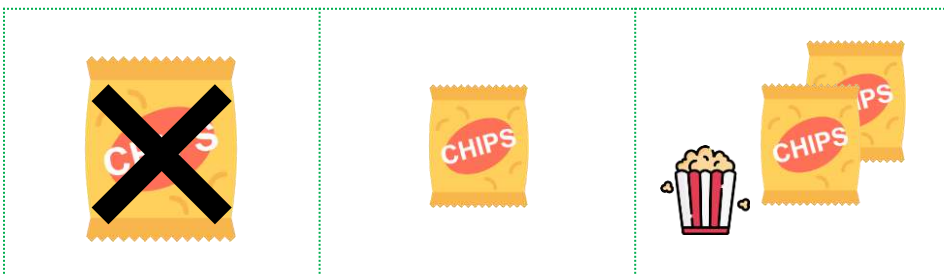
Yes, sometimes

Yes, every day

QUESTION 32

Do you eat salty snacks (crisps, crackers) at home or at preschool?

Please circle the correct answer.



No

Yes, sometimes






Yes, every day

QUESTION 33



Do you like Physical Education classes at the preschool?

Please circle the correct answer.

LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
				

QUESTION 34

Do you go for walks, cycling or swimming after preschool?

Please circle the correct answer.

		
---	---	--

No

Yes, sometimes

Yes, every day

THANK YOU!



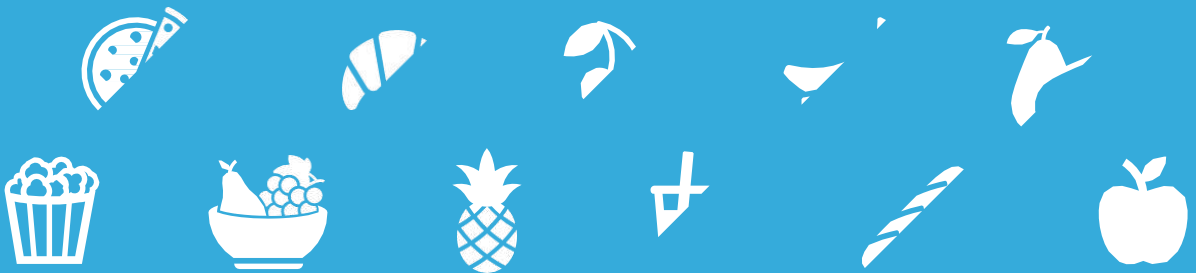
Pictures sourced from: <https://www.flaticon.com/>

ENTER CODE HERE



What do you like to eat?

Screener for First Grade Pupils



QUESTION 1



What do you like to eat and drink most?

Please colour your favourite products.

1. SWEETS



2. CRISPS



3. APPLE



4. POPCORN



5. PEAR



6. PLUM



7. STRAWBERRY



8. CARROT



9. PIZZA



10. BELL PEPPER



11. RADDISH



12. SOUP



13. TOMATO



14. TURNIP



15. MILK



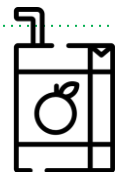
16. YOGHURT



17. KEFIR



18. JUICES, FRUIT PUREES



19. COTTAGE CHEESE



20. SWEET DRINKS

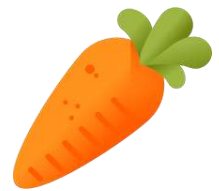
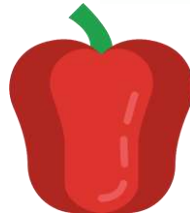


QUESTION 2



Tony made large shopping at the farmer's market. Can you help Tony place his shopping into correct baskets? Please place fruit into the red basket and vegetables into

the green basket. Please connect products with the correct basket. Fruit with the red one and vegetables with the green one.



QUESTION 3



Please circle products which are healthy for you.



1. TURNIP



2. TOMATO



3. CRISPS



4. SWEETS



5. BELL PEPPER



6. MILK



8. CARROT



9. POPCORN



7. APPLE



10. FIZZY DRINK



11. PURE FRUIT JUICE



12. STRAWBERRY



14. PLUMS



15. NATURAL YOGHURT



16. RADDISH



13. PIZZA



17. WATER



18. PEAR



QUESTION 3A







Please complete the sentence by circling the correct picture:


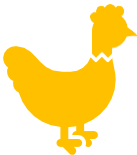


1. There are most vitamins in...

			
PIZZA	FRUIT AND VEGETABLES	SWEETS	CHEESE

2. My bones are strong and healthy thanks to...

			
CHIPS	SWEETS	FRUIT JUICES	MILK

3. In order to make natural yoghurt you need...



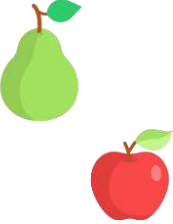


			
COW	HEN	ZEBRA	RABBIT

QUESTION 4



How often should you eat fruit and vegetables?



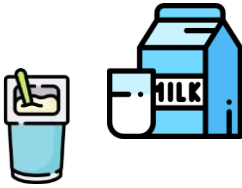
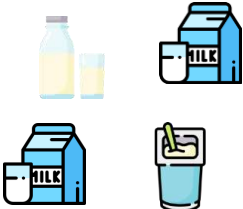
Please circle the correct answer.

				
Never	Several times a week	1-2 times a day	3-4 times a day	5 times a day

QUESTION 5

How often should you drink milk and eat dairy products?

Please circle the correct answer.


















































			
Never	Several times a week	1-2 times a day	3-4 times a day

QUESTION 6



Do you like to eat fruit?

Please mark next to each picture how much you like or don't like this fruit. If you have never eaten it, please mark a cross.

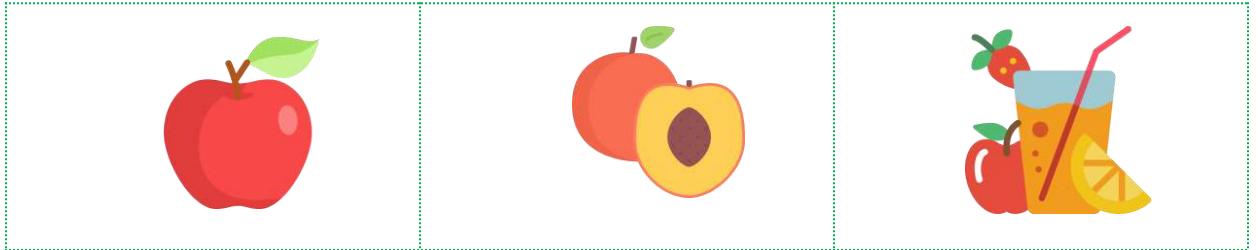
	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3 					
4 					
5 					
6 					
7 					
8 					 

QUESTION 7



In what form do you like to eat fruit most?

Please circle the correct picture.



WHOLE

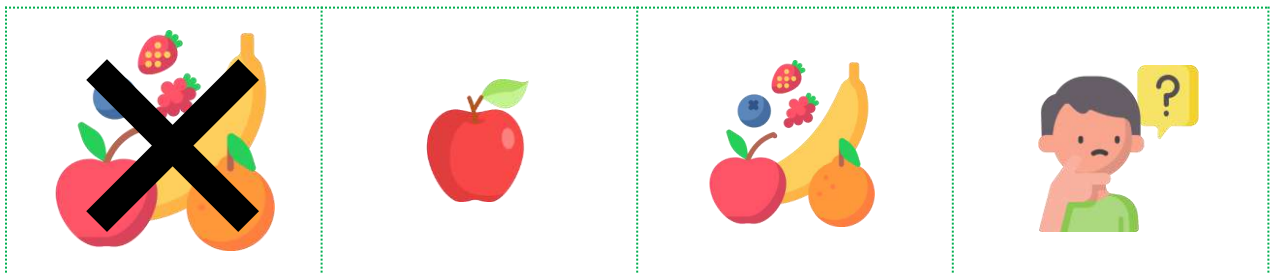
CUT INTO PIECES

I LIKE FRUIT JUICES

QUESTION 8

Do your parents eat fruit?

Please circle the correct answer.



No, they don't

Yes, sometimes

Yes, every day

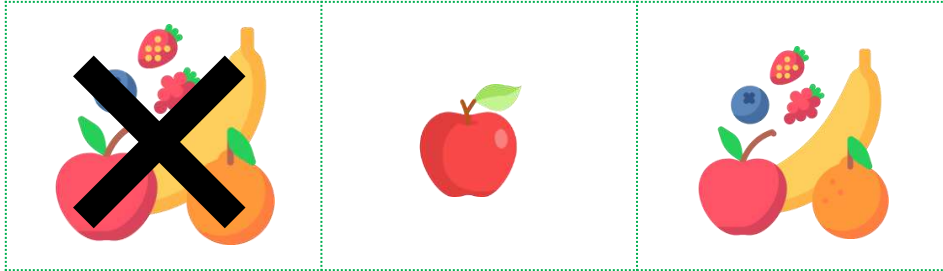
I don't know

QUESTION 9



Do your parents offer you fruit?

Please circle the correct answer.



No

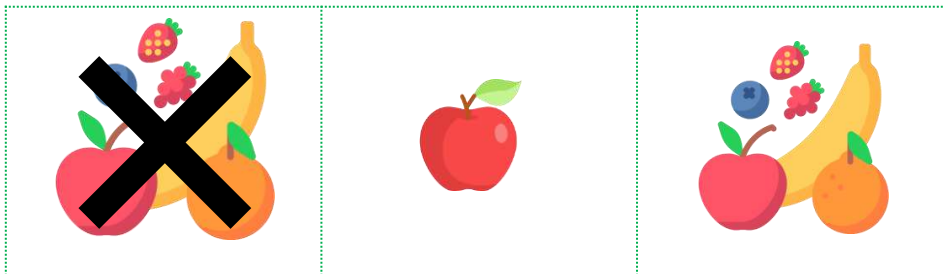
Yes, sometimes

Yes, every day

QUESTION 10

Is there fruit in your home?

Please circle the correct answer.



No

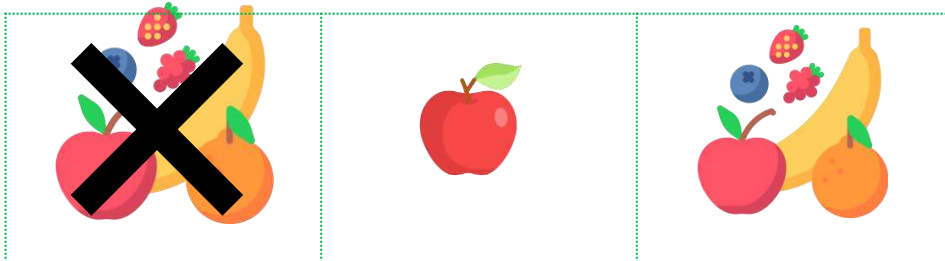
Yes, sometimes

Yes, every day

QUESTION 11

Do your parents tell you that it is important to eat fruit?

Please circle the correct answer.



No

Yes, sometimes

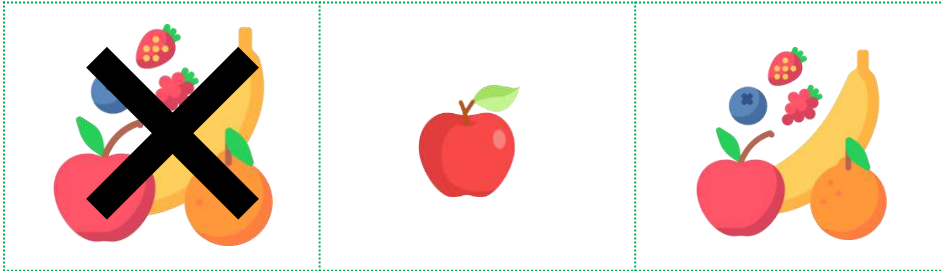
Yes, every day

QUESTION 12



Do you bring fruit to preschool for lunch or as a snack?

Please circle the correct answer.



No






Yes, sometimes

Yes, every day

QUESTION 13

Why don't you eat fruit?

Please underline the correct answer.

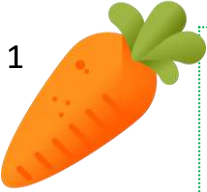

















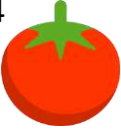





























-  1. It takes too much time
-  2. My friends don't eat it either
-  3. I'd rather have something sweet
-  4. Food breaks are too short
-  5. I like fruit and I eat it

QUESTION 14



Do you like to eat vegetables?

Please mark next to each picture how much you like or dislike this vegetable. If you have never eaten it, please mark a cross.

	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3 					
4 					
5 					
6 					
7 					
8 					

QUESTION 15



In what form do you like to eat vegetables most?

Please circle the correct picture.

WHOLE

SLICED OR
CHOPPED

I LIKE
VEGETABLE
JUICES

I LIKE SALADS

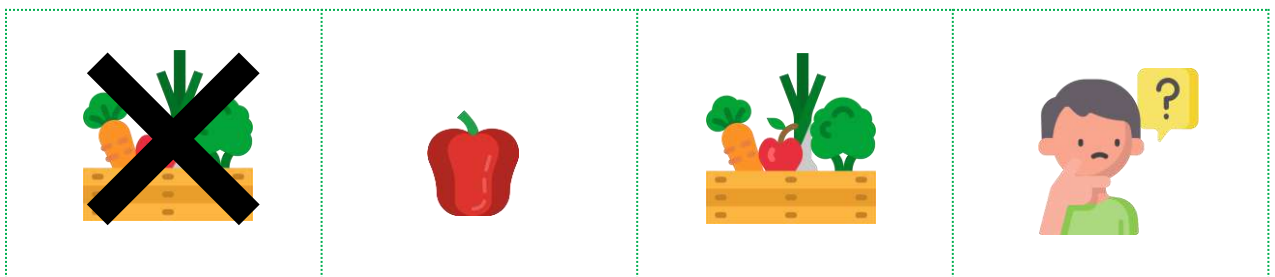
I LIKE COOKED
VEGETABLES (E.G.
IN A SOUP)



QUESTION 16

Do your parents eat vegetables?

