The evaluation of the School Fruit and Vegetable Scheme in Poland

- Summary -

Warsaw, February 2017
PART I
The evaluation of the School Fruit and Vegetable Scheme carried out by then National Food and Nutrition Institute

I. Introduction
II. Evaluation results
III. Conclusions and recommendations

PART II
An administrative evaluation of the functioning of the School Fruit and Vegetable Scheme

I. Factors of importance for the assessment of the functioning of the School Fruit and Vegetable Scheme
II. Impact of the parameters of the Scheme on its effectiveness, efficiency and relevance
III. Lessons learned and suggestions for modification
PART I
The evaluation of the School Fruit and Vegetable Scheme carried out by then National Food and Nutrition Institute

I. Introduction

The effectiveness of the School Fruit and Vegetable Scheme is regularly evaluated to determine whether and to what extent it meets its preset objectives. The evaluation of the scheme covered the school years from 2011/2012 to 2015/2016. The aim of the survey was to identify both the strengths of the scheme and areas requiring support and strengthening in the further implementation of school schemes. The results of the survey will provide the basis for changing and improving the formula of school schemes.

The survey was carried out in five selected Voivodships representing the central, eastern, western, northern and southern regions of Poland, i.e. Wielkopolskie, Mazowieckie, Opolskie, Podkarpackie and Pomorskie Voivodships. The concept of the evaluation survey provided for the execution of an evaluation of the effectiveness of the scheme in Classes I to III and one year after the end of the participation in the scheme, in Class IV, in particular in the scope of fruit and vegetable consumption. The survey started with the determination of the baseline prior to the launch of the scheme (a survey on children in Class I at the beginning the school year 2012/2013). The survey covered in parallel two groups of primary schools: those that participated in the scheme (the surveyed group) and those that did not participate in it (the control group). In the survey, which was anonymous, children and their parents filled in questionnaires on their diets and eating habits (including the method of recording consumption for 3 days and a questionnaire on the frequency of fruit and vegetable consumption). Moreover, with their parents’ assistance, children filled in so-called food consumption diaries. Special questionnaires were also filled by primary school principals.

In the schools covered by the scheme, on school days, as a rule, 2 portions of fruit and vegetables per week (including juices) were provided in each of the 10 weeks in Semester 1 of the school year and in each of the 10 weeks in Semester 2. Each child who participated in the scheme received as one serving a portion consisting of one fruit product (100-150 g) and one vegetable product (60 g). 4 portions out of the 20 ones received each term included fruit juices, fruit and vegetable juices or vegetable juices. In the first two years of the evaluation,
children were offered apples, carrots, peppers, radishes, strawberries and juices. In the third year of the evaluation, children received an extended variety of fruit and vegetables, including apples, pears, strawberries, blueberries, carrots, sweet peppers, small fruit tomatoes and kohlrabi, as well as fruit and vegetables juices. In accordance with the guidelines, fruit, vegetables and juices could not contain fat, salt, sugar or sweeteners.
II. Evaluation results

1. Fruit and vegetable consumption by children

The first year of the evaluation

- After the scheme had lasted a year, the children covered by the intervention ate significantly larger quantities of fruit ($p < 0.0009$), vegetables ($p < 0.027$) and fruit and vegetables as a total ($p < 0.0003$) on school days. In the same time period, the control group ate fewer fruit ($p < 0.043$), while the quantity of vegetables did not show any statistically significant change. After the scheme had lasted a year, the surveyed group ate 11% more fruit than the control group did and 9% more fruit and vegetables as a total.

- Similar but slightly less strong trends could be noticed in the consumption of fruit, vegetables, as well as fruit and vegetables as a total by both groups on school days and weekends considered together.

- At the end of the first year of the scheme, no statistically significant differences in the frequency of fruit and vegetable consumption could be found between the control and the surveyed groups.

Comment:
- The tendency for the decrease in fruit consumption in the spring within the group not covered by the intervention was confirmed by an analysis of the consumption frequency. It indicated that the frequency of the consumption of raw fruit in the control group also decreased at the end of the school year and distribution of fruit and vegetables in schools, whereas it remained at the same level in the surveyed group. Despite the fact that the total absolute quantity of eaten fruit and vegetables significantly increased in the group covered by the intervention, no difference was found in the consumption frequency between the surveyed and control groups at the second stage of the survey.

- Given the lower fruit consumption in the control group noticed in the spring months, it is important to point out the seasonality of fruit consumption in Poland. The unpublished studies carried out by the Institute of Agricultural and Food Economics indicate that the highest fruit consumption occurred in 2011 in August and September (3.92 kg/person/month and 3.82 kg/person/month,
respectively) and in December (3.98 kg/person/month) – when, on a seasonal basis, e.g. more tangerines are eaten during Christmas. As shown by the same studies, the lowest fruit consumption was reported in the period from February to May. In May, the consumption was the lowest, amounting to 2.32 kg/person/month. The second stage of the survey, which took place when the distribution of fruit and vegetables in schools ended, came exactly at the turn of May and June. The results of these studies explain the lower fruit consumption in the control group in the spring term, at the end of the scheme. Nevertheless, in the group covered by the School Fruit and Vegetable Scheme the fruit consumption did not fall, but even significantly increased.

The second year of the evaluation:

- After the second school year, in the group covered by the School Fruit and Vegetable Scheme the total fruit and vegetable consumption on school days remained at the level achieved at the previous stage.

- In the same time period, the total fruit and vegetable consumption in the control group slightly grew by 10 g, representing a 4% increase relative to the previous year (p = 0.02). However, it is important to note that this increase could only be seen in the quantity of fruit (p = 0.004), while the quantity of vegetables did not change. At the end of the second school year, the consumption in the group covered by the intervention (the surveyed group) was still higher by 20 g (6.5%) than the consumption of the control group (which was not covered by the scheme).

- On school days and weekends considered together, the total fruit and vegetable consumption in the group covered by the scheme significantly grew by 9 g (p = 0.004). This was mainly a result of fruit consumption (for fruit alone p < 0.00001). In the control group, there was no statistically significant increase in the total fruit and vegetable consumption, whereas there was a statistically significant increase in fruit consumption (p = 0.01); however, it was lower than the one in the surveyed group. At the end of the second year of the intervention, the total fruit and vegetable consumption in the group covered by the scheme still continued to be higher – the difference was 21 g, which represented 7% of the difference (p = 0.0008).

- At the end of the second year of the scheme, no statistically significant differences were found in the frequency of fruit and vegetable consumption between the control and surveyed groups.

- The scheme still continued to have a stronger impact on the consumption of fruit rather than that of vegetables.
**Comment:**

- During the second year of the evaluation, a very strong campaign promoting the consumption of apples (the most popular fruit in Poland) took place as a result of the embargo on their exports to Russia. Surplus apple stocks were distributed among children in all schools and also in some workplaces. This probably gave rise to higher consumption in the control group, which was not covered by the scheme, bringing it closer to the consumption level in the group covered by the intervention. However, the total fruit and vegetable consumption in the control group still continued to be lower than in the group covered by the intervention (the surveyed group), which was an effect of the first year of the distribution of fruit and vegetables in schools under the scheme. In the group covered by the scheme, the fruit and vegetable consumption on school days remained at the same level, although it still continued to be lower than the recommended level, and slightly grew on school days and weekends considered together (however, only in the case of fruit).

- Given the seasonality of fruit consumption in Poland, as confirmed by the data provided in the unpublished studies carried out by the Institute of Agricultural and Food Economics, it is important to emphasise that a positive phenomenon was noticed – the fruit consumption level in the first year of the intervention was maintained in the spring months. However, the consumption level was still too low to meet the WHO recommendations for both fruit and vegetables. Moreover, too low total vegetable consumption (in quantitative terms, as well as in relation to fruit) remained a cause of concern. A portion of the provided vegetables was smaller (60 g) than that of fruit (100-150 g); this can explain a lesser effect of the scheme on vegetable consumption. Earlier surveys aimed at determining the effectiveness of schemes designed to enhance fruit and vegetable consumption demonstrated that, given the preference for sweet taste, it was easier to increase the consumption of fruit than that of vegetables. However, since the vegetable consumption level and the frequency of fruit and vegetable consumption did not increase in the second year of the scheme, appropriate accompanying measures should be taken in the scope of children’s education, motivating actions, as well as thorough qualitative assessment of fruit and vegetable batches delivered to schools to be performed by school principles.

**The third year of the evaluation**

- After the third year of the survey, in the group covered by the *School Fruit and Vegetable Scheme* there was a statistically significant increase in the total fruit and vegetable consumption on school days with respect to the previous stage (by 17.4 g). This increase could primarily be seen in the quantity of vegetables ($p < 0.000$), although fruit
consumption also grew (p = 0.05). Within the same time period, a statistically significant increase in the total fruit and vegetable consumption on school days could also be noticed in the control group.

- After the third year of the scheme, significantly higher fruit consumption was reported in the group covered by the intervention (by 20.5 g, p = 0.001) that that in the group not covered by the scheme. At the end of the third year of the survey, in the group covered by the intervention the total fruit and vegetable consumption on school days was also higher at the trend level than that in the control group (which was not covered by the scheme).

- On school days and weekends considered together, after the third year of the scheme’s implementation, a significant increase was noticed in total fruit and vegetable consumption (by 20.4 g; p < 0.000) in the group covered by the scheme. This was a result of the consumption of both fruit and vegetables. In the control group, a statistically significant increase in the total fruit and vegetable consumption was also reported, which was mainly related to higher vegetable consumption. However, at the end of the third year of the intervention, in the group covered by the scheme the total fruit and vegetable consumption on school days and weekends considered together still continued to be significantly higher than the one in the control group (this was an effect of the higher fruit consumption then the one in the control group, by 19.5 g; p = 0.018).

- Over the three years of the School Fruit and Vegetable Scheme, the fruit consumption grew by 30 g a day, i.e. by 18%, whereas it increased by 4% in the control group. Over the first two years of the scheme, the consumption of vegetables remained at a similar level and grew significantly in both groups during the third year (with no statistically significant difference between the groups at the end of the scheme).