Please circle the correct answer.



No, they don't

Yes, sometimes

Yes, every day



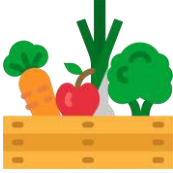
I don't know

QUESTION 17



Do your parents offer you vegetables?



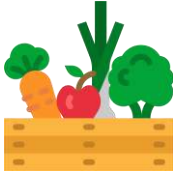
Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 18

Are there vegetables in your home?




Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 19

Do your parents tell you that it's important to eat vegetables?

Please circle the correct answer.




		
No	Yes, sometimes	Yes, every day

QUESTION 20



Do you bring vegetables to school for lunch or as a snack?






Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 21

Why don't you eat vegetables?

Please underline the correct answer.

























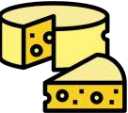





-  1. It takes too much time
-  2. My friends don't eat them either
-  3. I'd rather have something sweet
-  4. Food breaks are too short
-  5. I like vegetables and I eat them

QUESTION 22





Do you like to drink milk and eat dairy products?

Please mark next to each picture how much you like or dislike this product. If you have never eaten it, please mark a cross.

	LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
1 					
2 					
3  Jogurt naturalny					
4  Jogurt owocowy					
5 					

QUESTION 22a

Do your parents drink milk or eat dairy products?




			
No	Yes, sometimes	Yes, every day	I don't know

QUESTION 23






Do your parents offer you milk and dairy products?

Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day




QUESTION 24

Is there milk and dairy products at home (yoghurt, kefir, cream cheese)?

		
No	Yes, sometimes	Yes, every day

QUESTION 25

Do your parents tell you that it is important to drink milk and eat dairy product?




		
No	Yes, sometimes	Yes, every day

QUESTION 25a



Do you bring milk or dairy products to school for lunch or as a snack?






Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 25b

Why don't you don't have milk or dairy products (yoghurts, kefir, cream cheese)?

Please underline the true answer.

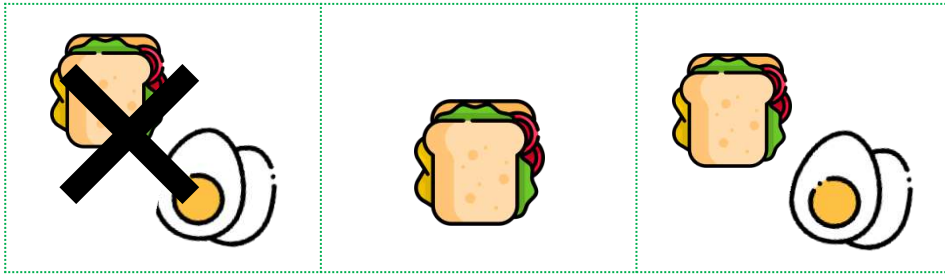
-  1. It takes too much time
-  2. My friends don't eat them either
-  3. I'd rather have something sweet
-  4. Food breaks are too short
-  5. I like milk and dairy products

QUESTION 26



Do you eat breakfast before leaving for school?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 27

Do you eat breakfast at school?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day



What do you usually have for lunch at school?

Please circle the products that you most often have for lunch.



1. SANDWICHES



2. VEGETABLES



3. SALTY SNACKS



4. SWEETS,
BARS



5. DAIRY SNACKS



6. FRUIT



7. DRINKS



8. BUNS, COOKIES



8. PURE
FRUIT JUICE

QUESTION 29



Do you eat fast foods (pizza, chips, hamburger)?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 30

Do you drink sweet, fizzy drinks (e.g. orange soda, coke) at home or at school?

Please circle the correct answer.



No

Yes, sometimes

Yes, every day

QUESTION 31



Do you drink sweet, non-fizzy fruit drinks, (e.g. Kubaś, Tymbark) at home or at school?

Please circle the correct answer.



No

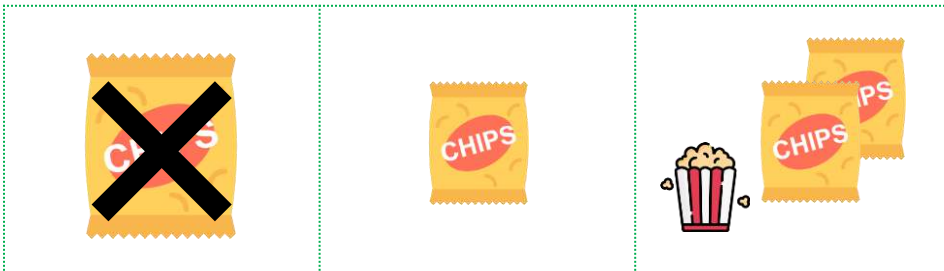
Yes, sometimes

Yes, every day

QUESTION 32

Do you eat salty snacks (crisps, crackers) at home or at school?

Please circle the correct answer.



No

Yes, sometimes






Yes, every day

QUESTION 33



Do you like Physical Education classes at school?



Please circle the correct answer.

LIKE	LIKE A BIT	DISLIKE A BIT	DISLIKE	HAVEN'T TRIED
				

QUESTION 34

Do you go for walks, cycling or swimming after school?

Please circle the correct answer.

		
No	Yes, sometimes	Yes, every day

QUESTION 35



Do you help your parents to cook and prepare meals?



No

Yes, sometimes

Yes, every day

QUESTION 36



Do you like lessons about healthy food?

LIKE

LIKE A BIT

DISLIKE A BIT

DISLIKE

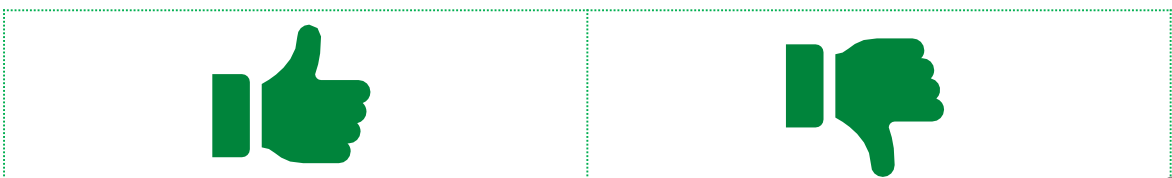


QUESTION 37

Do you tell at home about what you've learned about healthy food at school?

YES

NO



QUESTION 38

When you suddenly feel hungry, it's best to reach for...?



1. COOKIES, BUNS



2. FRUIT



3. PIZZA



4. SWEETS, BARS

QUESTION 39

When you suddenly feel thirsty, it's best to reach for...?



1. WATER



2. FRUIT JUICE



3. FIZZY DRINK

QUESTION 40

What contains good bacteria?



1. NATURAL YOGHURT



2. FRUIT JUICES



3. COOKIES

QUESTION 41



Several times a week you get fruit, vegetables, milk or other dairy products to eat at school. Do you like getting fruit at school?

LIKE

LIKE A
BIT

DISLIKE A
BIT

DISLIKE

			
---	---	---	--

QUESTION 42




Do you like getting vegetables at school?

LIKE

LIKE A
BIT

DISLIKE A
BIT

DISLIKE

			
---	---	---	--

QUESTION 43



Do you like getting milk and dairy products at school?

LIKE

LIKE A
BIT

DISLIKE A
BIT

DISLIKE

			
---	---	---	--

QUESTION 44

Below you see the different products you get to eat at school. Circle the ones you like getting the most and cross out the ones you dislike the most:



1. TURNIP



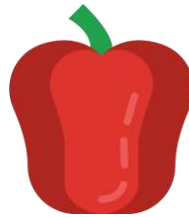
2. PLUMS



3. CARROT



4. APPLE



5. BELL PEPPER



6. STRAWBERRY



7. RADDISH



8. PEAR



9. PURE FRUIT JUICE



10. MILK



12. NATURAL YOGHURT



13. KEFIR



11. TOMATO

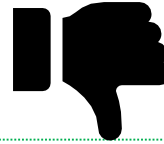
QUESTION 45



Would you like to get fruit at school more often?

TAK

NIE



QUESTION 46



Would you like to get vegetables at school more often?

YES

NO



QUESTION 47



Would you like to get milk and dairy products at school more often?

YES

NO





THANK YOU!



Pictures sourced from: <https://www.flaticon.com/>



"Scheme financed from European Union funds and the national budget"

Appendix 3. Screener for 3rd and 5th grade pupils – group subject to intervention

Hello!

What do you like to eat? What is it that you dislike? Are you interested with topics connected with healthy lifestyle?

These are the questions that we would like to know the answers to. Please read each question carefully. What comes first to mind? Please select and circle the most truthful answer.

Remember: this is not a test. There are no right or wrong answers. It is important that you answer all questions.



Do you like to eat following products?						
1	bananas	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
2	peaches	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
3	beetroots	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
4	cherries	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
5	chips	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
6	pears	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
7	apples	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
8	natural yoghurt	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
9	fruit yoghurt	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
10	cauliflower	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
11	turnip	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
12	cabbage	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
13	kefir	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
14	carrot	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
15	milk	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
16	nuts	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
17	bell pepper	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
18	pizza					

		1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
19	oranges	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
20	tomatoes	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
21	radish	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
22	cottage cheese	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
23	sweets	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
25	plums	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
26	strawberries	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried

In what form do you like to eat fruit the most?

1 whole	2 cut into pieces	3 I like fruit juices
-------------------	-----------------------------	---------------------------------

Do your parents eat fruit?

1 no, they don't	2 yes, sometimes	3 yes, every day	4 I don't know
----------------------------	----------------------------	----------------------------	--------------------------

Do you eat fruit?	1 no	2 yes, sometimes	3 yes, every day
Do your parents offer you fruit?	1 no	2 yes, sometimes	3 yes, every day
Do your parents tell you that it is important to eat fruit?	1 no	2 yes, sometimes	3 yes, every day
Is there fruit in your home?	1 no	2 yes, sometimes	3 yes, every day
Do you bring fruit to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day

If you don't eat fruit, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

In your opinion, how often should you eat fruit and vegetables?

1 don't have to eat it at all	2 several times per week	3 1-2 times per day	4 3-4 times per day	5 5 times per day
---	------------------------------------	-------------------------------	-------------------------------	-----------------------------

In what form do you like to eat vegetables most?

1 whole	2 sliced or chopped	3 I like vegetable juices	4 I like salads	5 I like cooked vegetables (e.g. in a soup)
-------------------	-------------------------------	-------------------------------------	---------------------------	---

Do your parents eat vegetables?

1 no, they don't	2 yes, sometimes	3 yes, every day	4 I don't know
----------------------------	----------------------------	----------------------------	--------------------------

Do you eat vegetables?	1 no	2 yes, sometimes	3 yes, every day
Do your parents offer you vegetables?	1 no	2 yes, sometimes	3 yes, every day
Do your parents tell you that it is important to eat vegetables?	1 no	2 yes, sometimes	3 yes, every day
Are there vegetables in your home?	1 no	2 yes, sometimes	3 yes, every day
Do you bring vegetables to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day

If you don't eat vegetables, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

Do you have milk and dairy products (yoghurts, kefir, cream cheese)?	1 no	2 yes, sometimes	3 yes, every day
Do your parents offer you milk and dairy products?	1 no	2 yes, sometimes	3 yes, every day
Do your parents tell you that it is important to drink milk and eat dairy products?	1 no	2 yes, sometimes	3 yes, every day
Is there milk and dairy product at home (yoghurt, kefir, cream cheese)?	1 no	2 yes, sometimes	3 yes, every day

Do you bring milk or dairy products to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day
---	----------------	----------------------------	----------------------------

If you don't have milk or dairy products, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

Do you help your parents to prepare meals?	1 no	2 yes, sometimes	3 yes, every day
Do you eat breakfast before leaving for school?	1 no	2 yes, sometimes	3 yes, every day
Do you eat breakfast at school?	1 no	2 yes, sometimes	3 yes, every day

Please write what do you usually have for breakfast at school?

.....

.....

.....

Do you eat fast foods (e.g. pizza, chips, hamburger)?	1 no	2 yes, sometimes	3 yes, every day
Do you drink sweet, fizzy drinks (e.g. orange soda, coke) at home or at school?	1 no	2 yes, sometimes	3 yes, every day
Do you drink sweet, non-frizzy fruit drinks (e.g. Kubuś, Tymbark) at home or at school?	1 no	2 yes, sometimes	3 yes, every day
Do you eat salty snacks (crisps, crackers) at home or at school?	1 no	2 yes, sometimes	3 yes, every day

Do you like Physical Education classes at school?	1 like	2 like a bit	3 dislike a bit	4 dislike	5 I don't take PE
--	------------------	------------------------	---------------------------	---------------------	-----------------------------

If you don't like PE, please briefly describe why:

.....

.....

.....

Do you go for walks, cycling, or swimming after school?

1
no

2
yes, sometimes

3
yes, every day

Do you do any sports after school?

1
no

2
yes, sometimes

3
yes, every day

Do you like lessons about healthy lifestyle?

1
like

2
like a bit

3
dislike a bit

4
dislike

Please think what you learn at school about healthy lifestyle. What else would you like to know about it?

.....

.....

.....

Please write at least one thing that you have learned in class about healthy lifestyle.

.....

.....

.....

Several times per week you get fruit, vegetables, milk or other dairy products to eat at school.

Do you like getting fruit at school?

1
like

2
like a bit

3
dislike a bit

4
dislike

Do you like getting vegetables at school?

1
like

2
like a bit

3
dislike a bit

4
dislike

Do you like getting milk and dairy products at school?