**Comment:**

- During the third year of the evaluation, in the school year 2014/2015, the range of vegetables provided in schools was expanded (with kohlrabi and small fruit tomatoes) and fruit (with strawberries and blueberries). It helped to sustain the growth tendency for the consumption in the group covered by the intervention. Although in the third school year an increase in the total fruit and vegetable consumption could also be noticed in the control group; it still did not reach the fruit consumption level of the group covered by the intervention. After the third school year, on school days and on school days and weekends considered together, a significantly higher total fruit and vegetable consumption continued to be reported in the group covered by the scheme (it was determined by fruit consumption) than that in the group not covered by the intervention. After three years, the fruit consumption in the group covered by the scheme grew by 18%.
• All the time, pupils could be seen to eat more fruit than vegetables. A portion of provided vegetables was smaller (60 g) than that of fruit (100-150 g), which can explain a lesser effect of the scheme on vegetable consumption. Earlier surveys aimed at determining the effectiveness of schemes designed to enhance fruit and vegetable consumption demonstrated that, given children’s preference for sweet taste, it was easier for the intervention schemes to increase the consumption of fruit than that of vegetables.

• A portion consisting of a fruit and vegetable or juice (in the case of 4 out of 10 portions) was provided twice a week for 10 weeks (representing about half the school term) in each term. The availability of this portion encouraged fruit and vegetable consumption, enabling teachers and schools to highlight an important role of fruit and vegetable consumption for health. Still, this was not a systematic (everyday) action which would be carried out on all school days. The idea should be considered of providing a vegetable or a fruit to pupils every day, e.g. by dividing portions into smaller servings and thus enhancing the frequency of their availability. This concerns in particular vegetables, given children’s lower preference for them and the greater need for encouraging children to eat them. Systematicity and repeatability of these actions could contribute to the development of a habit to eat vegetables and/or fruit every day.

• Although the fruit and vegetable consumption in the group covered by the School Fruit and Vegetable Scheme had increased, it still remained at a slightly lower level than the one recommended by experts. It is necessary to take appropriate comprehensive and systematised accompanying measures to the same extent in all the schools covered by the scheme in the scope of children’s education, motivating actions, as well as thorough qualitative assessment of fruit and vegetable batches delivered to schools to be performed by school principles.

The figures below show the fruit and vegetable consumption by children over the three years of the implementation of the School Fruit and Vegetable Scheme in the group which participated in the scheme (the surveyed group) relative to the consumption in the group which did not participate in the scheme (the control group).
Fig. 1. Total fruit and vegetable consumption.
[Spożycie warzyw i owoców ogółem = Total fruit and vegetable consumption; Spożycie = Consumption; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; kropki dziesiętne]

Fig. 2. Fruit and vegetable consumption on school days.
[Spożycie warzyw i owoców dni szkolne = Fruit and vegetable consumption on school days; Spożycie = Consumption; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]
Fig. 3. Total fruit consumption. 
[Spożycie owoców ogółem = Total fruit consumption; Spożycie = Consumption; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]

Fig. 4. Fruit consumption on school days.
[Spożycie owoców dni szkolne = Fruit consumption on school days; Spożycie = Consumption; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]
2. Consumption frequency

- Although the scheme influenced total fruit and vegetable consumption, it did not contribute to a significant increase in the frequency of fruit and vegetable consumption. At the end of the three years of the scheme, the mean frequency of fruit and vegetable consumption was 2.6 times a day in the surveyed group and 2.5 times a day in the control group (the median for both groups was 2.1 times a day) – including 0.9 times a
day for fruit in both groups (with the median of 0.8), as well as 1.66 times a day for vegetables in the surveyed group and 1.62 times a day for vegetables in the control group (with the median of 1.3 for both groups); there were no statistically significant differences between the groups.

Only 36% pupils in both groups ate fresh fruit at least once every day. 23% of children in the control group and 21% in the surveyed group ate raw vegetable salads and other salads at least once every day, while about 15% of children in both groups ate other vegetables and about 18.5% of children in both groups consumed boiled vegetables. About 20% of the examined pupils had juice at least once every day. No statistically significant differences were found between the groups.

3. Children’s knowledge on fruit and vegetable consumption

From the first to the third year of the evaluation

- The first year of the scheme greatly enhanced children’s awareness of the relationship between fruit and vegetable consumption and health. In reply to the open question “What should you do to live a healthy life?”, after one year of the implementation of the scheme in the surveyed group there was a significant increase in the number of answers “Eat vegetables” and “Eat fruit”, as well as “Be more active physically” and “Give up sweets”. In the second year of the scheme, the increase in children’s awareness of the health importance of fruit and vegetable consumption was sustained. In the surveyed group, in reply to an open question “What should you do to live a healthy life?”, the number of children indicating “vegetable consumption” grew by 15.1% and so it did by 10.9% in the control group. At the end of the second year of the scheme, the number of children in the group covered by the intervention who indicated vegetables was significantly higher by 12.1% than that in the control group (70.3% vs 57.8% of indications, respectively, p < 0.00001). Similarly, a significantly higher number of children in the surveyed group pointed out the relationship between fruit and vegetable consumption and health – indeed, as much as 72.6% compared with 60.8% of children in the control group, p < 0.000001.

- In the third year of the survey, the percentage of children in the group covered by the intervention who claimed that they needed to eat fruit and vegetables in order to be healthy did not significantly change with respect to the previous year (73.5% vs 70.6% for vegetables and 74.7% vs 72.8% for fruit). In turn, the number of children in the control group who stated that they needed to eat fruit and vegetables in order to be healthy rose to the level of the group covered by the intervention. At the end of the third year, there were no significant differences in the results obtained for the surveyed and control groups.
The children in the surveyed group significantly more frequently than at the previous stage claimed that in order to be healthy they needed to be active physically ($p<0.000$) and to give up sweets ($p=0.002$). The children in the control group significantly more frequently responded that, in addition to fruit and vegetable consumption, the components of a healthy life included keeping good hygiene ($p = 0.048$), drinking water ($p = 0.030$) and giving up sweets ($p<0.000$).

After the third year of the scheme, it was noticed that the children in the surveyed group significantly more frequently indicated physical activity ($p = 0.001$) as a factor which had a positive effect on health, but, at the same, significantly less frequently they stated that drinking water ($p = 0.003$) and giving up sweets ($p < 0.000$) had a positive effect on health.

After the first year, the scheme significantly enhanced the participating pupils’ knowledge on the recommended daily intake of fruit and vegetables. In the group covered by the scheme, during the scheme’s implementation, the number of correct answers concerning the recommended number of portions of fruit and vegetables in everyday diet significantly grew (by 12.3%), i.e. — almost twice as much as in the control group in the same time period. In the surveyed group, more than 42.9% of correct answers were given at the second stage versus 30.6% at the first stage.

In the second year of the scheme, it was reported that the number of correct answers concerning the recommended number of fruit and vegetable portions in a day had increased again (by 7.1%, $p = 0.001$), whereas the relevant knowledge had not grown in the control group. At the end of the second year of the intervention, the children in the surveyed group gave correct answers more frequently than those in the control group — 50.5% and 40.2% of correct answers, respectively ($p < 0.000$).

After the third year of the scheme, it was reported that the percentage of children in the group covered by the intervention who knew the number of recommended fruit and vegetable portions significantly increased further (by 9.5%). A survey showed that the number of children in the control group who had given a correct answer to the question “How many fruit and vegetables should you eat?” significantly diminished in the same time period. At the end of the third year of the scheme, significantly more children in the group covered by the intervention had knowledge on the recommended number of fruit and vegetable portions (59.8% vs 31.5%; $p < 0.000$).

Comment:

Throughout the period of the implementation of the scheme, the knowledge of children participating in the scheme concerning the number of recommended fruit and vegetable portions was significantly higher than that in the non-participating group — the control group. At the end of the three-year scheme, the percentage of children covered by the scheme who knew the correct answer was
59.8%, whereas it was much lower in the group of those who did not participate in the scheme, i.e. 31.5%.

- After the third year of the implementation, about 75% of children in both groups stated that they needed to eat fruit and vegetables in order to be healthy. The level of knowledge in the control group concerning this issue caught up with the higher level of knowledge of the children in the surveyed group (which had been reached in the previous two years). Taking into account the fact that the children in the surveyed group should be covered by additional educational activities to raise their awareness of the health impact of fruit and vegetables, this level should, unfortunately, be considered unsatisfactory. The alignment of the level of knowledge between the groups and the lack of a further increase in the children’s knowledge in this respect in the surveyed group may indicate poorer effectiveness of the educational activities carried out in the third year of the scheme in schools covered by the scheme.

The figures below show children’s nutritional knowledge concerning the recommended daily intake of fruit and vegetables.

Fig. 7. How many portions of fruit and vegetables should you eat? The distribution of correct answers.
[Ile porcji owoców i warzyw powinieneś jeść? = How many portions of fruit and vegetables should you eat?; Odpowiedzi poprawne = Correct answers; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]
Fig. 8. What should you do to live a healthy life? The distribution of answers indicating vegetables.
[Co robić, żeby żyć zdrowo? = What should you do to live a healthy life?; Odp. : Jeść warzywa = Answer: Eat vegetables; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]

Fig. 9. What should you do to live a healthy life? The distribution of answers indicating fruit.
[Co robić, żeby żyć zdrowo? = What should you do to live a healthy life?; Odp. : Jeść owoce = Answer: Eat fruit; Klasa I, Klasa II, Klasa III= Class I, Class II, Class III; badana = Surveyed group; kontrolna = Control group; commas as decimal separators]

4. Children’s nutritional behaviour and taste preferences

Barriers to fruit consumption

- Nearly 33% of the children who participated in the scheme claimed that there was at least one barrier to fruit consumption. At the first stage, as many as 27.5% of the
children in this group answered that the reason for this was too short breaks, whereas 30.5% said that they preferred to have something sweet, 18.8% replied that they did not eat fruit because their colleagues did not and 15.3% claimed that it took too much time. It is important to note a significant decrease in the number of all the answers indicating barriers to fruit consumption in the group covered by the scheme. At the end of the first year of the scheme, there was a significantly lower number (p < 0.00001) of answers “I do not eat them because my colleagues do not” and “I prefer to have something sweet” in the group covered by the intervention than in the control group (10.5% vs 17.4% and 19% vs 27.6%, respectively).