1
like

2
like a bit

3
dislike a bit

4
dislike

Please mention products which you like getting at school the most:

.....

.....

.....

Please mention products, which you dislike getting at school the most:

.....

.....

.....

What would you like to get at school more often:

Fruit?	1 no	2 yes
Vegetables?	1 no	2 yes
Milk and dairy products?	1 no	2 yes

In your opinion, which dairy product contains most calcium?

1. cottage cheese
2. natural yoghurt
3. cheese

Which ingredient is indispensable to make yoghurt from scratch?

1. yoghurt starter culture
2. yeast
3. egg white

How to prevent wastage of food:

1. by going to do grocery without a shopping list
2. by storing dairy products outside the fridge
3. by planning a weekly menu

In your opinion, when you suddenly feel hungry, what is the best choice?

1. pastries (e.g. buns)
2. fruit or vegetables
3. Fast food (e.g. pizza)
4. Sweets
5. Something else, please specify what.....

In your opinion, when you suddenly feel thirsty, what is the best choice?

1. Water
2. Fruit juice
3. Fizzy drink

S8. Are you a:

1. Girl
2. Boy



Appendix 4. Screener for 3rd and 5th grade pupils – control group

Hello!

What do you like to eat? What is it that you dislike? Are you interested with topics connected with healthy lifestyle?

These are the questions that we would like to know the answers to. Please read each question carefully. What comes first to mind? Please select and circle the most truthful answer.

Remember: this is not a test. There are no right or wrong answers. It is important that you answer all questions.



Q1. Do you like to eat following products?						
1	bananas	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
2	peaches	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
3	beetroots	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
4	cherries	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
5	chips	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
6	pears	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
7	apples	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
8	natural yoghurt	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
9	fruit yoghurt	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
10	cauliflower	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
11	turnip	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
12	cabbage	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
13	kefir	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
14	carrot	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
15	milk	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
16	nuts	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
17	bell pepper	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
18	pizza	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried

19	oranges	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
20	tomatoes	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
21	radish	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
22	cottage cheese	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
23	sweets	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
25	plums	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried
26	strawberries	1 like	2 like a bit	3 dislike a bit	4 dislike	5 haven't tried

Q2. In what form do you like to eat fruit the most?

1 whole	2 sliced or chopped	3 I like fruit juices
------------	------------------------	--------------------------

Q3. Do your parents eat fruit?

1 no, they don't	2 yes, sometimes	3 yes, every day	4 I don't know
---------------------	---------------------	---------------------	-------------------

Q4. Do you eat fruit?	1 no	2 yes, sometimes	3 yes, every day
Q5. Do your parents offer you fruit?	1 no	2 yes, sometimes	3 yes, every day
Q6. Do your parents tell you that it is important to eat fruit?	1 no	2 yes, sometimes	3 yes, every day
Q7. Is there fruit in your home?	1 no	2 yes, sometimes	3 yes, every day
Q8. Do you bring fruit to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day

Q9. If you don't eat fruit, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

Q10. In your opinion, how often should you eat fruit and vegetables?

1 don't have to eat it at all	2 several times per week	3 1-2 times per day	4 3-4 times per day	5 5. times per day
---	------------------------------------	-------------------------------	-------------------------------	------------------------------

Q11. In what form do you like to eat vegetables most?

1 whole	2 sliced or chopped	3 I like vegetable juices	4 I like salads	5 I like cooked vegetables (e.g. in a soup)
-------------------	-------------------------------	-------------------------------------	---------------------------	---

Q12. Do your parents eat vegetables?

1 no, they don't	2 yes, sometimes	3 yes, every day	4 I don't know
----------------------------	----------------------------	----------------------------	--------------------------

Q13. Do you eat vegetables?	1 no	2 yes, sometimes	3 yes, every day
Q14. Do your parents offer you vegetables?	1 no	2 yes, sometimes	3 yes, every day
Q15. Do your parents tell you that it is important to eat vegetables?	1 no	2 yes, sometimes	3 yes, every day
Q16. Are there vegetables in your home?	1 no	2 yes, sometimes	3 yes, every day
Q17. Do you bring vegetables to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day

Q18. If you don't eat vegetables, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

Q19. Do you have milk and dairy products (yoghurts, kefir, cream cheese)?	1 no	2 yes, sometimes	3 yes, every day
Q20. Do your parents offer you milk and dairy products?	1 no	2 yes, sometimes	3 yes, every day
Q21. Do your parents tell you that it is important to drink milk and eat dairy products?	1 no	2 yes, sometimes	3 yes, every day
Q22. Is there milk and dairy product at home (yoghurt, kefir, cream cheese)?	1 no	2 yes, sometimes	3 yes, every day
Q23. Do you bring milk or dairy products to school for lunch or as a snack?	1 no	2 yes, sometimes	3 yes, every day

Q24. If you don't have milk or dairy products, please select why:

1. It takes too much time
2. My friends don't eat it either
3. I'd rather have something sweet
4. Food breaks are too short
5. Other reason? Please specify.....

Q25. Do you help your parents to prepare meals?	1 no	2 yes, sometimes	3 yes, every day
Q26. Do you eat breakfast before leaving for school?	1 no	2 yes, sometimes	3 yes, every day
Q27. Do you eat breakfast at school?	1 no	2 yes, sometimes	3 yes, every day

Q28. Please write what do you usually have for breakfast at school?

.....

.....

.....

Q29. Do you eat fast foods (e.g. pizza, chips, hamburger)?	1 no	2 yes, sometimes	3 yes, every day
Q30. Do you drink sweet, fizzy drinks (e.g. orange soda, coke) at home or at school?	1 no	2 yes, sometimes	3 yes, every day
Q31. Do you drink sweet, non-frizzy fruit drinks (e.g. Kubuś, Tymbark) at home or at school?	1 no	2 yes, sometimes	3 yes, every day
Q32. Do you eat salty snacks (crisps, crackers) at home or at school?	1 no	2 yes, sometimes	3 yes, every day

Q33. Do you like Physical Education classes at school?	1 like	2 like a bit	3 dislike a bit	4 dislike	5 I don't take PE
---	------------------	------------------------	---------------------------	---------------------	-----------------------------

Q34. If you don't like PE, please briefly describe why:

.....

.....

.....

Q35. Do you go for walks, cycling, or swimming after school?	1 no	2 yes, sometimes	3 yes, every day
Q36. Do you do any sports after school?	1 no	2 yes, sometimes	3 yes, every day

Q37. Do you like lessons about healthy lifestyle?	1 like	2 like a bit	3 dislike a bit	4 dislike
--	------------------	------------------------	---------------------------	---------------------

Q38. Please think what you learn at school about healthy lifestyle. What else would you like to know about it?

.....

.....

.....

Q39. Please write at least one thing that you have learned in class about healthy lifestyle.

.....

.....

.....

Q40. In your opinion, which dairy product contains most calcium?

1. cottage cheese
2. natural yoghurt
3. cheese

Q41. Which ingredient is indispensable to make yoghurt from scratch?

1. yoghurt starter culture
2. yeast
3. egg white

Q42. How to prevent wastage of food:

1. by going to do grocery without a shopping list
2. by storing dairy products outside the fridge
3. by planning a weekly menu

Q43. In your opinion, when you suddenly feel hungry, what is the best choice?

1. Pastries (e.g. buns)
2. fruit or vegetables
3. Fast food (e.g. pizza)
4. Sweets
5. Something else, please specify what.....

Q44. In your opinion, when you suddenly feel thirsty, what is the best choice?

1. Water
2. Fruit juice
3. Fizzy drink

Q48. Are you a:

1. Girl
2. Boy



Appendix 5. Screener for parents of 1st, 3rd, 5th grade pupils (schools subject to intervention)

Enter code here

SURVEY FOR PARENTS / GUARDIANS

Danae Research Institute is conducting research commissioned by the National Support Centre for Agriculture. The research aims at evaluation of the Scheme for schools, consisting in provision fruit, vegetables, milk and dairy products to pupils. Your child is at a school that is subject to this Scheme. To fully analyse the effects of the Scheme, it is necessary to learn more about eating habits of children and their parents.

Therefore, we kindly ask you to fill in a short survey that will take approximately 15 minutes. Please remember that each time when we are asking about your child, we mean your son/daughter, which is currently in the first, third or fifth grade (please see the number on the sticker in the upper right corner). Research results will allow to adjust the Scheme to health needs of the pupils. The research is confidential, and all answers will be analysed in collective data sets.

Please answer the questions according to the instruction – by circling the correct answer. Unless the instruction stipulates otherwise, please select one answer per question. In case of a mistake, please cross the selected answer and circle the correct one, as shown below:

BLOCK 1. EATING STYLE AND HABITS AT THE HOUSEHOLD

1.	Yes	→	CORRECT ANSWER
2.	No	→	MISTAKE
3.	I don't know		

Q1. In general, you are eating:

1. Very healthy
2. Rather healthy
3. Rather unhealthy
4. Very unhealthy
5. I don't know / hard to say

Q2. Your child is eating:

1. Very healthy
2. Rather healthy
3. Rather unhealthy
4. Very unhealthy
5. I don't know / hard to say

Q3. On average how many minutes per day do you spend on prepping meals (in minutes):

1. For myself and other adults at home:minutes
2. For the kids:.....minutes

Q4. How often does your child eat at least one warm meal:

1. Every day
2. 5-6 times a week
3. 2-4 times a week
4. Once a week
5. Less than once a week

Q5. In your opinion is the diet of adults at your household the same or entirely different than the child's diet?

1. Entirely the same
2. Rather the same
3. Rather different
4. Entirely different
5. I don't know / hard to say

Q6. Do you ever read list of ingredients of purchased products?

1. Yes, I read the ingredient lists of all or nearly all products
2. Yes, I read ingredient lists of only some products
3. I don't read ingredient lists

Q7. Are there any products, which you are trying to avoid in your diet?

1. Yes, there are such products, → Please list them
-
2. No, there are no such products

Q8. Are there any products, which you are trying not to serve to your child?

1. Yes, there are such products → Please list them.....
-
2. No, there no such products

Q9. Where do you usually source the following products. For each product you can select more than one source:

	1. Garden/ own, family or friendly farm	2. Farmer's market	3. Local store	4. Supermarket	5. Other	6. We do not eat these products
FRUIT	1	2	3	4	5	6
VEGETABLE	1	2	3	4	5	6
MILK	1	2	3	4	5	6
DAIRY PRODUCTS (e.g. cheese, yoghurt, kefir)	1	2	3	4	5	6
MEAT	1	2	3	4	5	6
FISH	1	2	3	4	5	6

Q10. Does your child eat breakfast before leaving to school?

1. Every day
2. 5-6 times a week
3. 2-4 times a week
4. Once a week
5. Less than once a week
6. Never

Q11. Does your child take lunch to school?

1. Every day
2. 5-6 times a week
3. 2-4 times a week
4. Once a week
5. Less than once a week
6. Never

Q12. How would you define the level of food wasted at your household?

1. So much food gets wasted → go to Q13
2. Much food gets wasted → go to Q13
3. Little food gets wasted → go to Q13
4. Very little food gets wasted → go to Q13
5. We don't waste any food → go to Q14
6. I don't know / hard to say → go to Q14

Q13. Which products usually go to waste?

.....

.....

BLOCK 2. PARENTS' / GUARDIANS' DIET**Q14. How often do you eat the following products?**

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day	7. Twice a day	8. More than twice a day
FAST FOOD (e.g. hamburgers, chips, hot dogs, pizza)	1	2	3	4	5	6	7	8
NATURAL YOGHURTS	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED YOGHURTS	1	2	3	4	5	6	7	8
NATURAL KEFIR	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED KEFIR	1	2	3	4	5	6	7	8
MILK (e.g. cow, goat, does not include plant milks)	1	2	3	4	5	6	7	8
COTTAGE CHEESE	1	2	3	4	5	6	7	8
SWEET, FIZZY DRINKS (e.g. orange soda, Coca-Cola, etc.)	1	2	3	4	5	6	7	8
SWEETS	1	2	3	4	5	6	7	8
SALTY SNACKS (e.g. crisps, salty sticks)	1	2	3	4	5	6	7	8
PURE FRUIT JUICES	1	2	3	4	5	6	7	8
FIZZY DRINKS (e.g. Kubuś, Tymbark etc.)	1	2	3	4	5	6	7	8
VEGETABLE JUICES	1	2	3	4	5	6	7	8
RAW VEGETABLES (sliced or whole)	1	2	3	4	5	6	7	8
VEGETABLE SALADS	1	2	3	4	5	6	7	8

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day	7. Twice a day	8. More than twice a day
FRESH FRUIT	1	2	3	4	5	6	7	8
VEGETABLES IN OTHER, PROCESSED FORM (e.g. soups, vegetable stew)	1	2	3	4	5	6	7	8

BLOCK 3. CHILD'S DIET**Q15. How often does your child eat the following products?**

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day	7. Twice a day	8. More than twice a day
FAST FOOD (e.g. hamburgers, chips, hot dogs, pizza)	1	2	3	4	5	6	7	8
NATURAL YOGHURTS	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED YOGHURTS	1	2	3	4	5	6	7	8
NATURAL KEFIR	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED KEFIR	1	2	3	4	5	6	7	8
MILK (e.g. cow, goat, does not include plant milks)	1	2	3	4	5	6	7	8
COTTAGE CHEESE	1	2	3	4	5	6	7	8
SWEET, FIZZY DRINKS (e.g. orange soda, Coca-Cola, etc.)	1	2	3	4	5	6	7	8
SWEETS	1	2	3	4	5	6	7	8
SALTY SNACKS (e.g. crisps, salty sticks)	1	2	3	4	5	6	7	8
PURE FRUIT JUICES	1	2	3	4	5	6	7	8
FIZZY DRINKS (e.g. Kubuś, Tymbark etc.)	1	2	3	4	5	6	7	8
VEGETABLE JUICES	1	2	3	4	5	6	7	8
RAW VEGETABLES (sliced or whole)	1	2	3	4	5	6	7	8
VEGETABLE SALADS	1	2	3	4	5	6	7	8
FRESH FRUIT	1	2	3	4	5	6	7	8
VEGETABLES IN OTHER, PROCESSED FORM (e.g. soups, vegetable stew)	1	2	3	4	5	6	7	8

Q16. Does your child receive the following products in-between meals as snacks?