After the second year of the scheme, the number of children declaring “I do not eat them because …”: “It takes too much time” or “Breaks are too short” (p < 0.00001) decreased in the group covered by the intervention (p < 0.00001). In the same time period, the number of children in the control group who indicated the specific barriers did not change. After the second year of the scheme, the children in the group covered by the intervention answered less frequently that they did not eat fruit because “It takes too much time” (4.4% vs 10.2%; p < 0.00001), “My colleagues do not eat them” (8.5% vs 17.5%; p < 0.00001), “I prefer something sweet” (19.6% vs 29.5%; p < 0.00001) or “Breaks are too short” (12.9% vs 23.9%; p < 0.00001) than those in the control group.

After the third year of the scheme, a decrease was noticed in the number of children in the group covered by the intervention who claimed that “I do not eat them because …”: “It takes too much time” or “Breaks are too short” (p < 0.00001), as well as “I prefer to have something sweet” (19.8% vs 10.7%; p < 0.000). There was also a significant increase in the number of children who stated that they had no problem with eating fruit (78.5% vs 88.4%; p < 0.000). In the control group, a significant decrease was noticed in the number of children who indicated the answer “I do not eat fruit because it takes too much time” (11.5% vs 2.4%; p < 0.000), “Because my colleagues do not eat them” (17.2% vs 11.7%; p = 0.007) or “I prefer to have something sweet” (28.3% vs 13.8%; p < 0.000). Significantly fewer children in the surveyed group than in the control group claimed that they did not eat fruit because their colleagues did not eat them (6.6% vs 11.7%; p = 0.0003) and that breaks were too short (12.5% vs 20.4%; p < 0.000). In the group covered by the intervention, there were also significantly more children who stated that they had no problem with eating fruit (88.4% vs 82%; p < 0.000).

**Barriers to vegetable consumption**

After the first stage, 28.1% of the children who participated in the scheme said that there was at least one barrier to vegetable consumption. In this group, as many as 30.7% of children answered that the reason for this was too short breaks, whereas 34.4% declared that they preferred to eat something sweet, 20.1% said that they did not eat vegetables because their colleagues did not and 15.3% claimed that it took too much time. It is important to note a significant decrease in the number of all the answers
indicating barriers to vegetable consumption; it was greater in the group covered by the scheme than in the control group. At the second stage of the survey, there were significantly fewer answers “I do not eat them because my colleagues do not eat them”, as their number fell by as much as 10.9%.

After the second year of the scheme, in the group covered by the intervention, a decrease was reported in the number of children who indicated barriers to vegetable consumption, including those who said that “I do not eat vegetables because ...”: “It takes too much time” or “Breaks are too short” (p < 0.00001). In the control group, the number of children who indicated particular barriers at the same time did not change, but the number of children who indicated the answer “It takes too much time to eat vegetables” even grew by 3.6% (p = 0.02). After the second year of the scheme, children in the group covered by the intervention less frequently answered that they did not eat vegetables because “It takes too much time”, (4.7% vs 16.7%, p < 0.00001), because “My colleagues do not eat them” (9.5% vs 21.8%, p < 0.00001), “I prefer to have something sweet” (25.2% vs 39.2% (p < 0.00001) or “Breaks are too short” (13.6% vs 24.5%, p < 0.00001) compared with the control group.

After the third year of the scheme, a statistically significant increase was reported in the number of children who stated that they had no problem with eating vegetables (84.7% vs 74.5%; p < 0.000). However, a comparison of the surveyed and control groups still indicated that more children in the group covered by the intervention had a problem with eating vegetables because it took too much time (3% vs 5.1%; p = 0.027), their colleagues did not eat them (7.2% vs 10.9%; p = 0.008), sweets were preferred to vegetables (16.6% vs 22%; p = 0.006) or because of too short breaks (11.6% vs 19.1%; p < 0.000).

**Comment**

- The results indicate that the scheme significantly contributed to the reduction of barriers to the consumption of both fruit and vegetables, i.e. relevant to children of the same age not eating them, the time needed to prepare them for consumption or too short breaks, in both the first and second years of the scheme. In the group covered by the scheme, a significantly lower number of children (in comparison with the control group) declared that they preferred to eat something sweet instead of fruit and vegetables. The availability of fruit and vegetables in school and their consumption by colleagues in the course of the scheme affected pupils’ nutritional attitudes and enabled the consumption to grow thanks to reducing the hitherto barriers to fruit and vegetable consumption.

- It is important to note that, as indicated by the results, the scheme significantly contributed to the reduction of not eating fruit and/or vegetables because “Colleagues do not eat them”. Probably, both the availability of vegetables in
school and the consumption of these vegetables by school colleagues encouraged children who had not eaten them for various reasons.

- The results indicate that the scheme continuously contributed to the reduction of certain barriers to the fruit and vegetable consumption by children.

**Breakfast**

- The frequency of having the first breakfast before leaving home rose by 4% (p = 0.02) in the group covered by the scheme, whereas it did not change in the control group. However, at the end of the second year of the scheme, about 34% of children in both groups did not have the first breakfast every day and there were no statistically significant differences between the groups. About 70% of children in both groups declared that they had the second breakfast every day. In both the surveyed and control group, the frequency of having the second breakfast decreased by about 4% after the second year of the survey (p = 0.002).

- After the third year of the scheme, the frequency of having the first breakfast before leaving home in both the surveyed and control groups remained at the same level as at the previous stage of the survey. In both groups, every third pupil had no first breakfast every day.

- About 64% of children in both groups declared that they had the second breakfast every day. After the third year of the scheme, in both the surveyed and control groups the frequency of having the second breakfast fell by 6-7% (p < 0.000; p = 0.005, respectively).

**Comment:**

- Despite the three years of the implementation of the scheme, the number of children who had the first breakfast every day before leaving home for school did not rise. The results also indicate that the number of children who had no second breakfast at school grew. There is a need to launch a wider promotion campaign and to motivate pupils to eat correctly by increasing accompanying measures which would address not only fruit and vegetable consumption. Moreover, probably more time is needed and close cooperation with parents is also required to ensure that the scheme can contribute to a greater extent not only to enhancing fruit and vegetable consumption among children, but also to changing their other eating habits.

**Children’s opinions**

- After two years of the scheme, in the group covered by the intervention, the number of children who gave an affirmative answer to the question “Do you think that you have eaten more fruit and vegetables since you started to get them at school?” significantly
increased from 63.8% to 71% (p = 0.0001). In comparison with the previous stage, after the third year of the intervention no statistically significant change was noticed in frequency of affirmative answers to the question “Do you think that you have eaten more fruit and vegetables since you started to get them at school?”

- At the end of the first year of the scheme, 83.3% of children in the surveyed group and 86.1% of those in the control group gave an affirmative answer to the question “Would you like to eat more fruit?” (with the differences on the threshold of statistical significance, p = 0.05). 72% of children in both groups gave an affirmative answer to the question “Would you like to eat more vegetables?”. After two years of the scheme, pupils gave a similar answer. About 86% of pupils in both groups gave an affirmative answer to the question “Would you like to eat more fruit?”. About 73% of pupils in both groups said “Yes” to the question “Would you like to eat more vegetables?”.

- After one year of the scheme, 76.9% of pupils gave an affirmative answer to the question “Do you eat a sufficient quantity of fruit?”, whereas before the start of the scheme, in both the surveyed and control groups a statistically significant lower number of such answers was reported (67.4 %; p < 0.00001). 64.1% of pupils in both groups said “Yes” to the question “Do you eat a sufficient quantity of fruit?”. After one year of the scheme, in both the surveyed and control groups the number of such answers was higher by about 3%; however, this increase was not statistically significant. After the second year, affirmative answers to the question “Do you think that you eat a sufficient quantity of fruit?” were more frequently given by pupils in the surveyed group than those in the control group (77.4% vs 71.2%, p = 0.002). In the case of vegetables, the statistical difference occurred at the trend level (70.1% the surveyed group vs 66.5% in the control group; p = 0.1).

**Taste preferences**

- Children were asked what they liked to eat and drink. After one year of the scheme, the group covered by the intervention answered “fruit” more frequently than the control group (30.1% vs 23.3%; p = 0.0001). After one year of the scheme, only 15.5% of the pupils in the surveyed group and 13.5% of those in the control group indicated vegetables; the differences were not significant. 38.4% of the children in the surveyed group and 37.1% of those in the control group indicated sweets and sweet drinks; the differences were not significant, either.

- 48.9% of children made purchases at school shops. Most frequently, they bought candies, lollipops, jelly beans and chewing gums. After the intervention, the number of children in the surveyed group who bought candies, lollipops, jelly beans and chewing gums significantly fell from 23.4% to 19.1% (p = 0.0026), whereas their number in the control group did not change. In both groups, the number of children who bought ice cream in warmer months (from May to June) increased. The number of children in the
control group who bought chips increased, whereas their number in the surveyed group did not change. The number of children who bought sweet drinks grew in both groups.

- Just as after one year of the scheme, after two years of its implementation, in reply to the question about what they liked to eat or drink the children in the group covered by the intervention indicated fruit more frequently than those in the control group (39.5% vs 34.9%, respectively, p = 0.03). 27.9% of the children in the group participating in the scheme and 27.8% of those in the control group mentioned vegetables as products they liked. After the second year of the evaluation, an additional change was noticed in respect of the declaration of preferences for sweets and sweet drinks. In the group participating in the scheme, a significant decrease was reported in the number of children who mentioned sweets and/or sweet drinks among the products which they liked to eat or drink. At the end of the second year of the evaluation, the children in the group covered by the scheme significantly less frequently mentioned sweets and/or sweet drinks than those in the control group (29.0% vs 35.7%, respectively, p = 0.001).

- Additionally, a change was noticed after the third year of the survey – the children in the group covered by the intervention answered significantly more frequently that they liked vegetables (in comparison with the control group). After three years of the scheme, in the surveyed group there were significantly more children who mentioned vegetables as the products which they liked than in the control group (34.6% vs 24.5%; p < 0.000). Moreover, in the group covered by the scheme there were significantly more children who liked fruit (42.3% vs 35.7%; p = 0.007).

- The results on pupils’ detailed preferences for fruit and vegetables indicated that they liked fruit better than vegetables. Before the start of the scheme, there were no significant differences between the preferences of children in both groups. In the surveyed group, it was found that the best liked fruit included apples – 98.3% of indications, raspberries – 93.5%, strawberries – 93.1% and bananas – 94.4%. The least liked fruit included currants – 18.2% of indications and kiwi –16.6%. In the surveyed group, it was found that the vegetables which children liked the best included carrots – 89% of indications, lettuce – 93.5%, cucumbers – 89.7% and horseradish – 73.6%. The least liked vegetables included spinach – 36.5% of indications, zucchini – 31.6% and peppers – 31.5%. Zucchini and spinach were also the vegetables which children knew to the least extent (25.4% and 24.1% of indications, respectively). Under the impact of the scheme, in the surveyed group the number of children who liked peppers significantly grew – from 59.9% to 64.7% – and the number of children who did not like this vegetable decreased – from 31.5% to 26.4% (p = 0.000). At the end of the school year, in both groups a significant increase was reported in the number of children who liked lettuce (e.g. in the surveyed group from 70.7% to 74.5%, p = 0.006) and horseradish (e.g. in the surveyed group from 73.6% to 76.7%, p = 0.003), i.e. the vegetables which are consumed in the largest quantities from May to June, in which were also the months when the surveys were carried out. The results indicate that probably the greater
availability of these vegetables both at school (peppers) and at home (lettuce, horseradish) contributed to children’s greater acceptance of them.

- In the second year of the scheme, the best liked vegetables still continued to include lettuce, cucumbers, and carrots. Without any change, the best liked fruit included apples, bananas, strawberries, and raspberries. After three years of the scheme, it was only the order of preferred fruit that changed slightly. Among vegetables, cucumbers, carrots, and lettuce became the best liked ones. Just as in the previous years, the vegetables which children liked the least and, at the same time, knew to the least extent continued to be zucchini and spinach. The best liked fruit still continued to include apples, strawberries, raspberries, and bananas. It is important to note that, under the impact of the scheme, during its second year, in the surveyed group the number of children who liked peppers significantly increased, whereas a decrease was reported in the number of children who did not like this vegetable (peppers were one of vegetables offered at school). After the second year of the scheme, the number of pupils in the schools participating in the scheme who stated that they liked peppers was higher by 7% than that of pupils in the control group who did not participate in the scheme (70.1% vs 63.3%, p = 0.001).

- After two years of the scheme, parents in the group covered by the scheme significantly more frequently gave an affirmative answer to the question “Is your child eager to eat fruit and vegetables?” which was asked of parents than those in the control group (86.5% vs 81.9%, p = 0.005). Just as at the previous stage, after three years of the scheme the parents in the group covered by the scheme significantly more frequently gave an affirmative answer than those in the control group did (88.6% vs 83%, p = 0.001).

**Comment**

- The scheme had a positive effect on preferences for vegetables. Stronger preferences for fruit still persisted among the children participating in the scheme. An expansion of the variety of vegetables provided in the last school year covered by the scheme could cause an increase in the number of children who mentioned vegetables as products which they liked.

- In the parents’ opinion, after three years of the implementation of the scheme children were more eager to eat fruit and vegetables.
5. Parents and the family home – nutritional behavior, knowledge and opinions about the scheme

Nutritional behaviour

- In the course of the first year of the scheme, in the group covered by the intervention a significant increase was reported in the number of children who stated that their parents encouraged them every day or almost every day to eat fruit and vegetables. In turn, in the second year there was an increase in the number of children in the control group whose parents encouraged them to eat fruit and vegetables, which caused the
absence of statistically significant differences between the groups in this respect at the end of the second year. In both groups, after two years of the scheme only about 55% of children were encouraged by their parents to eat fruit and about 55% to eat vegetables. Compared with the previous stage, in the third year of the survey a weak growing trend was found in the surveyed group (p = 0.052) in respect of the number of children who stated that their parents encouraged them every day or almost every day to eat fruit and vegetables.

- About 76% of children in both groups gave an affirmative answer to the question “Can you freely take different fruit at home?”. The first year of the scheme did not cause an increase in the number of affirmative answers to this question. After two years of the scheme free access to fruit at home was declared by significantly more children in the group covered by the intervention (87.7% vs 84.7%; p = 0.05).

- About 53% of children in both groups gave an affirmative answer to the question “Can you freely take different vegetables at home?”. After one year of the implementation of the scheme, the number of affirmative answers to this question increased in both groups – by about 10% in the surveyed group and by about 8% in the control group. After two years of the scheme, free access to vegetables was significantly more frequently declared by the children in the group covered by the scheme than by those in the control group (79.1% vs 74.4%; p = 0.001). After three years of the scheme, free access to vegetables was also significantly more frequently (p = 0.01) declared by the children in the surveyed group (82.1%) than by those in the control group (76.9%).

- Neither the first nor the second year of the scheme contributed to enhancing the frequency of providing children with fruit and vegetables between meals and that of giving them to children, so that they would take them to school.

- In the group which participated in the scheme, every day or on most days only 9.1% of parents gave vegetables to children, so that they would take them to school, and 21% of parents provided them with cut vegetables between meals. After the third year of the scheme, no statistically significant differences were found between the groups in respect of the percentage of parents who provided children with cut vegetables between meals every day/on most days. In both groups, every fifth parent stated that they gave their children cut vegetables between meals. The third year of the scheme did not affect, either, the percentage of parents who gave their children vegetables, so that they would take them to school every day.

- The results indicated that 55% of parents in the control group and 51.3% of those in the surveyed group stated that they gave their child cut fruit between meals every day or on most days. After the first year of the scheme, no statistically significant changes were noticed. After the third year of the scheme, the parents of the children in the group covered by the intervention significantly more frequently (in comparison with those of children in the control group) stated that they gave cut fruit to their children between meals every day or on most days (52.5% vs 47.4%; p = 0.041). Thus, during the
implementation of the scheme, the number of parents who made this declaration did not grow.

- In Form I, children were given fruit, so they would them to school on most days or every day only by 32% of parents in the surveyed group and by 35% of those in the control group. At the end of the third year of the scheme, no statistically significant differences were found between the surveyed groups in this respect.

Parents’ knowledge

- Only 11.5% of the parents in the group covered by the scheme and 13.5% of those in the control group gave a correct answer to the question “How many fruit and vegetables should your child consume?”. After one year of the implementation of the scheme, in the group which participated in it, there was an increase in the number of parents who could correctly define the recommended quantity of fruit and vegetables in children’s diet to 16.5% (p < 0.00001), while their number in the group which did not participate in the scheme grew to 17.1% (p = 0.003). However, the parents in the group covered by the scheme indicated a higher number of recommended portions of fruit and vegetables than those in the control group did. After two years of the scheme, at the end of Form II, only 18.85% of the parents in the group which participated in the scheme and 22% of those in the control group gave a correct answer to the question “How many fruit and vegetables should your child consume?”. At the same time, during the implementation of the evaluation, almost all the parents in both groups (99%) declared their awareness of the great health importance of the fruit and vegetable consumption by children. About 54% claimed that children should eat fruit and vegetables because they prevented diseases, for the general purpose of being healthy – 90%, because they were tasty – 46%, because they were cheap – 1.8%, because it was quick and convenient to eat them – 6% and because they helped to keep the correct body weight – 49%.

- After three years of the scheme, only 20.6% of the parents in the surveyed group and 20.9% of those in the control group gave a correct answer to the question “How many fruit and vegetables should your child consume?”. Compared with the previous year, there was no statistically significant increase in the number of parents who gave a correct answer to this question. At the same time, all the parents (99%) in both groups declared again that the fruit and vegetable consumption by their children was very important for their health. No statistically significant differences were found between the surveyed groups in respect of the question “Why should children eat fruit and vegetables?”. Just as at the beginning of the scheme, almost all the parents stated that fruit and vegetables should be eaten “for the general purpose of being healthy” (the surveyed group – 90.2%, the control group – 89%), that children should be eaten “because they prevent diseases” (the surveyed group – 55.1%, the control group – 54.5%), “they helped to keep the correct body weight” (the surveyed group – 53.7%, the control group – 53%) and “because they are tasty” (the surveyed group – 44.7%, the
control group – 46%). The fewest parents indicated the answer “because they are cheap” (the surveyed group – 1.4%, the control group – 1.8%) and “because it is quick and convenient to eat them” (the surveyed group – 6.6%, the control group – 5.7%).

- Parents most frequently acquired their knowledge on nutrition from TV and radio – 62.7% of indications, the Internet – 54.3%, popular periodicals – 47.2%, books – 47.9% and their doctor – 34%. Only 13.2% of parents indicated schools as a source of their knowledge on nutrition. 15.1% of parents drew their knowledge from commercials. Similar results were obtained in the control group. After one year of the scheme, many more parents in the surveyed group than those in the control group stated that schools were a source of their knowledge, with 21.8% of indications, although the number of indications of schools significantly grew in both groups. After two years of the implementation of the scheme, the sources of the knowledge on correct nutrition most often included TV and radio (66.5% of indications) or the Internet (66.2%), books (49.9%), popular periodicals (46.6%), doctors (35.6%), parents (21.8%), schools (22.9%) and commercials (17.9%). The sources of knowledge were not different in statistically significant terms between the surveyed and control groups. Both in the surveyed and control groups, the importance of the Internet as a source of knowledge significantly grew during the second year. Similar answers were found in the third year of the survey; there were no differences between the surveyed groups in respect of the sources of the knowledge on correct nutrition. More than half the parents in both groups indicated the Internet and TV/radio as the sources of their knowledge. 20.4% of parents in the schools covered by the schemes and 19.5% of those in the control group regarded schools as sources of their knowledge on nutrition.