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day
FRUIT	1	2	3	4	5	6
VEGETABLES	1	2	3	4	5	6
MILK	1	2	3	4	5	6
DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	1	2	3	4	5	6

Q17. Does your child ever take or ask for the following products:

	1. Never	2. Less than once a week	3. Once a week	4. Several times a week	5. Every day or several times a day
FRUIT	1	2	3	4	5
VEGETABLE	1	2	3	4	5
MILK	1	2	3	4	5
DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	1	2	3	4	5

Q18. Please think about products, which your child likes or dislikes. Please list most and least favourite products from individual categories:

	Please list most favourite	Please list least favourite
FRUIT	Most favourite:	Least favourite:
VEGETABLES	Most favourite:	Least favourite:
MILK	Most favourite:	Least favourite:
DAIRY PRODUCTS (e.g. yoghurts, kefir, cream cheese)	Most favourite:	Least favourite:

Q19. Is it in any way difficult to serve the following products to the child? Why? You may select several answers.

FRUIT	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult
VEGETABLES	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult
MILK AND DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult

BLOCK 4. OPINIONS ABOUT HEALTHY DIET**Q22. In your opinion, how often should children eat:**

	1. Should not eat it at all	2. 1-3 portions a week	3. 4-6 portions a week	4. 1 portion a day	5. 2 portions a day	6. 3 portions a week	7. 4 portions a week	8. 5 portions a week
FRUIT	1	2	3	4	5	6	7	8
VEGETABLES	1	2	3	4	5	6	7	8
MILK	1	2	3	4	5	6	7	8
DAIRY PRODUCTS (e.g. cheese, yoghurt, kefir)	1	2	3	4	5	6	7	8

Q23. Why do you think children should eat fruit and vegetables? You can select several answers.

1. Because it prevents illness
2. Generally, for good health
3. Because it is tasty
4. Because of the costs
5. Because it is fast and easy to prepare
6. To maintain proper body weight
7. Other, which?.....
8. I believe that children should not eat fruit and vegetables

Q24. Why do you think children should drink meat and eat dairy products? You can select several answers.

1. Because it boosts immunity
2. Generally, for good health
3. Because it is tasty
4. Because of the costs
5. Because it is fast and easy to prepare
6. To maintain proper body weight
7. Other, which?.....
8. I believe that children should not drink milk or eat dairy products

Q25. Are you interested in nutrition?

1. Definitely yes → go to Q26
2. Rather yes → go to Q26
3. Rather not → go to Q27
4. Definitely not → go to Q27

Q26. Where do you get information about it? You can select several answers.

1. television and radio
2. press
3. advertising
4. doctor
5. parents
6. Internet
7. books
8. educational materials supplied by the school

Q27. Do you think that it is important that the child eats fruit and vegetables every day?

1. Very important
2. Rather important
3. Neither important nor unimportant
4. Rather unimportant
5. Entirely unimportant

Q28. Do you think that eating fruit and vegetables can prevent the following conditions:

	1. yes	2. no	3. I don't know/hard to say
HEART DISORDERS	1	2	3

DIGESTION PROBLEMS	1	2	3
DIABETES	1	2	3
SKIN CONDITIONS	1	2	3
OVERWEIGHT AND OBESITY	1	2	3
TUMORS	1	2	3

Q29. Is it in any way difficult to eat fruit? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to fruit consumption
6. Eating fruit is not difficult

Q30. Is it in any way difficult to eat vegetables? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to vegetable consumption
6. Eating vegetables is not difficult

Q31. Is it in any way difficult to consume milk or dairy products? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to milk and dairy products' consumption
6. Consuming milk or dairy products is not difficult

BLOCK 5. LIFESTYLE

Q32. Please think about different forms of physical activities: swimming, cycling, other sports. How would you rate your physical activity?

1. I am active every day or almost every day
2. I am active several times a week
3. I am active at least once a week
4. I am active several times a month
5. I am active less than once a month
6. I am not active

Q33. Is your child physically active?

1. Regularly
 2. Sometimes
 3. Not active at all
-

Q34. Do you ever do any physical activity together with your child?

1. Yes, every day or almost every day
2. Yes, several times a week
3. Yes, at least once a week
4. Yes, at least once a month
5. Yes, less than once a month
6. No, never

BLOCK 6. EVALUATION OF THE PROGRAMME FOR SCHOOLS

The school your child attends, participates in the Scheme for schools, which the framework of which pupils receive fruit, vegetables, milk and dairy products at school. Its objective is to promote healthy eating habits among pupils.

In this part of the survey, we would like you to evaluate that Scheme.

Q35. In general how do you rate the concept of giving children fruit, vegetables, milk and dairy products at school?

1. Definitely good
2. Rather good
3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Q36. Please justify your rating of the Scheme for schools:

.....

.....

.....

Q37. How do you rate products that are given to children at school?

6. Definitely good
7. Rather good
8. Rather bad
9. Definitely bad
10. I don't know / hard to say

Q38. Does your child tell you about the products received at school on a given day?

1. Yes, always or almost always
2. Yes, sometimes
3. No, never

Q39. Does your child tell you about what it has learned at school about healthy eating?

4. Yes, always or almost always
5. Yes, sometimes
6. No, never

Q40. Does your child ever bring back home fruit/vegetables/milk/dairy products received at school?

1. Yes, always or almost always → go to 0
2. Yes, sometimes → go to 0
3. No, never → go to Q42

Q41. Why does your child bring back these products home?

1. Does not like it
2. Did not have time to eat it
3. Wasn't hungry
4. Other reason → which?.....

Q42. Do you think that because of the Scheme for schools, your child:

	1.	2.	3.	4.	5.
--	----	----	----	----	----

	Definitely yes	Rather yes	Rather not	Definitely not	I don't know / hard to say
Is more keen to have fruit	1	2	3	4	5
Has fruit more often	1	2	3	4	5
Is more keen to have vegetables	1	2	3	4	5
Has vegetables more often	1	2	3	4	5
Is more keen to have milk/dairy products	1	2	3	4	5
Has milk/dairy products more often	1	2	3	4	5
Has better knowledge of produce and healthy eating habits	1	2	3	4	5
Notices whether consumed products are ecological	1	2	3	4	5
Notices food wastage problem	1	2	3	4	5
Is more keen to do sports	1	2	3	4	5
Limits consumption of sweetened products (drinks / sweets)					

Q43. Did you notice other effects of the Scheme for schools and giving children fruit/vegetables/milk/dairy products?

1. Yes, which?
 2. No
 3. I don't know / no opinion
-

Q44. Did you read educational materials pertaining to the Scheme for schools available at the website:

<https://www.programdlaszkol.org/rodzice/index?>

1. Yes
 2. No
-

Q45. Do you see the need to implement any changes to the Scheme for schools and giving children fruit/vegetables/milk/dairy products?

1. Yes, which?
 2. No
 3. I don't know / no opinion
-

PERSONAL INFORMATION

To close off, please answer few questions that we will use for statistical analysis of collected data

P1. Please fill in below information about your child:

1. Height |_|_|_| cm
2. Weight |_|_| kg
3. Age |_| years

P2. Please select your gender:

4. Female
5. Male

P3. Please enter your birth year: |_|_|_|_|

P4. What is your education background:

1. Primary
2. Basic vocational
3. Secondary
4. Higher
5. Don't want to answer

P5. What is the size of locality where you live:

1. village
2. city with population up to 50 thousand
3. city with population of 50-99 thousand
4. city with population of 100-199 thousand
5. city with population of 200-499 thousand
6. city with population over 500 thousand

P6. Which of the following statements, best describes income management at your household?

1. we have enough and we manage to save some for the future
2. we have enough without any special sacrifices, but we are not able to save for the future
3. we are economical and this is why we have enough to cover all expenses
4. we live very economically, in order to put money aside for major purchases
5. we have only enough to cover basic needs
6. we don't have enough money even for the cheapest food
7. I don't want to answer

P7. Please indicate approximate percentage of your household budget spent on food? |_|_|%



Thank you very much for participating!

Danae Research Team

3-DAY CHILD'S FOOD DIARY

Dear Ladies and Gentlemen,

Together with your child, please fill in your child's **3-day food diary**. Please include all meals that your child consumed over that period – also those eaten at school or other places outside school. When filling in the diary, please follow the following rules:

1. Please list all products consumed over the next 3 days. At least one day has to be on a weekend (e.g. Thursday, Friday, Saturday, or Sunday, Monday, Tuesday).
 2. Please enter date and weekday when information was recorded.
 3. Recording should start from the time child gets up from bed and end when the child gets up from bed on the next day. Please also list everything the child ate and drank at night.
 4. Please record all food, products, drinks consumed at every meal, also the ones the child had in-between meals, both at home and outside.
 5. In the section **When and where the meal was consumed** please enter time when a meal, product or drink was consumed. It is important to write the location – at home, at school, at grandparents' house, at a restaurant.
 6. When listing individual products, please describe them as much in detail as possible – name of the product, brand (if you know it), characteristics, for instance *lactose-free milk, 1.5%, rye bread, Nestle cornflakes, peach yoghurt, Tymbark apple juice, Snickers bar, chocolate with nuts*.
 7. When recording individual meals it is important to include their ingredients and spices, for instance *tomato soup with noodles, coleslaw, pancakes with cottage cheese and strawberries, tea with sugar and lemon, team with lime honey*.
 8. If a meal was prepared using instant dishes or semi-finished products, please mention them, i.e. *"Spring" frozen soup, frozen dumplings with blueberries, Knorr Mexican sauce, cheeseburger – Mc Donald's*
 9. Please list the size of portion of each product in home measuring methods, that is table spoon, tea spoon (flat, medium generous), cup (by indicating its size – 1 cup 300ml, 0.5 cup 200 ml), plate (full, not full, deep, small, large, dessert), number of bread slices (thin, medium, thick slice), how bread is smeared with butter (thin, medium, thick layer), slices of ham (thin, medium, thick), slices of cheese (thin, medium, thick slice), tomato (thin, medium, thick slice of a large, small, medium tomato), cucumber, arugula (handful), dehusked walnuts (2 handfuls) etc., number of pieces, serving size: small, medium, large (small meatloaf, medium portion of chips, large apple, medium banana) or in grams, litres or millilitres, if you know the weight or the volume of products consumed by the child (for instance from information on the packaging).
 10. In the case of children who eat meal at schools, please ask the child whether he/she had something to eat in-between meals, whether he/she bought something at the school store or had a portion of a served meal, if not → please ask more or less what part of the portion he/she ate.
-

1ST DAY OF RESEARCH			
Day: 10 May 2022		Weekday: Thursday	
Meal	When and where consumed	Products, meals, drinks (please mention brand of the product, added sweetening product, spices)	Portion size measured by home measuring methods
<i>breakfast</i>	<i>7:30 am Home</i>	<i>Wheat roll Delma margarine tomato chives salt Chicken Wiener sausage Granulated raspberry fruit tea</i>	<i>1 piece Thick layer Small, 2 thin slices 1 teaspoon pinch 2 pieces 1 glass, 250 ml</i>
<i>lunch</i>	<i>11:00 am School</i>	<i>Knoppers bar Banana Apple juice Tymbark</i>	<i>1 sztuka Średni, 1 sztuka 200 ml</i>
<i>dinner</i>	<i>1:00 pm School</i>	<i>Tomato soup with rice Potatoes Pork meatballs in tomato sauce Carrot salad Strawberry compote</i>	<i>300 ml 2 large 50 g meat and 2 table spoons of sauce 50 g Half a cup: 150 ml</i>
<i>2nd dinner</i>	<i>4:00 pm At grandparents' house</i>	<i>Pancakes with cottage cheese and sugar Granulated raspberry fruit tea</i>	<i>2 large pancakes + 2 table spoons of cottage + 1 teaspoon of sugar 1 cup, 250 ml</i>
<i>supper</i>	<i>19:15 Home</i>	<i>Wheat bread Smoked pork ham Granulated raspberry fruit tea Ketchup</i>	<i>2 slices 2 thin slices 1 cup, 250 ml 1 teaspoon</i>
<i>snack</i>	<i>9:30 pm Home</i>	<i>popcorn Coca cola</i>	<i>200 g 1 cup 250 ml</i>

1ST DAY OF RESEARCH			
Day:		Weekday:	
Meal	When and where consumed	Products, meals, drinks (please mention brand of the product, added sweetening product, spices)	Portion size measured by home measuring methods

Appendix 6. Screener for parents of 3rd, 5th grade pupils (control group)

Enter code here

SURVEY FOR PARENTS / GUARDIANS

Danae Research Institute is conducting research commissioned by the National Support Centre for Agriculture. The research aims at evaluation of the Scheme for schools, consisting in provision fruit, vegetables, milk and dairy products to pupils. Your child is at a school that is subject to this Scheme. To fully analyse the effects of the Scheme, it is necessary to learn more about eating habits of children and their parents.

Therefore, we kindly ask you to fill in a short survey that will take approximately 15 minutes. Please remember that each time when we are asking about your child, we mean your son/daughter, which is currently in the third or fifth grade (please see the number on the sticker in the upper right corner). Research results will allow to adjust the Scheme to health needs of the pupils. The research is confidential, and all answers will be analysed in collective data sets.

Please answer the questions according to the instruction – by circling the correct answer. Unless the instruction stipulates otherwise, please select one answer per question. In case of a mistake, please cross the selected answer and circle the correct one, as shown below:

<input checked="" type="radio"/> 1.	Yes	→	CORRECT ANSWER
<input checked="" type="radio"/> 2.	No	→	MISTAKE
3.	I don't know		

BLOCK 1. EATING STYLE AND HABITS AT THE HOUSEHOLD

Q20. In general, you are eating:

1. Very healthy
2. Rather healthy
3. Rather unhealthy
4. Very unhealthy
5. I don't know / hard to say

Q21. Your child is eating:

1. Very healthy
2. Rather healthy
3. Rather unhealthy
4. Very unhealthy
5. I don't know / hard to say

Q22. On average how many minutes per day do you spend on prepping meals (in minutes):

1. For myself and other adults at home:minutes
2. For the kids:.....minutes

Q23. How often does your child eat at least one warm meal:

1. Every day
2. 5-6 times a week
3. 2-4 times a week
4. Once a week
5. Less than once a week

Q24. In your opinion is the diet of adults at your household the same or entirely different than the child's diet?

1. Entirely the same
 2. Rather the same
 3. Rather different
 4. Entirely different
 5. I don't know / hard to say
-

Q25. Do you ever read list of ingredients of purchased products?

1. Yes, I read the ingredient lists of all or nearly all products
 2. Yes, I read ingredient lists of only some products
 3. I don't read ingredient lists
-

Q26. Are there any products, which you are trying to avoid in your diet?

1. Yes, there are such products, → Please list them
 -
 2. No, there are no such products
-

Q27. Are there any products, which you are trying not to serve to your child?

1. Yes, there are such products → Please list them.....
 -
 2. No, there no such products
-

Q28. Where do you usually source the following products. For each product you can select more than one source:

	1. Garden/ own, family or friendly farm	2. Farmer's market	3. Local store	4. Supermarket	5. Other	6. We do not eat these products
FRUIT	1	2	3	4	5	6
VEGETABLE	1	2	3	4	5	6
MILK	1	2	3	4	5	6
DAIRY PRODUCTS (e.g. cheese, yoghurt, kefir)	1	2	3	4	5	6
MEAT	1	2	3	4	5	6
FISH	1	2	3	4	5	6

Q29. Does your child eat breakfast before leaving to school?

1. Every day
 2. 5-6 times a week
 3. 2-4 times a week
 4. Once a week
 5. Less than once a week
 6. Never
-

Q30. Does your child take lunch to school?

1. Every day
 2. 5-6 times a week
 3. 2-4 times a week
 4. Once a week
 5. Less than once a week
 6. Never
-

Q31. How would you define the level of food wasted at your household?

1. So much food gets wasted → go to Q13
2. Much food gets wasted → go to Q13
3. Little food gets wasted → go to Q13

4. Very little food gets wasted → go to Q13
5. We don't waste any food → go to Q14
6. I don't know / hard to say → go to Q14

Q32. Which products usually go to waste?

.....

.....

BLOCK 2. PARENTS' / GUARDIANS' DIET
Q33. How often do you eat the following products?

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day	7. Twice a day	8. More than twice a day
FAST FOOD (e.g. hamburgers, chips, hot dogs, pizza)	1	2	3	4	5	6	7	8
NATURAL YOGHURTS	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED YOGHURTS	1	2	3	4	5	6	7	8
NATURAL KEFIR	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED KEFIR	1	2	3	4	5	6	7	8
MILK (e.g. cow, goat, does not include plant milks)	1	2	3	4	5	6	7	8
COTTAGE CHEESE	1	2	3	4	5	6	7	8
SWEET, FIZZY DRINKS (e.g. orange soda, Coca-Cola, etc.)	1	2	3	4	5	6	7	8
SWEETS	1	2	3	4	5	6	7	8
SALTY SNACKS (e.g. crisps, salty sticks)	1	2	3	4	5	6	7	8
PURE FRUIT JUICES	1	2	3	4	5	6	7	8
FIZZY DRINKS (e.g. Kubuś, Tymbark etc.)	1	2	3	4	5	6	7	8
VEGETABLE JUICES	1	2	3	4	5	6	7	8
RAW VEGETABLES (sliced or whole)	1	2	3	4	5	6	7	8
VEGETABLE SALADS	1	2	3	4	5	6	7	8
FRESH FRUIT	1	2	3	4	5	6	7	8
VEGETABLES IN OTHER, PROCESSED FORM (e.g. soups, vegetable stew)	1	2	3	4	5	6	7	8

BLOCK 3. CHILD'S DIET
Q34. How often does your child eat the following products?

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day	7. Twice a day	8. More than twice a day
FAST FOOD (e.g. hamburgers, chips, hot dogs, pizza)	1	2	3	4	5	6	7	8
NATURAL YOGHURTS	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED YOGHURTS	1	2	3	4	5	6	7	8
NATURAL KEFIR	1	2	3	4	5	6	7	8
FRUIT, FLAVOURED KEFIR	1	2	3	4	5	6	7	8
MILK (e.g. cow, goat, does not include plant milks)	1	2	3	4	5	6	7	8
COTTAGE CHEESE	1	2	3	4	5	6	7	8
SWEET, FIZZY DRINKS (e.g. orange soda, Coca-Cola, etc.)	1	2	3	4	5	6	7	8
SWEETS	1	2	3	4	5	6	7	8
SALTY SNACKS (e.g. crisps, salty sticks)	1	2	3	4	5	6	7	8
PURE FRUIT JUICES	1	2	3	4	5	6	7	8
FIZZY DRINKS (e.g. Kubuś, Tymbark etc.)	1	2	3	4	5	6	7	8
VEGETABLE JUICES	1	2	3	4	5	6	7	8
RAW VEGETABLES (sliced or whole)	1	2	3	4	5	6	7	8
VEGETABLE SALADS	1	2	3	4	5	6	7	8
FRESH FRUIT	1	2	3	4	5	6	7	8
VEGETABLES IN OTHER, PROCESSED FORM (e.g. soups, vegetable stew)	1	2	3	4	5	6	7	8

Q35. Does your child receive the following products in-between meals as snacks?

	1. Never	2. Less than once a week	3. Once a week	4. 2-4 times a week	5. 5-6 times a week	6. Every day
FRUIT	1	2	3	4	5	6
VEGETABLES	1	2	3	4	5	6
MILK	1	2	3	4	5	6
DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	1	2	3	4	5	6

Q36. Does your child ever take or ask for the following products:

	1. Never	2. Less than once a week	3. Once a week	4. Several times a week	5. Every day or several times a day
FRUIT	1	2	3	4	5
VEGETABLE	1	2	3	4	5
MILK	1	2	3	4	5
DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	1	2	3	4	5

Q37. Please think about products, which your child likes or dislikes. Please list most and least favourite products from individual categories:

Please list most favourite		Please list least favourite	
FRUIT	Most favourite:	Least favourite:	
VEGETABLES	Most favourite:	Least favourite:	
MILK	Most favourite:	Least favourite:	
DAIRY PRODUCTS (e.g. yoghurts, kefir, cream cheese)	Most favourite:	Least favourite:	

Q38. Is it in any way difficult to serve the following products to the child? Why? You may select several answers.

FRUIT	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult
VEGETABLE	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult
MILK AND DAIRY PRODUCTS (e.g. yoghurt, kefir, cream cheese)	<ol style="list-style-type: none"> 1. Yes, because they are expensive 2. Yes, because they are difficult to store 3. Yes, because it takes a lot of time to prepare 4. Yes, because it is difficult to find ones that are tasty 5. Yes, because other household members do not like them 6. Yes, because the child does not want to eat them 7. No, it is not difficult

BLOCK 4. OPINIONS ABOUT HEALTHY DIET**Q46. In your opinion, how often should children eat:**

	1. Should not eat it at all	2. 1-3 portions a week	3. 4-6 portions a week	4. 1 portion a day	5. 2 portions a day	6. 3 portions a week	7. 4 portions a week	8. 5 portions a week
FRUIT	1	2	3	4	5	6	7	8
VEGETABLES	1	2	3	4	5	6	7	8
MILK	1	2	3	4	5	6	7	8
DAIRY PRODUCTS (e.g. cheese, yoghurt, kefir)	1	2	3	4	5	6	7	8

Q47. Why do you think children should eat fruit and vegetables? You can select several answers.

1. Because it prevents illness
 2. Generally, for good health
 3. Because it is tasty
 4. Because of the costs
 5. Because it is fast and easy to prepare
 6. To maintain proper body weight
 7. Other, which?.....
 8. I believe that children should not eat fruit and vegetables
-

Q48. Why do you think children should drink meat and eat dairy products? You can select several answers.

1. Because it boosts immunity
 2. Generally, for good health
 3. Because it is tasty
 4. Because of the costs
 5. Because it is fast and easy to prepare
 6. To maintain proper body weight
 7. Other, which?.....
 8. I believe that children should not drink milk or eat dairy products
-

Q49. Are you interested in nutrition?

1. Definitely yes → go to Q26
 2. Rather yes → go to Q26
 3. Rather not → go to Q27
 4. Definitely not → go to Q27
-

Q50. Where do you get information about it? You can select several answers.

1. television and radio
 2. press
 3. advertising
 4. doctor
 5. parents
 6. Internet
 7. books
 8. educational materials supplied by the school
-

Q51. Do you think that it is important that the child eats fruit and vegetables every day?

1. Very important
 2. Rather important
 3. Neither important nor unimportant
 4. Rather unimportant
 5. Entirely unimportant
-

Q52. Do you think that eating fruit and vegetables can prevent the following conditions:

	1. yes	2. no	3. I don't know/hard to say
HEART DISORDERS	1	2	3
DIGETION PROBLEMS	1	2	3
DIABETES	1	2	3
SKIN CONDITIONS	1	2	3
OVERWEIGHT AND OBESITY	1	2	3
TUMORS	1	2	3

Q 53. Is it in any way difficult to eat fruit? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to fruit consumption
6. Eating fruit is not difficult

Q30. Is it in any way difficult to eat vegetables? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to vegetable consumption
6. Eating vegetables is not difficult

Q31. Is it in any way difficult to consume milk or dairy products? Why? You may select several answers.

1. It's expensive
2. Difficult to store
3. Takes a lot of time to prepare
4. Difficult to find ones that are tasty
5. Unclear recommendations related to milk and dairy products' consumption
6. Consuming milk or dairy products is not difficult

BLOCK 5. LIFESTYLE

Q56. Please think about different forms of physical activities: swimming, cycling, other sports. How would you rate your physical activity?

1. I am active every day or almost every day
2. I am active several times a week
3. I am active at least once a week
4. I am active several times a month
5. I am active less than once a month
6. I am not active

Q57. Is your child physically active?

1. Regularly
2. Sometimes
3. Not active at all

Q58. Do you ever do any physical activity together with your child?

1. Yes, every day or almost every day
2. Yes, several times a week
3. Yes, at least once a week
4. Yes, at least once a month
5. Yes, less than once a month

6. No, never

PERSONAL INFORMATION

To close off, please answer few questions that we will use for statistical analysis of collected data

P1. Please fill in below information about your child:

1. Height |_|_| cm
2. Weight |_|_| kg
3. Age |_| years

P2. Please select your gender:

1. Female
2. Male

P3. Please enter your birth year: |_|_|_|_|

P4. What is your education background:

1. Primary
2. Basic vocational
3. Secondary
4. Higher
5. Don't want to answer

P5. What is the size of locality where you live:

1. village
2. city with population up to 50 thousand
3. city with population of 50-99 thousand
4. city with population of 100-199 thousand
5. city with population of 200-499 thousand
6. city with population over 500 thousand

P6. Which of the following statements, best describes income management at your household?

1. we have enough and we manage to save some for the future
2. we have enough without any special sacrifices, but we are not able to save for the future
3. we are economical and this is why we have enough to cover all expenses
4. we live very economically, in order to put money aside for major purchases
5. we have only enough to cover basic needs
6. we don't have enough money even for the cheapest food
7. I don't want to answer

P7. Please indicate approximate percentage of your household budget spent on food? |_|_|%



DANAÆ

Thank you very much for participating!