Comment

- Although parents knew that fruit and vegetable consumption was very important for their children’s health, the number of parents who gave a correct answer to the question “How many portions of fruit and vegetables should your child consume?” did not grow under the impact of the scheme. Only every fifth parent knew how many portions of fruit and vegetables were recommended in their child’s daily diet. It is necessary to take accompanying measures which would target parents as well in order to educate them in the scope of correct nutrition and also to encourage them to cooperate with schools in this respect.

- In the third year of the implementation of the scheme, schools were a source of knowledge on correct nutrition only for every fifth parent. The conclusion can be drawn that schools did not fully use the possibilities and potential of the educational scheme in which they took part.

- Parents’ education on nutrition is extremely important, since the choices they make, having meals together and the availability of specific products at home shape children’s habits. The problem is either the lack of parents’ knowledge on
the impact of nutrition on the functioning of the human body or their lack of time; sometimes parents are also unwilling to take health-strengthening measures. A school is a place where the family education on health can be carried out in the form of custodians’ active cooperation with the school. The results of surveys on parents’ knowledge indicate the need for taking educational accompanying measures addressed to parents, with particular consideration given to the transfer of information on the recommended intake of fruit and vegetables in children’s diet and a practical message as to how this objective can be achieved.

- 13.4% of parents in the surveyed group and a similar number of them in the control group said: “It is difficult to eat fruit because it is expensive”. This was the most frequent reason which parents mentioned as a barrier to fruit consumption. Fruit most often came from an allotment garden or home garden (68.9% of indications) or was bought at a town market (56.7%) and at supermarket (50.2%).

- The main barrier to vegetable consumption which parents mentioned was that “It was difficult for them to find tasty vegetables” – with 14% indications in the surveyed group and a similar number of them in the control group. Vegetables most often came from an allotment garden or home garden (70% of indications) or were bought at a town market (58.2%) and at supermarket (48.8%).

- Most of the surveyed parents of the children participating in the second year of School Fruit and Vegetable Scheme evaluated the scheme as very good (72.8%) and good (17.8%). Still, 7.2% of parents had some reservations about the scheme. These reservations most often concerned the quality of the fruit and vegetables provided, their variety, bad storage in foil. Some parents also remarked that their children brought home their uneaten portions. After the three years of the implementation of the scheme, a significant majority of the parents of the children participating in the School Fruit and Vegetable Scheme (94.3%) evaluated the scheme (as very good – 76.4%, and good – 17.9%). A considerably smaller number of parents – 3.7% of them – had some reservations about it. Compared with the second year, a higher percentage of parents appreciated the scheme and, consequently, a lower percentage of them voiced their reservations about it. Their comments most often concerned the quality of fruit and vegetables (untasty), bad storage (in foil) and the fact that children brought home their uneaten portions. Given the enhanced variety, reservations no longer concerned diversity.

Comment

- The products which qualify for distribution should be characterised by the highest quality, healthy properties and diversity. The person who accepts at school a given batch of fruit and vegetables from a supplier should carefully
check the quality of the product batches delivered. The school principal should
effect the quality of the products delivered, since lower quality of certain
commodity batches can undermine the taste values appreciated by children,
such as sweetness, crispness or juiciness, and constitute a critical factor affecting
the effectiveness of the scheme. Lower quality of fruit and vegetables, which was
pointed out by certain parents, in some cases might result from mechanical
damage caused by the fact that children did not eat them and continued to keep
them.

- It was found that the scheme had no effect on the fruit and vegetable consumption by
  the surveyed parents. At the end of the third year of the scheme, no statically significant
differences were noticed in the frequency of fruit and vegetable consumption between
the parents of children in the surveyed and control groups.

The impact of the scheme and parents’ income

- Parents’ income affected the fruit and vegetable consumption by all the pupils in both
  the surveyed and control groups on school days. A significantly lower fruit and vegetable
consumption level was found in families with an income below PLN 500 per person in
the household (about 40% of families). In the group which participated in the scheme,
after the first year of its implementation, fruit and vegetable consumption significantly
grew in the group with an income of up to PLN 500 per person in the household,
whereas no significant changes were found in families with an income of more than PLN
500 per person in the household. In the same time period, the fruit consumption
significantly fell in the control group with an income of more than PLN 500 per person,
whereas the vegetable consumption in the group remained unchanged. In contrast, the
fruit consumption did not significantly change in the group with an income of up to PLN
500 per person. In the group with lower incomes, the scheme contributed to enhancing
the low fruit consumption. In the group with higher incomes the scheme sustained the
fruit consumption and even increased it to some extent (at the trend level), whereas a
decrease in fruit consumption was found in the control group with the same incomes.

- In the control group with lower incomes, only vegetable consumption increased to a
  slight extent but significantly; just as it did in the surveyed group with the same
incomes. Higher vegetable consumption at that time in both the surveyed and control
groups in families with lower incomes of up to PLN 500 per person could be related to
the increased consumption of seasonal, late spring vegetables, such as lettuce, radish
and cucumbers, including certain early vegetables from home gardens (indicated as best
liked by children, particularly at the second stage of the survey in the late spring).

- The results can suggest that the scheme had a slightly stronger impact on the group of
  children whose parents had lower incomes in relation to fruit consumption.
6. Schools - children’s assessment of the accompanying measures

- According to children’s declarations, in the schools covered by the scheme teachers more frequently (in comparison with the control group) said that “fruit and vegetables had to be consumed every day”, “fruit and vegetables were good for health” and explained how many fruit and vegetables should be consumed.

- The results after three years of the implementation of the scheme indicated that 93.6% of children in the surveyed group and 92% of children in the control group gave an affirmative answer to the question “Did your teacher say that fruit and vegetables were good for health?” (no statistically significant difference). 76% of pupils in the group covered by the scheme stated that their teacher gave them the information on how many fruit and vegetables should be consumed, whereas a much smaller number of them in the control group (67.5%) claimed that their teacher gave them the information in this scope (p < 0.000). The children in the surveyed group significantly more frequently gave an affirmative answer to the question “Did your teacher say that fruit and vegetables should be consumed every day?” (85.4 vs 79.2%; p = 0.001).

- In the second year of the scheme, among the educational accompanying measures on correct nutrition carried out by the schools participating in the scheme, children mentioned the following actions as the ones that they liked the best: competitions – 64.1% of children’s indications, excursions to farms – 55.7%, festivals – 48.0%, classroom chats – 32.0%, healthy food days with parents – 30.9%, practical culinary classes – 27.3%, a school newspaper – 20.1% and a school garden – 17.3%.

- Compared with the previous year, a statistically significant change was noticed in the group which participated in the scheme, consisting in children’s greater interest in excursions to farms (63.9%), festivals (59.8%), classroom chats (43.9%) and healthy food days (36.3%). Compared with the control group, more children in the surveyed group mentioned excursions to farms, festivals, culinary classes and a school newspaper as the ones which they liked the best. The changes in the interest in the particular educational measures could be related to children’s older age or a change in the form or attractiveness of these measures.

Comment

- The accompanying measures should be adapted to children’s age and education level. There is a need to develop educational materials for teachers which would support the implementation of the principles of correct nutrition at particular levels of education.

- There is still a need to deliver accompanying measures in parallel with the distribution of fruit and vegetables. The school principals declared that accompanying measures were delivered, but the effectiveness and manner of
their implementation depended on the school. After three years of the scheme, about 60% of the children in the group covered by the intervention indicated a correct number of fruit and vegetable portions which should be consumed every day (cf. the results in the Knowledge subsection). At the same time, most pupils declared that their teacher gave them the information that fruit and vegetables were important for health (93.6%) and that they should be consumed every day (85.4%), as well as that their teacher gave them the information as to how many fruit and vegetable portions should be consumed (76%). It can be concluded that incorrect or insufficient information continues to be provided, which can suggest that the form of providing information is not effective. The data collected from school principals and teachers indicate that educational materials or class scenarios which would be systematised and unified for all schools are indispensable. They might be used and implemented as part of educational and motivating accompanying measures.

7. Selected aspects related to the fruit and vegetable consumption by children one year after the completion of the scheme

Children’s knowledge on the recommended intake of fruit and vegetables

- In the group which had earlier been covered by the scheme, a higher percentage of children who had the knowledge on the recommended daily intake of fruit and vegetables than the one in the control group was sustained (55.8% of correct answers vs 37.8% correct answers; p < 0.0000).

![Graph showing children's knowledge on recommended intake of fruit and vegetables](image)

Fig. 12. Children’s knowledge on the recommended intake of fruit and vegetables one year after the completion of the scheme – a comparison of the percentages of correct answers. [Grupa badana = Surveyed group; Grup kontrolna = Control group; Etap IV = Stage 4; Etap V = Stage 5; commas as decimal separators]
Barriers to fruit and vegetable consumption

- Despite the fact that during the year following the completion of the scheme the children in both groups significantly more frequently made the declarations: “I prefer something sweet to a fruit” and “I prefer something sweet to a vegetable”, the children in the group which had participated in the scheme for three years significantly less frequently answered that they preferred something sweet to a fruit (13.2 % vs 19.2%, p = 0.002) and that they preferred something sweet to a vegetable (21.8% vs 26.7%, p= 0.02). In contrast, the tendency for a reduction (as a result of the scheme) of not eating fruit/vegetables on the grounds that “I do not eat them because my colleagues do not eat them” was not sustained.