Danae Research Team

3-DAY CHILD'S FOOD DIARY

Dear Ladies and Gentlemen,

Together with your child, please fill in your child's **3-day food diary**. Please include all meals that your child consumed over that period – also those eaten at school or other places outside school. When filling in the diary, please follow the following rules:

1. Please list all products consumed over the next 3 days. At least one day has to be on a weekend (e.g. Thursday, Friday, Saturday, or Sunday, Monday, Tuesday).
 2. Please enter date and weekday when information was recorded.
 3. Recording should start from the time child gets up from bed and end when the child gets up from bed on the next day. Please also list everything the child ate and drank at night.
 4. Please record all food, products, drinks consumed at every meal, also the ones the child had in-between meals, both at home and outside.
 5. In the section **When and where the meal was consumed** please enter time when a meal, product or drink was consumed. It is important to write the location – at home, at school, at grandparents' house, at a restaurant.
 6. When listing individual products, please describe them as much in detail as possible – name of the product, brand (if you know it), characteristics, for instance *lactose-free milk, 1.5%, rye bread, Nestle cornflakes, peach yoghurt, Tymbark apple juice, Snickers bar, chocolate with nuts*.
 7. When recording individual meals, it is important to include their ingredients and spices, for instance *tomato soup with noodles, coleslaw, pancakes with cottage cheese and strawberries, tea with sugar and lemon, team with lime honey*.
 8. If a meal was prepared using instant dishes or semi-finished products, please mention them, i.e. *"Spring" frozen soup, frozen dumplings with blueberries, Knorr Mexican sauce, cheeseburger – Mc Donald's*
 9. Please list the size of portion of each product in home measuring methods, that is table spoon, tea spoon (flat, medium generous), cup (by indicating its size – 1 cup 300ml, 0.5 cup 200 ml), plate (full, not full, deep, small, large, dessert), number of bread slices (thin, medium, thick slice), how bread is smeared with butter (thin, medium, thick layer), slices of ham (thin, medium, thick), slices of cheese (thin, medium, thick slice), tomato (thin, medium, thick slice of a large, small, medium tomato), cucumber, arugula (handful), dehusked walnuts (2 handfuls) etc., number of pieces, serving size: small, medium, large (small meatloaf, medium portion of chips, large apple, medium banana) or in grams, litres or millilitres, if you know the weight or the volume of products consumed by the child (for instance from information on the packaging).
 10. In the case of children who eat meal at schools, please ask the child whether he/she had something to eat in-between meals, whether he/she bought something at the school store or had a portion of a served meal, if not → please ask more or less what part of the portion he/she ate.
-

1ST DAY OF RESEARCH			
Day: 10 May 2022		Weekday: Thursday	
Meal	When and where consumed	Products, meals, drinks (please mention brand of the product, added sweetening product, spices)	Portion size measured by home measuring methods
<i>breakfast</i>	<i>7:30 am Home</i>	<i>Wheat roll Delma margarine tomato chives salt Chicken Wiener sausage Granulated raspberry fruit tea</i>	<i>1 piece Thick layer Small, 2 thin slices 1 teaspoon pinch 2 pieces 1 glass, 250 ml</i>
<i>lunch</i>	<i>11:00 am School</i>	<i>Knoppers bar Banana Apple juice Tymbark</i>	<i>1 sztuka Średni, 1 sztuka 200 ml</i>
<i>dinner</i>	<i>1:00 pm School</i>	<i>Tomato soup with rice Potatoes Pork meatballs in tomato sauce Carrot salad Strawberry compote</i>	<i>300 ml 2 large 50 g meat and 2 table spoons of sauce 50 g Half a cup: 150 ml</i>
<i>2nd dinner</i>	<i>4:00 pm At grandparents' house</i>	<i>Pancakes with cottage cheese and sugar Granulated raspberry fruit tea</i>	<i>2 large pancakes + 2 table spoons of cottage + 1 teaspoon of sugar 1 cup, 250 ml</i>
<i>supper</i>	<i>19:15 Home</i>	<i>Wheat bread Smoked pork ham Granulated raspberry fruit tea Ketchup</i>	<i>2 slices 2 thin slices 1 cup, 250 ml 1 teaspoon</i>
<i>snack</i>	<i>9:30 pm Home</i>	<i>popcorn Coca cola</i>	<i>200 g 1 cup 250 ml</i>

1ST DAY OF RESEARCH			
Day:		Weekday:	
Meal	When and where consumed	Products, meals, drinks (please mention brand of the product, added sweetening product, spices)	Portion size measured by home measuring methods

Q51. Where do the children consume the products they receive?

1. In classrooms
2. At the school hall
3. At the school canteen
4. Other location, where.....?
5. I don't know / hard to say

Q52. At what times are the products handed to the children?

1. In the morning hours (before or right after the class starts)
2. During classes, in the middle of the day
3. After classes
4. Depends, we do not have a specific time set

PROMOTIONAL ACTIVITIES CONNECTED WITH THE PROGRAMME**Q53. Is there a poster promoting "Scheme for schools" posted at your school?**

1. Yes
2. No

Q54. Do you use any promotional materials, made available within the framework of the Scheme, related to healthy lifestyle?

1. Yes
2. No

Ask if 0=1. Multiple choice

Q55. How are the promotional materials related to healthy lifestyle used at school? You can give multiple answers.

1. There are posters at school related to healthy lifestyle
2. We hand out promotional materials to pupils
3. We hand out promotional materials to parents
4. Other, which?.....

Q56. Are there any educational efforts implemented at the school pertaining to healthy lifestyle, constituting an element of the Scheme for schools?

1. Yes
2. No

Ask if 0=1. Multiple choice. 3 - exclusive

Q57. Do teachers at your school use the materials published on the website of the Scheme for schools or they use own materials? You can select multiple answers.

1. They use own materials
2. They use materials published on the website of the Scheme for schools
3. I don't know / hard to say.

EVALUATION OF THE PROGRAMME FOR SCHOOLS**Q58. Do you notice any advantages connected with the school's participation in the Scheme?**

		1	2	3
1.	For the school	Yes. Which?	No	I don't know / hard to say
2.	For teachers	Yes. Which?	No	I don't know / hard to say
3.	For pupils	Yes. Which?	No	I don't know / hard to say
4.	For parents	Yes. Which?	No	I don't know / hard to say

Q59. Do you notice any disadvantages connected with participation in the Scheme?

1. Yes, which.....?
2. No

Q60. How do you rate the quality of products supplied to the school?

1. Definitely good
2. Rather good
3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Script: Ask if 0=3,4

Q61. What influences your rating?

.....

Q62. How do you rate cooperation with product suppliers?

1. Definitely good
2. Rather good
3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Script: Ask if 0=3,4

Q63. What influences your rating?

.....

Q64. How is the participation of the school in the Scheme for schools rated by the pupils' parents?

1. Definitely good
2. Rather good
3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Ask if 0>1.

Q65. Did you notice a change in the rating of the Scheme for schools among the parents over the years?

1. Yes, the rating of the Scheme is increasingly higher
2. Yes, the rating of the Scheme is increasingly lower
3. No, I did not notice any change in rating of the Scheme

Q66. Please estimate, what is the percentage of parents who do not allow their children to participate in the Scheme?

Script: range 0% - 100%

Q67. What is the rating of the Scheme among the pupils?

1. Definitely good
2. Rather good
3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Q68. In general, how would you rate willingness of the pupils to consume the supplied products?

1. Definitely good
2. Rather good

3. Rather bad
4. Definitely bad
5. I don't know / hard to say

Multiple choice

Q69. Which products are most popular among pupils? You can select multiple answers.

1. Apples
2. Pears
3. Plums
4. Strawberries
5. Carrot
6. Radish
7. Bell pepper
8. Tomatoes
9. Turnip
10. Fruit juices
11. Milk
12. Natural yoghurt
13. Natural kefir
14. Cottage cheese

Q70. Which products are least popular? You can select multiple answers.

1. Apples
2. Pears
3. Plums
4. Strawberries
5. Carrot
6. Radish
7. Bell pepper
8. Tomatoes
9. Turnip
10. Fruit juices
11. Milk
12. Natural yoghurt
13. Natural kefir
14. Cottage cheese

Open-ended question

Q71. What do you do with unused products?

.....

SCHOOL'S OPERATION

Q72. How long is the breakfast break?

|_|_| minutes

Q73. Is there a canteen at school?

1. Yes
2. No

Ask if Q29=1

Q74. Who eats at the school canteen?

.....

Q75. Does the school organize dinner?

1. Yes
2. No

Ask if 0=1

Q76. Is this a full dinner (soup, 2nd course)?

1. Yes
2. No

Ask if 0=1

Q77. What percentage of pupils have dinner at school?

Script: range 0% - 100%

Q78. Is there a shop at school?

1. Yes
2. No

Ask if 0=1

Q79. Can pupils buy any of the following in the school shop:

	1.	2.
fresh fruit or vegetables	yes	no
sweet drinks (including fizzy)	yes	no
pastries (e.g. buns)	yes	no
salty snacks	yes	no
sweets	yes	no
Dairy products (kefir, yoghurts)	yes	no
fast foody (e.g. grilled cheese baguettes, chips, hot-dogs)	yes	no

Q80. Are there any vending machines at school with sweets or sweet drinks?

1. Yes
2. No

EXTRACURRICULAR ACTIVITIES

Q81. Are there any campaigns relating to healthy lifestyle and diet organized at school?

1. Yes
2. No

Ask if 0=1.

Q82. What type of campaigns are organized? You can select multiple answers.

1. conferences
2. fairs
3. picnicks
4. topical events
5. meetings with experts
6. other, which?.....

Ask if 0=1.

Q83. To whom are the healthy nutrition campaigns addressed to?

1. To children
2. To parents
3. Both

Ask if 0=1.

Q84. Please list which topics (connected with healthy lifestyle and nutrition) did the campaigns organized this year refer to:

1.
2. This year we did not organize such campaigns

Q85. Does the school provide parents with knowledge related with healthy lifestyle, proper nutrition?

1. Yes

2. No

Ask if 0=1.

Q86. In which way?

.....

Ask if 0=1.

Q87. Is that topic of any interest?

1. Definitely yes
2. Rather yes
3. Rather not
4. Definitely not
5. I don't know / hard to say

Q88. Are there extracurricular sports classes organized at school?

1. Yes
2. No

Q89. Are the any of the following facilities at school:

	1.	2.
sports field	yes	no
gymnasium	yes	no
swimming pool	yes	no
tennis court	yes	no
gym	yes	no

PERSONAL INFORMATION

P1. Gender

1. Female
2. Male

P2. Please enter the year since which you are acting as the school's Headmaster:

|_|_|_|_|

Appendix 8. CAWI screener for headmasters of schools not participating in the Scheme for schools.

Danae Sp. z o.o. is responsible for executing research, which aims at evaluating the effectiveness of the Scheme for schools implemented in a number of primary schools across Poland. The Scheme includes pupils from first to fifth grade of primary school and consists in among others distributing fruit, vegetables, milk and dairy products among pupils.

The research was commissioned by the National Support Centre for Agriculture and is financed from European Union funds and the national budget.

In order to assess effectiveness of the Scheme it is necessary to collect information about activities undertaken as schools, which do not participate in the Scheme for schools. Therefore, we kindly ask you to fill in a brief survey about your school. Your opinion, as a person managing the school, is extremely important to us.

Your answers are safeguarded by statistical confidentiality. This implies that the collected data will be used only for statistical studies, reports and analyses. Research result will be only presented in form of a collective report, rendering identification of individual schools impossible.

Prior to commencement of the survey, please read the instruction below:

1. To move to the next question, please click "continue" button
2. You can stop the survey at any time. Upon returning, the survey will resume where it was left off.

This survey refers to the following school: [scripter: please enter full name of the school based on ID from the database]

REASONS FOR NOT JOINING THE PROGRAMME

Q90. Did you receive information about the possibility to participate in the Scheme for schools?

1. Yes
2. No

Ask if 0=1

Q91. Did you receive sufficient information about the Scheme for schools, allowing you to make a decision whether or not to join?

1. Definitely yes
2. Rather yes
3. Rather not
4. Definitely not
5. I was not responsible for making this decision

Ask if 0=3,4

Q92. Which information was missing?

.....

Q93. As a school, did you inform the parents about the possibility to join the Scheme for schools?

1. Yes
2. No
3. I don't know / hard to say

Ask if 0=1

Q94. How do you rate interest of the parents with the possibility of the school joining the Scheme?

1. Definitely interested
2. Rather interested
3. Rather not interested
4. Not really interested
5. I don't know / hard to say

Q95. Why did you school decide not to join the Scheme for schools?

1.

2. I do not know

Q96. Would you consider joining this or any similar Scheme in the future?

1. Definitely yes
2. Rather yes
3. Rather not
4. Definitely not
5. I don't know / hard to say

SCHOOL'S OPERATION

Q97. How long is the breakfast break at school?

|_|_| minutes

Q98. Is there a canteen at school?

1. Yes
2. No

Ask if Q9=1=1

Q99. Who eats at the school canteen?

.....

Q100. Does the school organize dinner?

3. Yes
4. No

Ask if 0=1

Q101. Is this a full dinner (soup, 2nd course)?

1. Yes
2. No

Ask if 0=1

Q102. What percentage of pupils have dinner at school?

Script: range 0% - 100%

Q103. Is there a shop at school?

1. Yes
2. No

Ask if 0=1

Q104. Can pupils buy any of the following in the school shop:

	1.	2.
fresh fruit or vegetables	yes	no
sweet drinks (including fizzy)	yes	no
pastries (e.g. buns)	yes	no
salty snacks	yes	no
sweets	yes	no
Dairy products (kefir, yoghurts)	yes	no
fast foody (e.g. grilled cheese baguettes, chips, hot-dogs)	yes	no

Q105. Are there any vending machines at school with sweets or sweet drinks?

1. Yes
2. No

EXTRACURRICULAR ACTIVITIES

Q106. Are there any campaigns relating to healthy lifestyle and diet organized at school?

1. Yes
2. No

Ask if 0=1.

Q107. What type of campaigns are organized? You can select multiple answers.

1. conferences
2. fairs
3. picnicks
4. topical events
5. meetings with experts
6. other, which?.....

Ask if 0=1.

Q108. To whom are the healthy nutrition campaigns addressed to?

1. To children
2. To parents
3. Both

Ask if 0=1.

Q109. Please list which topics (connected with healthy lifestyle and nutrition) did the campaigns organized this year refer to:

1.
2. This year we did not organize such campaigns

Q110. Does the school have classes for children related to healthy lifestyle?

1. Yes
2. No

Ask if 0=1.

Q111. Is this topic of any interest among pupils?

1. Definitely yes
2. Rather yes
3. Rather not
4. Definitely not
5. I don't know / hard to say

Q112. Does the school provide parents with knowledge related with healthy lifestyle, proper nutrition?

1. Yes
2. No

Ask if 1=1.

Q113. In which way?

.....

Ask if 1=1.

Q114. Is that topic of any interest?

1. Definitely yes
2. Rather yes
3. Rather not
4. Definitely not
5. I don't know / hard to say

Q115. Are there extracurricular sports classes organized at school?

1. Yes

2. No

Q116. Are the any of the following facilities at school:

	1.	2.
sports field	yes	no
gymnasium	yes	no
swimming pool	yes	no
tennis court	yes	no
gym	yes	no

PERSONAL INFORMATION

P1. Gender

- 1. Female
- 1. Male

P2. Please enter the year since which you are acting as the school's Headmaster:

|_|_|_|_|

Appendix 9. IDI guide for parents

Hello,

My name is... . I work for DANAE. Upon request of the National Support Centre for Agriculture, we are conducting interviews of parents of 1st, 3rd and 5th grade pupils, regarding eating preferences and habits.

The research which we are conducting aims at evaluation of the Scheme for schools at your child's school. Scheme for schools consists in children regularly receiving at school portions of fruit, vegetables and dairy products. I would like to talk about diet and eating habits at your household.

Our conversation will take about an hour. To start with, I would like to assure you that there are no right or wrong answers. Each information is important to us. We ensure full confidentiality of your answers.

If you have more than one child, please remember that whenever I am asking about your son's/daughter's eating habits, we are talking about the child that is currently in ... grade [MODERATOR: enter grade number 1st, 3rd, 5th] at school, where the Scheme for schools is being implemented.

Block 1. General information about eating habits at the household

1. Is food important at your household? To what extent? What does it mean?
2. Do you put a lot of attention to diet and eating habits at your household?
3. Is the diet of the child/children the same or different than that of adults? How?
4. Do you eat meals together? How often?
5. Do you follow any specific diet?
 - a. MODERATOR: please ask about being vegetarian, vegan, gluten-free
 - b. *If there is any diet, probe* → why is that? Is this a matter of beliefs, health? Necessity because of allergies, diseases? Since when is the diet in place?
 - c. *If there is no diet* → was there ever any diet before, for instance before have a baby?
6. Do you have any food allergies? **If yes,** then who has these allergies? Does this influence the diet of the remaining household members? How?

Block 2. How meals are prepared at home

7. Do you read ingredients list on the purchased products? Which most often? Are there any ingredients, which you are trying to avoid when buying products?
8. Where do you usually do grocery shopping? (at the farmer's market, deli, local suppliers, discount food store, supermarket)
9. Is it common to prepare homemade meals at your household? How often? Who is responsible for that? Do your children ever cook with you?
10. Where do you take the recipes for meals that you prepare?
11. Do you have anyone you look up to when it comes to nutrition? Who is that?
12. How much time do you devote to preparation of meals for the children?
13. How many warm meals do children eat during the day?
14. Does your child eat breakfast at home? Does your child take lunch to school? What does she/he usually have for breakfast and lunch?
15. How often do you eat with your child at restaurants? Do you order food in?

16. How would you define the amount of food wasted at home? Do you throw a lot of food to the garbage? Which products you usually throw out?
17. Do you ever eat products passed their expiry date? Which ones? Do you ever serve such products to your child? Which? Which expired product you would never serve to your child? Would you eat it yourself though?

Block 3. Healthy diet

18. In your opinion, which products are most important in the child's diet from health perspective? Which products should be avoided?
19. Does everyone at your household eat the same meals, or are they different in any way? If yes, then how are they different and why?
20. *If the respondent has more than 1 child* → whether the diet of individual children differs in any way? Why? How?
21. Are there any products which you are trying to avoid in children's diet? Do you try to avoid them yourself?
22. Are there any products, you specifically want your children to eat? Which? Why? What do you do if your children do not want/like these products?
23. Are there any elements of your child's diet, which you would like to change? Which? Why?
24. Does your child eat healthier than other children at school or not? Why do you think so?
25. How many portions of (1) fruit, (2) vegetables, (3) milk and dairy products should children eat?
MODERATOR: if not mentioned spontaneously, probe: whether per day or per week?
26. Does your family have sweets at home? Which? How often? What about salty snacks (crisps, salty sticks)? What about sweet drinks?
27. Do you ever search for information about nutrition? Where? What is your opinion about source of knowledge in terms of availability, quality, reliability of received information?

Block 4. Food at school

28. Do you know whether your child likes the meals / products served at school? **If yes**, then how do you get to know about it?
29. Are you interested in menu for a given week/month at school?
30. Are you satisfied with your child's diet at school? Is there anything you would like to change? What specifically?
31. Your child takes part in the Scheme for schools, in which pupils receive portions of fruit, vegetables and dairy products, regularly at school. Do you know which products does your child receive at school as part of the Scheme for schools? If yes, then how do you get to know about it?
32. Is your child willingly eating received products?
 - If yes:**
 - a. Which products are those?
 - b. Why?
 - If not:**
 - c. Which products are those?

d. Why?

33. What is your opinion about the products received at school?
34. Do what extend does the Scheme for schools address the daily reference value for fruits, vegetables, milk and dairy products?
35. What is your opinion on the idea behind the Scheme for schools?
36. Please mention strengths and weaknesses of the Scheme for schools.
37. Do you see the need to change anything about the Scheme? If yes, then which changes should be introduced into the Scheme?

Block 5. Child's eating preferences

38. Which products/meals does your child like the most?
39. Which products/meals your child dislikes?
40. Does your child eat fish, fruit, vegetables, milk, dairy products, meat? Does he/she like these products?
41. Did you notice that the child is more willing to eat fruit, vegetables, milk and dairy products after the school has joined the Scheme for schools? **If yes**, where does he/she eat more of these products?
MODERATOR: probe whether at school or at home.

Block 6. Educational activities

42. Does your child tell you about what he/she learned at school about eating healthy? **If yes**, what does your child tell you mostly about? Which topics are most interesting to your child?
43. Do you know in which educational activities related to healthy eating your child participates?
MODERATOR: probe for what type of educational activities are those.
44. Did you receive any educational materials (brochures, films) related to healthy eating? **If yes**, do you use the received materials? To what extent? What do you think about it?
45. Did you receive educational materials connected with the Scheme for schools? **If yes**, do you use the received materials? To what extent? What do you think about it?
46. Did the educational activities connected with increased consumption of fruit, vegetables, milk and dairy products at school, influence change in (1) eating habits and (2) menu at the household? **If yes**, to what extent the educational activities promoted at school shape the (1) eating habits and (2) menu at the household?

Block 7. Lifestyle

47. Did you ever have any problems with your child's weight (underweight/overweight)?
48. Does your child like sports? Which? Does he/she attend any additional sports classes?
49. Do you take your child for walks? Do you cycle together?

Is there anything you would like to add?

Thank you for your time!

Appendix 10. IDI guide for parents of 3rd and 5th grade pupils (control group)

Hello,

My name is... . I work for DANAE. Upon request of the National Support Centre for Agriculture, we are conducting interviews of parents of 3rd and 5th grade pupils, regarding eating preferences and habits.

The research which we are conducting aims at evaluation of the Scheme for schools implemented in some primary schools in Poland. Scheme for schools consists in children regularly receiving at school portions of fruit, vegetables and dairy products. In order to evaluate the effectiveness of the Scheme, we should also know the opinions of parents of children who do not participate in it. Therefore, I would like to talk about diet and eating habits at your household.

Our conversation will take about an hour. To start with, I would like to assure you that there are no right or wrong answers. Each information is important to us. We ensure full confidentiality of your answers.

If you have more than one child, please remember that whenever I am asking about your son's/daughter's eating habits, we are talking about the child that is currently in third/fifth grade.

Block 1. General information about eating habits at the household

50. Is food important at your household? To what extent? What does it mean?
51. Do you put a lot of attention to diet and eating habits at your household?
52. Is the diet of the child/children the same or different than that of adults? How?
53. Do you eat meals together? How often?
54. Do you follow any specific diet?
 - a. MODERATOR: please ask about being vegetarian, vegan, gluten-free
 - b. *If there is any diet, probe* → why is that? Is this a matter of beliefs, health? Necessity because of allergies, diseases? Since when is the diet in place?
 - a. *If there is no diet* → was there ever any diet before, for instance before have a baby?
55. Do you have any food allergies? IF YES, then who has these allergies? Does this influence the diet of the remaining household members? How?

Block 2. How meals are prepared at home

56. Do you read ingredients list on the purchased products? Which most often? Are there any ingredients, which you are trying to avoid when buying products?
57. Where do you usually do grocery shopping? (at the farmer's market, deli, local suppliers, discount food store, supermarket)
58. Is it common to prepare homemade meals at your household? How often? Who is responsible for that? Do your children ever cook with you?
59. Where from do you take the recipes for meals that you prepare?
60. Do you have anyone you look up to when it comes to nutrition? Who is that?
61. How much time do you devote to preparation of meals for the children?
62. How many warm meals do children eat during the day?

63. Does your child eat breakfast at home? Does your child take lunch to school? What does she/he usually have for breakfast and lunch?
64. How often do you eat with your child at restaurants? Do you order food in?
65. How would you define the amount of food wasted at home? Do you throw a lot of food to the garbage? Which products you usually throw out?
66. Do you ever eat products passed their expiry date? Which ones? Do you ever serve such products to your child? Which? Which expired product you would never serve to your child? Would you eat it yourself though?

Block 3. Healthy diet

67. In your opinion, which products are most important in the child's diet from health perspective? Which products should be avoided?
68. Does everyone at your household eat the same meals, or are they different in any way? If yes, then how are they different and why?
69. *If the respondent has more than 1 child* → whether the diet of individual children differs in any way? Why? How?
70. Are there any products which you are trying to avoid in children's diet? Do you try to avoid them yourself?
71. Are there any products, you specifically want your children to eat? Which? Why? What do you do if your children do not want/like these products?
72. Are there any elements of your child's diet, which you would like to change? Which? Why?
73. Does your child eat healthier than other children at school or not? Why do you think so?
74. How many portions of (1) fruit, (2) vegetables, (3) milk and dairy products should children eat?
MODERATOR: if not mentioned spontaneously, probe: whether per day or per week?
75. Does your family have sweets at home? Which? How often? What about salty snacks (crisps, salty sticks)? What about sweet drinks?

Block 4. Food at school

76. Does your child eat meals available at school?
- If yes: are you interested in the menu for given week/month at school?
 - Are you satisfied with your child's diet at the educational facility? Is there anything you would like to change? Anything specifically?
 - Do you know whether your child likes the meals / products served at school?

Block 5. Child's eating preferences

77. Which products/meals does your child like the most?
78. Which products/meals your child dislikes?
79. Does your child eat fish, fruit, vegetables, milk, dairy products, meat? Does he/she like these products?
80. *If the respondent has more than 1 child* → is the diet of individual children different? Why? How?
81. Are there any elements of the child's diet which you would like to change? Which? Why?

Block 6. Lifestyle

82. Did you ever have any problems with your child's weight (underweight/overweight)?
83. Does your child like sports? Which? Does he/she attend any additional sports classes?

84. Do you take your child for walks? Do you cycle together?

Is there anything you would like to add?

Thank you for your time!

Appendix 11. FGI discussion guide for parents

Hello,

My name is... . I work for DANAE. Upon request of the National Support Centre for Agriculture, we are conducting interviews of parents of 1st, 3rd and 5th grade pupils, regarding eating preferences and habits.

The research which we are conducting aims at evaluation of the Scheme for schools at your child's school. Scheme for schools consists in children regularly receiving at school portions of fruit, vegetables and dairy products. I would like to talk about diet and eating habits at your household.

Our conversation will take about an hour. To start with, I would like to assure you that there are no right or wrong answers. Each information is important to us. We ensure full confidentiality of your answers.

If you have more than one child, please remember that whenever I am asking about your son's/daughter's eating habits, we are talking about the child that is currently in 1st, 3rd, or 5th grade at school, where the Scheme for schools is being implemented.

Block 1. General information about eating habits at the household

1. Is food important at your household? To what extent? What does it mean?
2. Do you put a lot of attention to diet and eating habits at your household?
3. Is the diet of the child/children the same or different than that of adults? How?
4. Do you eat meals together? How often?

Block 2. How meals are prepared at home

5. What is the prevailing nutritional model at your household? (preparation of meals at home/using catering services/eating at restaurants/bars/canteens)

⇒ Questions to ask parents who mainly cook at home

6. What is your meal prep routine at home?
7. Do you change the meal prep routine depending on who eats these meals? (jointly/separately prepared meals for adults and children)
8. How do you define the routine/mechanisms connected with preparation of meals at your household? (menu planned independently / by an expert)
9. Do you have anyone you look up to when it comes to nutrition? Who is that?
10. Who is responsible for preparing meals at your household? Do your children ever cook with you?
11. How much time do you spend on average on preparation of meals at home?
12. How does the child's diet influence the meal prep routine at your household? (probe for possible diets – vegetarian, vegan, allergies)
13. Where do you usually do grocery shopping? (at the farmer's market, deli, local suppliers, discount food store, supermarket)
14. What are your choice criteria when it comes to source of food products?
15. How do the child's eating habits influence the choice of source of food at your household?
16. To what extent do you care about the origin and ingredients of the purchased food products? Which most commonly? Are there any ingredients you try avoiding in the products that you buy?

17. How would you define the amount of food wasted at home? Do you throw a lot of food to the garbage? Which products you usually throw out?

Blok 3. Importance of healthy diet

18. To what extent is eating healthy important to you?
19. Do you implement principles of healthy eating to your daily menu at home? If yes, did you encounter any barriers or problems connected therewith?

⇒ **Moderator: use pieces of paper to write down most recurring problems, probe among the remaining respondents whether they also encounter these**

20. Do you feel the pressure of the environment to eat healthy? If yes, to what extent does this pressure influence your attitude towards healthy diet?
21. Do you differentiate meals consumed by individual household members? If yes, what is the reason of such differentiation? How do you do it?
22. Are there any products which you are trying to avoid in children's diet? Do you try to avoid them yourself?
23. Does your family have sweets at home? Which? How often? What about salty snacks (crisps, salty sticks)? What about sweet drinks? Do you try to limit those? How do you explain it to the children?
24. Do you have knowledge about nutrition? If yes, what are your sources of information about it? What is your opinion about source of knowledge in terms of availability, quality, reliability of received information?