Preferences for fruit and vegetable consumption

- One year after the completion of the scheme, the children covered by the three-year scheme significantly more frequently claimed that they were eager to eat fruit and vegetables than those in the control group did – 89.5% vs 83%, p < 0.0002.

Fruit and vegetable consumption one year after the completion of the scheme

- The evaluation carried out one year after the completion of the three-year edition of the scheme did not show any significant long-term contribution of the scheme to higher fruit and vegetable consumption by children or to a higher frequency of their consumption; although it is important to note that the higher fruit consumption in the participating group than the one in the control still persisted at the trend level (p = 0.06).

![Fig. 13. Fruit and vegetable consumption in grams one year after the completion of the scheme.](image)

[Spożycie = Consumption; Grupa badana = Surveyed group; Grupa kontrolna = Control group; Etap IV = Stage 4; Etap V = Stage 5; commas as decimal separators]
Table 1. The frequency of fruit and vegetable consumption in the course of the scheme and one year after its completion (Stage 5).

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Surveyed group</th>
<th>Control group</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Me</td>
<td>SD</td>
</tr>
<tr>
<td>Stage 1</td>
<td>2.35</td>
<td>2.07</td>
<td>1.40</td>
</tr>
<tr>
<td>Stage 2</td>
<td>2.44</td>
<td>2.07</td>
<td>1.51</td>
</tr>
<tr>
<td>Stage 3</td>
<td>2.45</td>
<td>2.14</td>
<td>1.31</td>
</tr>
<tr>
<td>Stage 4</td>
<td>2.57</td>
<td>2.14</td>
<td>1.67</td>
</tr>
<tr>
<td>Stage 5</td>
<td>2.74</td>
<td>2.28</td>
<td>1.78</td>
</tr>
<tr>
<td>Stage 1 to Stage 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 14. The frequency of fruit and vegetable consumption in the course of the scheme and one year after its completion (Stage 5).

[Częstotliwość spożycia = Consumption frequency; Etap I = Stage 1; Etap II = Stage 2; Etap III = Stage 3; Etap IV = Stage 4; Etap V = Stage 5; Grupa badana = Surveyed group; Grupa kontrolna = Control group; commas as decimal separators]
8. The School Fruit and Vegetable Scheme and the accompanying measures in the years 2012/2013 and 2014/2015 in the opinions of the principals of the schools participating in the scheme

The results on the opinions of the school principals on the School Fruit and Vegetable Scheme

- In the first edition of the survey (the school year 2012/2013), the overwhelming majority of the principals declared that their schools had no problems resulting from their participation in the scheme. Only one school in a rural area reported a problem (which was a poor quality of the vegetables supplied). In the second edition of the survey (the school year 2014/2015), none of the schools had any problems resulting from their participation in the scheme.

- In both editions of the survey, all the school principals declared that there were benefits which resulted from the participation in the scheme. Most frequently, they mentioned the following benefits:
  - a change of eating habits,
  - an enhancement of the nutritional value of children’s diet,
  - the education value of the scheme,
  - pupils and parents’ satisfaction with being offered free of charge portions of fruit and vegetables.

- In both editions of the survey, all the school principals confirmed that their pupils were eager to consume the portions of fruit which were provided to them.

  In the second edition of the survey, pupils were most eager to eat: apples – in 35 schools (85.4%), pears – in 28 schools (68.3%), radishes – in 26 schools (63.4%), carrots – in 19 schools (46.3%), small fruit tomatoes – in 14 schools (34.1%), blueberries – in 13 schools (31.7%), strawberries – in 10 schools (24.4%) and peppers – in 5 schools (12.2%). Compared with the previous edition, a smaller number of principals mentioned carrot as the vegetable which their pupils liked the best (in the first edition, 63.4% of principals held the opinion that carrot was the vegetable which their pupils liked the best).

- In the second edition of the survey, children preferred to receive fruit in the form of juice – such an answer was given in 82.9% of schools. The other answers included the provision of whole fruit (53.7%) or fruit cut into pieces (31.7%). The results do not sum up to 100%, since the principals gave more than one answer.

  Two years before, juice was also the preferred form of the provision of fruit, followed by fruit cut into pieces.

- Children preferred to receive vegetables that were cut into pieces (68.3%). The other answers included juice (53.7%) and whole vegetables (29.3%). The results do not sum up to 100%, since the principals gave more than one answer. In the case of vegetables, there was no difference between the editions of the survey.
● All the school principals said that the present manner of distributing fruit and vegetables was an appropriate one.

The results on the implementation of external schemes on correct nutrition and physical activity

● In both editions of the questionnaire survey, most schools in both rural and urban areas implemented external schemes designed to improve nutrition and physical activity. In the first edition of the survey, 95.1% of principals declared that accompanying measures were carried out (these measures were not taken in 2 schools in urban areas). In the second edition of the survey, such schemes were also implemented by 79.5% establishments, including 84.4% of schools in urban areas and 75% of schools in rural areas.

The results on the implementation of the accompanying measures related to the *School Fruit and Vegetable Scheme*

● In both editions of the survey, the overwhelming majority of the principals stated that they carried out accompanying measures addressed to pupils as part of the *School Fruit and Vegetable Scheme*. In the first edition of the survey, 95% of principals claimed that accompanying measures were carried out and so did 90% of the principals in the second edition.

● The accompanying measures which were most frequently implemented as part of the scheme in the first and second editions of the survey included:
  - classroom chats (94.9% and 92.7%, respectively),
  - competitions (76.9% and 73.2%, respectively),
  - the creation of a school newspaper (69.2% and 73.2%, respectively),
  - culinary classes (74.4% and 68.3%, respectively),
  - activities outside the school, excursions to farms and courts (56.4% and 63.4%, respectively),
  - healthy nutrition days (33.3% and 39%, respectively),
  - meetings with experts (30.8% and 39%, respectively),
  - family festivals (51.3% and 36.6%, respectively),
  - the cultivation of school gardens (18% and 14.6 %, respectively).

● In both first and second editions of the survey, the principals gave the following answers to the question “*What were the objectives of the implemented measures?*”:
  - to promote a healthy diet and fruit and vegetable consumption (100% and 95%, respectively),
  - to show the children the origin of fruit and vegetables and link them to agriculture (69% and 75,6%, respectively),
  - to address other issues (e.g. a change in eating habits, the effects of incorrect nutrition, the culture and hygiene of nutrition (30.8% and 14.6%, respectively).
In the first edition of the survey, in the course of accompanying measures, pupils received educational materials in 73.7% of schools. In the second edition, educational materials were made available to pupils in 61% of schools. In both editions, the number of schools where pupils did not receive anything was similar (23.7% vs 24.4%).

In the first and second editions of the survey, the financial resources for the implementation of accompanying measures in the surveyed schools came from the same sources:

- from the contributions paid by parents (53.9% and 55.3 %, respectively),
- from the budget of the Parents Council (41% and 50%, respectively),
- from sponsors (33.3% and 42.1%, respectively),
- from the school budget (25.6% and 36.8%, respectively),
- from other sources – ARR (Agricultural Market Agency), MOPS (Municipal Social Welfare Centres), SKO (School Savings Union); (15.4% and 7.9%, respectively).

In the first edition of the survey, 91.2% of the principals gave an affirmative answer to the question “Are accompanying measures a standard component of the curriculum implemented by the school?”. In the second edition of the survey, fewer principals, i.e. 73.2% of them, answered that accompanying measures were a standard component of the curriculum.

In response to the question “Do accompanying measures go beyond the curriculum as additional educational measures?”, 34% of principals answered that accompanying measures went beyond the curriculum as additional educational measures. In the first edition of the survey, more principals, i.e. 80% of them, said that in their schools accompanying measures went beyond the curriculum.

At both stages of the survey, in response to the question “Does the school have any difficulties with implementing accompanying measures?”, the overwhelming majority of principals (95%) answered that they had no such difficulties.

In the first edition of the survey, in response to the question “What would help to implement accompanying measures?”, principals gave the following answers:

- educational materials for children and parents (89.7%),
- ready class scenarios for teachers (64%),
- the preparation of a guide for schools (53.8%).

In the second edition of the survey, 22% of principals answered that educational materials for children and parents would be helpful. Single answers mentioned: ready class scenarios, a guide for teachers, meetings with experts, e.g. dieticians or fruit farmers, free of charge fruit and vegetables for preparing culinary classes and cooperation with a fruit and vegetable processing plant. It was an open question; therefore, the principals gave diverse answers.

In the first edition of the survey, parents were involved in accompanying measures in 77.9% of schools and so they were in 66.7% of schools in the second edition.
Suppliers were involved in accompanying measures in 41.7% of schools. Two years before, suppliers were involved in accompanying measures in 31.6% of schools.

In response to the question, “How do you assess the significance of accompanying measures for the achievement of the objectives of the scheme?”, most principals, i.e. 61.5% of them, assessed the significance of the measures as large. 23.1% of principals defined their significance of accompanying measures as essential, while 15.4% of principals found it to be moderate. No principal evaluated the significance of accompanying measures as low or none. Compared with the previous edition of the survey, there was a decrease in the number of principals who assessed the significance of accompanying measures as large (71.8% vs 61.5%), whereas an increase was reported in the number of principals who evaluated the significance of accompanying measures as essential (10.3% vs 23.1%).

In the second edition of the survey, fruit and vegetable advertisements were placed in 60% of schools, including in 47.4% of schools in rural areas and in 71.4% of schools in urban areas (one school failed to respond). The poster of the School Fruit and Vegetable Scheme could be found in all the schools in rural and urban areas.

Comment

The principals of the schools participating in the survey declared that they had no problems resulting from the participation in the scheme. All the principals discerned benefits arising from the participation in the scheme. School principals indicated that, among the fruit and vegetables provided under the scheme, pupils were most eager to eat apples, which were followed by pears and radishes. The comparison of the two editions of the survey shows a decrease in the number of principals who said that carrot was the vegetable which pupils liked the best. The change of preferences in the second edition of the survey could result from an enhanced variety of the supplied fruit and vegetables.