Blok 4. How to encourage children to follow a healthy lifestyle

25. Do you ever talk to your child/children about topics related to nutrition? How important is it for you to talk to your children about healthy lifestyle?
26. Do you ever try to interest your child/children with healthy eating? If yes, how do you increase the interest of your child/children in this topic? In which situation do you encourage your child/children to implement healthy eating habits?
27. Do you ever encourage your child/children to sports activity? If yes, then how? In which situations?
28. Do you encourage your child/children to participate in physical education classes and extracurricular sports classes?
29. Do you notice that your child/children have a problem of being attached to unhealthy eating habits? If yes, how do try and redirect your child's/children's habits towards healthy eating?

Blok 5. School's approach to eating and diet at school

30. What is your opinion about the school's influence on shaping of eating habits among children? And how should it look like?
31. Do you believe that the school is expanding children's knowledge related to nutrition? In your opinion does the education system support proper nutrition? If yes, then how?

Blok 6. Evaluation of the Scheme for schools

32. Your child takes part in the Scheme for schools, in which pupils receive portions of fruit, vegetables and dairy products, regularly at school. Do you know which products does your child receive at school as part of the Scheme for schools? If yes, then how do you get to know about it?
33. What is your opinion of the idea behind the Scheme for schools? In your opinion is the Scheme for schools attractive, both for the children and the parents? Could you specify what could make it more attractive?
34. Please mention strengths and weaknesses of the Scheme for schools.
35. Do you notice aspects of the Scheme, which require change or improvement? If yes, which aspects are those?
36. Did you notice that the child is more willing to eat fruit, vegetables, milk and dairy products after the school has joined the Scheme for schools? If yes, where does he/she eat more of these products?
MODERATOR: probe whether at school or at home.

Appendix 12. IDI guide for tutors

Hello,

My name is... . I work for DANAЕ. Upon request of the National Support Centre for Agriculture, we are conducting interviews with tutors at primary schools, regarding eating preferences and habits.

The research which we are conducting aims at evaluation of the Scheme for schools, which is implemented in the class that you tutor. Scheme for schools consists in children regularly receiving at school portions of fruit, vegetables and dairy products.

Our conversation will take about an hour. To start with, I would like to assure you that there are no right or wrong answers. Each information is important to us and will be used to understand the effects of the Scheme for schools in terms of changing children's attitude towards consumption of fruit, vegetables, milk and dairy products.

We ensure full confidentiality of your answers.

Block 1. Healthy lifestyle

1. Are you interested in the subject of healthy lifestyle? If yes, then how do you acquire knowledge thereon?
2. What are your sources of knowledge? What is your top source of information about this subject-matter?
3. What is your opinion about source of knowledge in terms of availability, quality, reliability of received information?
4. How do you update information related to healthy lifestyle?
5. Do you have anyone you look up to when it comes to nutrition? Who is that?
6. In your opinion which products are most important (healthiest) in child's diet? Which products should be avoided?
7. DO you try shaping healthy eating habits among the children? If yes, how?

Block 2. Children's eating preferences

8. In your opinion are pupils eating healthy food? Why?
9. Is it important to you what kind of food children bring to school? Why?
10. What kind of food do children bring to school? MODERATOR: probe for warm and cold meals.
11. What kind of food do children usually bring to school?
12. In your opinion, can the food brought to school by children be called "healthy"?
13. Do children bring to school (1) sweets, (2) salty snacks, (3) sweet drinks?
14. Do children bring to school (1) fruit, (2) vegetables, (3) milk, (4) dairy products?
15. In your opinion what do children in your class like to eat the most? Why these specific products/dishes?
16. What do you think about diet of the pupils? MODERATOR: if the respondents has problems with giving the answer, probe for making the diet more diverse and the level of diversification.
17. In your opinion do parents draw a lot of attention to diet and eating habits of their children (1) at home (2) at school? Why?
18. How much time do the children have to consume a meal?

19. Where are the meals consumed?
20. Do children use the school shop? **If yes**, then to what extent? Do children often buy things at the school shop? Which products are most popular among children (1) at school and (2) in your classroom?
21. Which products were withdrawn from the school shop over the last 3 years? Do you think that any other products should be withdrawn from the shop?
22. In your opinion is the diet of children from affluent families different than the one of the less affluent ones? **If yes**, then to what extent?
23. Which products are most popular among children from (1) affluent (2) less affluent families?
24. In your opinion what percentage of children from (1) affluent (2) less affluent families bring vegetables and fruit to school? MODERATOR: probe separately about percentage of children from affluent and less affluent families.
25. In your opinion is there a fashion for any group of products, which are consumed by children from (1) affluent and (2) less affluent families?

Block 3. Physical activity

26. In your opinion, do children like sports?
27. In your opinion are children keen on participating in physical activity lessons organized at school? **If not**, what is the reason?
28. In your opinion, which physical activities are most popular among children? Which are least popular? MODERATOR: probe for PE and extracurricular classes organized at school (e.g. school sports club).
29. Do children talk about how they spend free time outside of school? MODERATOR: probe for children's physical activity outside the school.

Block 4. Evaluation of the Scheme for schools

30. Your school is part of the Scheme for schools, wherein pupils regularly receive portions of fruit, vegetables and dairy products at school. In your opinion, are the pupils keen on eating the received products?
31. Which of the received products children like the most? Which they dislike?
32. Do you observe that received products are thrown away? **If yes**, how much of it? What does this result from?
33. What do you think about the quality of products supplied within the framework of Scheme for schools?
34. Does the Scheme influence diversity of children's diet?
 - If not**:
 - a. Why?
 - If yes**:
 - b. To what extent?
 - c. In your opinion which products have greatest impact on differentiation of children's diet?
35. Do children bring (1) fruit, (2) vegetables, (3) milk and (4) dairy products to school?
 - If yes**:
 - a. Do you think that there are more such products that before implementation of the Scheme for schools?
 - If not**:

b. Why do you think that is?

36. What is your opinion about implementation of the Scheme at the school?
37. Please list strengths and weaknesses of the implemented Scheme for schools.
38. In your opinion what are the advantages of the Scheme for schools? What are the disadvantages?
39. Since the joining of the Scheme for schools, did you observe children being more interested in (1) healthy diet and (2) healthy lifestyle? **If not**, why do you think that is?
40. Do you see the need to modify the Scheme? **If yes**, what modifications should be introduced to the Scheme?
41. Should it be continued in years to come? Why?
42. In your opinion, did the Scheme for schools change the eating habits of (1) children and (2) their parents? Why?

Block 5. Educational activities and materials

43. Do you have classes pertaining to healthy lifestyle? **If yes**, to what do the classes usually pertain?
44. Are children keen on participating in classes pertaining to (1) healthy diet and (2) healthy lifestyle? Why? **If not**, what is the reason?
45. How do you disseminate the latest knowledge on healthy lifestyle?
46. Which other classes pertaining to healthy lifestyle are there at your school?
47. Who decides whether to organize them?
48. Are you also responsible for organizing classes pertaining to healthy lifestyle? **If yes**, then to what extent?
49. Does the school draft educational materials pertaining to (1) healthy lifestyle and (2) healthy diet? If yes, which materials are these? Who is responsible for creating educational materials at school?
50. What do you think about effectiveness of educational efforts undertaken by the school?
51. To what extent do educational activities support promotion of healthy food? Why?
52. Do you know which educational materials did the school receive in connection with implementation of the Scheme for schools?
 - a. What is your opinion about the quality of received educational materials? Why?
 - b. To what extent do you use the marketing materials?
 - c. Is there anything missing? If yes, please provide specific examples.

Is there anything you would like to add?

Thank you for your time!

Hello,

My name is... . I work for DANAE. Upon request of the National Support Centre for Agriculture, we are conducting interviews with intendants / representatives of primary schools, regarding eating preferences and habits.

The research which we are conducting aims at evaluation of the Scheme for schools, which is implemented at your educational facilities. Scheme for schools consists in children regularly receiving at school portions of fruit, vegetables and dairy products.

Our conversation will take about an hour. To start with, I would like to assure you that there are no right or wrong answers. Each information is important to us and will be used to understand the effects of the Scheme for schools in terms of changing children's attitude towards consumption of fruit, vegetables, milk and dairy products.

We ensure full confidentiality of your answers.

Block 1. School's operation

1. To begin with, please tell me which areas have been isolated at your educational facility as places where pupils can eat? MODERATOR: if the respondent finds it difficult to provide the answer, probe for classrooms, school shop, school halls, places isolated for food consumption (e.g. canteen).
2. In which other places, not isolated by school authorities, do pupils have food?
3. Which (1) meals and (2) food products do the pupils eat in the mentioned places? MODERATOR: probe for each separately.
4. In your opinion are these meals prepared at home or not? MODERATOR: probe for meals purchased at school and in other places.
5. What do you think about the amount of food going to waste at the educational facility? Do children throw away a lot of food to the garbage? Which (1) meals and (2) products are thrown away most often?

Block 2. School canteen

6. Is there a canteen at your educational facility?
If not → MODERATOR, go to Block 4.
7. How is it equipped?
8. Do you think that there is anything missing? If yes, what do you think it is? MODERTOR: probe for additional rooms, equipment, furniture.
9. Are meals prepared on site or supplied from an outside catering company? Which meals are prepared at the canteen? Which are ordered?
10. Which meals prepared at the canteen the children like the most? Which they dislike?
11. Do all children get meals prepared at the canteen?
If not:
 - a. How many parents buy meals served at the canteen?
12. Do you know what products are used to prepare the meals? Where are they usually purchased?
13. Who is responsible for preparing the menu at the canteen? How is the menu prepared?

Block 3. Menu at the educational facility

14. Please tell me who is responsible for creating the menu for the children at your educational facility?
15. How are menus for the children created?
16. Are the following taken into consideration when creating the menu: (1) ingredients (2) nutritional value of the product? If yes, to what extent?
17. Do parents have any reservations to the menu?

If yes:

- a. What kind of reservations are these?
- b. What do they usually refer to?
- c. How does the school react to them?

18. In your opinion are the parents interested in how children are fed at school?

If yes:

- a. To what extent?
- b. What are they most interested in? Why?

If not:

- c. What is the reason?

19. In your opinion, are the children interest in nutrition?

If yes:

- a. Which area are they most interested in? Which aspects of nutrition are children most interested in? MODERATOR, if the respondents have difficulties with the answer, mention issues such as health, nutrition, caloric content, ethics, popularity)?

If not:

- b. What is the reason?
- c. Which actions is your educational facility undertaking in order to get children interested in eating healthy?

Block 4. Participation of the educational facility in the Scheme

20. Please tell me how it came about that your educational facility joined the Scheme for schools?
21. What was the reason behind your educational facility joining the Scheme for schools? Which of the mentioned reasons was the deciding factor behind your educational facility's decision to join the scheme?
22. Prior to joining the Scheme, did you notice unhealthy eating habits among your pupils? If yes, which?
23. Prior to joining the scheme, did the school organize classes aiming at educating children in the area of healthy food and lifestyle?

If yes:

- a. Which classes were these?
- b. How often were they organized?
- c. Who was responsible for organizing it?

24. Prior to joining the Scheme, were the parents informed about it? Why? If yes, did they have any reservations against the school's participation in the Scheme?

Block 5. Opinion on the received products

25. Do you know which products do the children receive? If yes, could you please mention them?
26. In your opinion are the pupils eager to consume the received products?
27. Which of the received products children like? Which they dislike?
28. Do you observe that received products are thrown away? **If yes**, how much of it? What does this result from?
29. What do you think about the (1) quality and (2) diversity of products supplied within the framework of the Scheme for schools? MODERATOR: probe separately about the quality and diversity of the products.
30. In opinion does the Scheme influence diversity of children's diet?
- If yes:**
- a. To what extent? In your opinion which products have greatest impact on differentiation of children's diet?
- If not:**
- b. Which products are missing from the children's diet?
31. Do children bring (1) fruit, (2) vegetables, (3) milk and (4) dairy products to school?
- **If yes**, Do you think that there are more such products that before implementation of the Scheme for schools?
- **If not**, why do you think that is?
32. In your opinion, did better access to fruit, vegetables, milk and dairy products change the eating habits of (1) children, (2) parents?
- If yes:**
- a. To what extent?
- If not:**
- b. Why?
- c. What other efforts could change that?

Block 6. Evaluation of cooperation with the suppliers

33. How are the products supplied to your educational facility?
34. Who is responsible for contact with suppliers of products to your educational facility?
35. What is your opinion on cooperation with suppliers of products?
36. Were there any difficulties in cooperation with the suppliers? **If yes**, which problems were those?
37. Were there ever situations that products were not delivered to your educational facility?
- If yes:**
- a. What happened?
- b. How was the situation handled?
- c. How often does this happen?

Block 7. Evaluation of Scheme for schools

38. What is your opinion about implementation of the Scheme for children at your educational facility?
39. Is the Scheme being implemented in line with its assumptions?
40. **If not** → what kind of difficulties did you encounter in relation to implementing the Scheme at school?
 - a. What do the problems usually pertain to?
 - b. How did you handle them?
41. Please list strengths and weaknesses of the implemented Scheme for schools.
42. In your opinion what are the advantages of the Scheme for schools? What are the disadvantages?
43. Since the joining of the Scheme for schools, did you observe children being more interested in (1) healthy diet and (2) healthy lifestyle? **If not**, why do you think that is?
44. Do you see the need to modify the Scheme? **If yes**, what modifications should be introduced to the Scheme?
45. Should it be continued in years to come? Why?

Is there anything you would like to add?

Thank you for your time!