According to principals, pupils most preferably consumed fruit in the form of juice and their next choices were whole fruit and fruit cut into pieces. In the previous survey, juice was also the preferred form of provision, followed by fruit cut into pieces. This change could have been caused by the fact that children were older and by the fact that cut fruit remains fresh for a short time. In the survey, there was no change in the answer as to the preferred form of vegetable consumption. According to principals, pupils most preferably consumed vegetables which were cut in pieces, followed by those in the form of juice and, finally, those provided as whole vegetables.

Most principals declared that they implemented accompanying measures related to the scheme. The accompanying measures which were most frequently implemented as part of the scheme included successively: classroom chats, competitions, the publication of a school newspaper, culinary classes and school incursions. A comparison of the two editions of the survey shows a decrease in the number of principals who assessed the significance of accompanying measures as large, whereas an increase was reported in the number of
principals who assessed the significance of accompanying measures as essential. The financial resources for the implementation of accompanying measures in the surveyed schools came from contributions paid by parents, from sponsors and from the school budget.

Principal declared that ready educational materials, class scenarios and guides for teachers would be helpful in the implementation of accompanying measures.

9. *The School Fruit and Vegetable Scheme and the accompanying measures in the years 2012/2013 and 2014/2015 in the opinions of the principals of the schools which did not participate in the scheme*

**Information on the School Fruit and Vegetable Scheme**

- In the first edition of the survey (the school year 2012/2013), the basic reasons for failure to participate in the scheme included:
  - a shortage of space in the school (38.1%),
  - problems related to supplier (23.8%),
  - parents’ opinion (19%),
  - poor quality of products (19%),
  - children receiving fruit and vegetables from other sources (9.5%),
  - the participation in other schemes (7%),
  - no information on the scheme (4.8%),
  - no staff available to coordinate the issues related to the scheme (4.8%).

In the case of schools in urban areas, most of them did not join the scheme because of a shortage of space – 40% and problems related to supplier – 25%. Schools in rural areas did not join the scheme because of a shortage of space – 36.4%, problems related to supplier – 22.7% and parents’ opinion – 22.7%.

In the second edition of the survey (the school year 2014/2015), the basic reasons for failure to participate in the scheme included:

- a shortage of space in the school (37.5%),
- parents’ opinion (16.7%),
- an inappropriate range of products (16.7%),
- the participation of the school in other schemes (16.7%),
- issues related to supplier (12.5%),
- other problems (negative opinions of schools, no information) (16.7%)
Comment

The basic reason for failure to participate in the scheme which was given by school principals was a shortage of space. After two years, the principals of the schools which did not participate in the scheme less frequently declared that the basic reason for failure to participate in the scheme was a problem related to supplier. The principals of the schools which did not participate in the scheme were well informed about the scheme. They declared that the information on the scheme was exhaustive. The failure to participate in the scheme did not prevent the implementation of measures to promote a healthy lifestyle, including those related to correct nutrition. All the schools carried out activities which promoted healthy nutrition. Just as in the participating schools, they included primarily: classroom chats, competition, the publication of a school newspaper and culinary classes. Half of the non-participating schools informed that they organised school festivals and every third school held healthy food days.

The measures taken by schools also included the education of parents. Most of the surveyed schools carried out activities which communicated the knowledge on healthy nutrition to parents.

Conclusions

The School Fruit and Vegetable Scheme is appreciated by school principals and has become a constant component of the curriculum which promotes correct nutrition in primary schools. The accompanying measures carried out in schools require a unified, effective form which would be helpful in the education on nutrition. At present, there are no systematised educational activities which would fully use the potential of the scheme.
III. Conclusion and recommendations

The results indicate that providing fruit and vegetable portions in schools free of charge in the next years can be an effective strategy for enhancing the fruit and vegetable consumption by children, in particular by raising the awareness of the health importance of fruit and vegetable consumption and gradually influencing children’s eating habits, especially in relation to the habit of fruit consumption.

Over the three years of the implementation of the School Fruit and Vegetable Scheme, fruit consumption significantly increased (by about 30 g a day, i.e. by 18%). In the same time period, in the control group it only grew by about 4%. Over the first two years of the implementation of the scheme, vegetable consumption remained at a similar level and significantly increased in the third year in both groups (there were no statistically significant differences at the end of the scheme). However, the scheme had no significant effect on the frequency of fruit and vegetable consumption.

A number of other positive effects of the School Fruit and Vegetable Scheme were also found in the group covered by the intervention. They concerned pupils’ nutritional attitudes and behaviour, such as a further increase in children’s knowledge on the health aspects of fruit and vegetables, the levels of their consumption, the less frequent occurrence of barriers to fruit and vegetable consumption in relation to the control group (which was not covered by the scheme), greater willingness to eat fruit and vegetables (according to parents’ opinion), higher preferences for fruit in general and peppers as a vegetable, lower preferences for sweet drinks/sweets. The enhanced variety of vegetables provided in the third school year covered by the evaluation could have contributed to increasing the percentage of children who mentioned vegetables as products which they liked.

Despite the observed increase in fruit consumption under the impact of the scheme, there are still two major sources of concern: the scheme only slightly enhanced the vegetable consumption and the total fruit and vegetable consumption in relation to the World Health Organization recommendations still remains too low. The small impact of the scheme on vegetable consumption can be explained by the fact that a portion of vegetables provided twice a week was smaller (60 g) than a portion of fruit (100-150 g); moreover, 4 of 10 of these portions consisted of juice. Earlier surveys aimed at evaluating the effectiveness of schemes designed to enhance the fruit and vegetable consumption by children demonstrated that, given the sweet taste of fruit tolerated by children, it was easier to increase fruit consumption than that of vegetables.
At the same time, the evaluation of the scheme also showed a deterioration of other eating habits as children grew older, including e.g. failure to have the first breakfast before leaving home or failure to have the second breakfast at school in both of the surveyed children’s groups. On this basis, it can be concluded that as children grew older it was more difficult to sustain their correct eating habits.

In order to further strengthen, sustain or reinforce the achieved positive effects, as well as to remedy certain components which weaken its performance, the *School Fruit and Vegetable Scheme*, under which free of charge portions of fruit and vegetables are provided, should be supported by activities of the school covering the whole environment and making it possible for children to e.g. have the second breakfast during an adequately long break, eat correctly balanced school lunches, buy healthy products at school shops and engage in physical activity. In addition, the scheme should be accompanied by intensified educational activities, which should also involve parents. Particular consideration should be given to activities motivating children to eat vegetables. In the context of the possible impact of the scheme on other eating habits of children, these activities should include children’s education delivered in a manner which would motivate them to make their own healthy choices – not only in relation to fruit and vegetables.

As part of accompanying measures, there is a need for close cooperation between the school and parents, so that the scheme could contribute to a greater extent to higher fruit and vegetable consumption, as well as to a change of other eating habits of children. The results on parents’ knowledge indicate that schools need to deliver educational accompanying measures addressed to parents, including in particular the communication of information on the recommended intake of fruit and vegetables in children’s diet. It is parents who directly shape their children’s environment from their youngest age and indirectly affect their behaviour, habits and attitudes. The eating habits which they introduce at home (e.g. having meals together) shape their children’s eating standards. They are responsible for the availability and diversity of food at home, which also affects what their children eat. Therefore, as parents’ eating habits play an extremely significant role in shaping children’s preferences in food consumption, continuous cooperation with parents should be an inherent component of accompanying measures related to the scheme. Schools should carry out systematised and scheduled educational activities addressed to parents. The cooperation with parents provides opportunities for creating a uniform educational environment and thereby for ensuring higher effectiveness of the activities launched. Parent education can be difficult, given their natural unwillingness to change specific habits, including those related to nutrition. Therefore, the activities of schools in the scope of the health education of parents should also be carried out in diversified and attractive ways, with respect for parents’ time.

As an integral component of the scheme, accompanying measures should be strengthened and continued at different levels. The evaluation results indicate that, as a result of the scheme, children’s knowledge and awareness of the health aspects of fruit and
vegetables and the recommendations for their consumption systematically improved and there was a favourable change in nutritional attitudes and eating habits, including a reduced number of barriers to fruit and vegetable consumption etc. However, it is important to note that only half of the surveyed pupils could correctly indicate the number of fruit and vegetable portions recommended for consumption. The communicated information can be insufficient, inconsistent or provided in an inadequately attractive form.

Accompanying measures should first be supported by a package of unified and systematised educational materials to be used by teachers in all the schools participating in the scheme, including class scenarios and teaching aids, intended for working with pupils and cooperation with parents. The educational materials could help schools to implement the preset objectives in ways which would be attractive and consistent for all the parties involved. This was confirmed by the results of a questionnaire sent out to school principals, who indicated that educational materials for children and parents and guides for teachers, including class scenarios, would be helpful in the implementation of accompanying measures.

School principals should exact the quality of the products delivered from suppliers, since lower quality of certain commodity batches or products from certain suppliers can undermine the taste values appreciated by children, such as e.g. sweetness, crispness or succulence, and constitute a critical factor affecting the consumption by children or the effectiveness of the scheme. *School Fruit and Vegetable Scheme* is an excellent tool and idea exerting a positive effect on some of children’s nutritional behaviour and attitudes, as well as on fruit consumption; however, it entails a number of critical factors that hinder the achievement of its preset objectives (including the organoleptic quality of the portions provided, the form or scope of the accompanying measures carried out, the cooperation with parents).

The selection of fruit and vegetables provided as part of the scheme should ensure diversity of the products offered. The now enhanced product range and the resulting greater attractiveness of the products offered can contribute to higher effectiveness of the activities carried out, provided that they are continued for a longer time. A portion consisting of a fruit and vegetable or juice (in the case of 4 out of 10 portions offered) is provided twice a week for 10 weeks (representing about half the school term) each term. The availability of this portion encourages fruit and vegetable consumption, enabling teachers and the school to highlight an important role of fruit and vegetable consumption for health. Still, this is not a systematic action, which would be carried out on all school days. Consideration should be given to the everyday provision of a vegetable or a fruit to pupils, e.g. by dividing portions into smaller servings and thus enhancing the frequency of their availability. This concerns in particular vegetables, given children’s lower preference for them, and the greater need for encouraging children to eat them. Systematicity and repeatability of these actions could contribute to the development of a habit to eat vegetables and/or fruit every day. Given
children’s low consumption of fruit and vegetables in unprocessed form, the juice portion offered in schools (4 out of 10 portions) could be replaced by a portion of vegetables or fruit.

Despite the demonstrated effectiveness of the scheme in enhancing fruit consumption and improving children’s nutritional behaviour to some extent, the evaluation carried out one year after the completion of the three-year edition of the scheme did not show any significant long-term contribution of the scheme to higher fruit and vegetable consumption by children or a greater frequency of their consumption – although it is important to note that higher fruit consumption in the participating group still continued at the trend level. In turn, better knowledge among children continued and so did a slightly larger number of declarations that the children covered by the three-year scheme were eager to eat fruit and vegetables. It can be concluded that the scheme should be implemented for a longer period of time in order to sustain its long-term effects in relation to consumption and with higher intensity in the aspects described more extensively above (e.g. increasing the frequency of the provision of fruit and vegetable portions in schools, systematisation of accompanying measures addressed to children and the involvement of parents in the accompanying measures related to the scheme).
Part II
An administrative evaluation of the functioning of the School Fruit and Vegetable Scheme

I. Factors of importance for the assessment of the functioning of the School Fruit and Vegetable Scheme

1. Establishment of the National Strategy for the Scheme
In the period of the 5 school years covered by the evaluation, i.e. from 2011/2012 to 2015/2016, the School Fruit and Vegetable Scheme was implemented in Poland, in accordance with the National Strategy for the Implementation of the School Fruit and Vegetable Scheme in the Republic of Poland, which applied in the particular school years, and pursuant to acts of EU and national legislation.
The rules of implementation of the Scheme, which were laid down, among others, in the National Strategy, were prepared by the Ministry of Agriculture and Rural Development, in cooperation with the following institutions:
   a) the Ministry of National Education,
   b) the Ministry of Health,
   c) the Ministry of Family, Labour and Social Policy,
   d) the Agricultural Market Agency.

2. Financing of the Scheme
In accordance with the EU regulations, the Scheme budget is co-financed from the EU and national funds (with the respective shares of 75% and 25% and those of 88% and 12% from the school year 2014/2015). All the national resources come from the national budget and the Scheme does not require parental financial contribution. The preliminary guaranteed allocation from the EU to Poland was initially EUR 9.223 million and then EUR 11.645 million since the school year 2014/2015. Starting in the school year 2013/2014, Poland applied for the allocation of additional funds from the EU budget beyond the initial allocation and the value of the budget in a given school year depended on the final amount of funds awarded to Poland by the EC. The limited budget of the Scheme, in the form of a national quantitative restriction, had an essential effect on the key aspects of the implementation of the Scheme; in particular, the selection of the target group of the Scheme. Taking into account:
   – the value of the available annual budget of the Scheme,
- the assumption of the free of charge distribution of fruit and vegetables to children,
- the need to ensure the intensity and thereby the efficiency of actions (as a minimum, 2 fruit and vegetable portions a week),
- the highest possible effectiveness of the Scheme, i.e. to ensure that it reaches children in an age when it is easiest to shape nutritional habits,

children in Forms I-III of the primary school were initially selected as the target group.

Additional funds from the EU budget, beyond the initial allocation, made it possible to develop the Scheme and enhance its availability and attractiveness to children and schools. An expanded catalogue of products to be distributed to children was introduced. It was enriched with fruit and vegetables with values which were attractive to children or fruit and vegetables they had not known before (e.g. blueberries, cocktail tomatoes and kohlrabi). In addition, the group of children who could participate in the Scheme was enlarged with those attending the so-called zero forms in primary schools. As a result of this, all the youngest pupils in primary schools in Forms from O to III (i.e. aged from about 6 to 9) were able to participate in the Scheme.

The overwhelming part of the resources from the Scheme budget was used to finance deliveries of products to schools, while a much smaller part of them covered the costs of the promotion and evaluation of the Scheme (in the school year 2015/2016 the promotion and evaluation costs represented less than 3% of the Scheme budget). At the same time, in relation to the education reform carried out in the abovementioned period to gradually lower from 7 to 6 years the age when children were obliged to begin their education in the primary school, the size of the target group significantly grew in the school year 2015/2016, to include as a total almost 1.618 million children. This situation also generated additional costs related to the need to organise product deliveries to the growing group of children in a given range of school forms.

In accordance with the EU legislation, before the school year 2013/2014, accompanying measures of educational nature had not been eligible for funding under the Scheme from the EU budget. Such a possibility emerged in the school year 2014/2015; however, given the need to provide the growing target group with fruit and vegetable deliveries with intensity ensuring the efficiency of the actions carried out, it was decided that the Scheme budget would be spent to implement the basic pillar of the Scheme, i.e. fruit and vegetable deliveries. In consequence, while carrying out their obligatory educational activities, schools took advantage of their own financial resources, used financial support of their sponsors or suppliers (if possible) or carried out these activities in a manner which did not generate any additional costs for the schools. There is no doubt that the absence of financial support for educational activities from the Scheme budget also affected their quality and efficiency of achieving the Scheme’s objectives (cf. details in Part I of the report). In the context of the financing of the Scheme, it is important to note a high rate of the utilisation of the Scheme budget, which exceeded 90% in the school years from 2012/2013 to 2015/2016 (in the last year of the evaluation, i.e. 2015/2016, the budget utilisation rate reached 97%). Such a high budget utilisation rate demonstrates that the budget management model adopted in Poland
and the organisation of the delivery system operate effectively and efficiently, guaranteeing a high budget utilisation rate.

3. Tasks and responsibilities of stakeholders

Ministry of Agriculture and Rural Development (MARD):
- the preparation of the *National Strategy for the School Fruit and Vegetable Scheme* (including the selection of fruit and vegetables to be distributed to children from the catalogue developed by the Ministry of Health, the indication of the target group and the definition of the model for the implementation of deliveries),
- the preparation of national legal acts to govern the implementation of the Scheme, including the Regulation of the Minister of Agriculture and Rural Development laying down the rules of implementation of the Scheme in a given school year (the determination of deadlines, rates of aid per portion, quantities and types of products delivered etc.),
- within the range of competence of the Ministry, the exercise of supervision and official controls on the commercial quality of agri-food products by its subordinate bodies (the Agricultural and Food Quality Inspection).

Ministry of National Education (MNE):
- the determination, in cooperation with the MARD, of the target group of children which the Scheme should address and its size in the particular school years,
- the preparation of guidelines for primary schools on the implementation of educational activities as part of the Scheme in the form of a catalogue of activities from which schools could choose (the Regulation of the Minister of National Education),
- the provision of information on the Scheme to schools and encouraging them to participate in it, as well as ongoing cooperation in relation to the implementation of the Scheme.

Ministry of Family, Labour and Social Policy:
- the recommendation of the free of charge distribution of fruit and vegetables to children.

Ministry of Health (MH):
- the elaboration of a wide catalogue of products which can be distributed to children,
- within the range of competence of the Ministry, the exercise of supervision over the sanitary conditions related to the preparation and implementation of fruit and vegetable deliveries to schools, including the implementation of official controls by its subordinate bodies (the State Sanitary Inspection).

National Food and Nutrition Institute in Warsaw:
- the implementation of an evaluation of the *School Fruit and Vegetable Scheme* on commission from the Agricultural Market Agency and in accordance with the EC guidelines (the elaboration of the concept and assumptions of the survey, the selection of the group to be surveyed, the development of methodology, the implementation of
the survey, an analysis of collected data, the elaboration of the survey results, the formulation of conclusions and the preparation of the report).

**Agricultural Market Agency (ARR):**

It administers the *School Fruit and Vegetable Scheme* within the framework of the EU and national regulations, in accordance with the rules laid down in them. Among others:

- it takes part in the works on the draft National Strategy and the national legislation on the Scheme,
- it elaborates and provides the Conditions for the Participation in the Scheme, containing the rules of participation, deadlines, form templates etc.,
- it approves the entities which receive aid and publishes a list of approved suppliers on its website,
- it administers the delivery organisation module; among others, it accepts the contracts signed between schools and suppliers, lays down and publishes information on the number of fruit and vegetable portions which a child receives in a given term (depending on the total number of children participating in the Scheme as defined in the contracts signed between schools and suppliers),
- it handles applications for aid and pays it out,
- it carries out administrative inspections and on-site controls on the premises of suppliers and in primary schools,
- it monitors the implementation of the Scheme and is responsible for the execution of an evaluation of the efficiency of the Scheme, which is commissioned to a specialist unit of the public health sector,
- it carries out activities in the scope of communication and promotion of the Scheme (including the organisation of information and promotion campaigns, the management of the website and other communication channels in the social media, the publication of information materials and posters providing information on the Scheme which are placed in schools),
- it cooperates with the MNE in ensuring the implementation of educational activities by the schools participating in the Scheme as part of the Scheme and as part of the ongoing implementation of the Scheme.

The activities related to the management of the implementation of deliveries are carried out by the Regional Branches of the ARR in 16 Voivodships.

**Suppliers:**

- they are obliged to be approved for their participation in the Scheme,
- every term they sign contracts on free of charge deliveries of fruit and vegetables with primary schools; copies of the contracts are submitted to the ARR,
- they deliver fruit and vegetables to primary schools, in accordance with the frequency and guidelines laid down by the ARR and in national and EU legislation,
- they are responsible for the quality of products delivered to schools,
- after the implementation of deliveries, they apply for aid to the ARR,
- they keep the relevant records and store the required documentation.
Primary schools:
– they sign contracts with suppliers on fruit and vegetable deliveries (in case a school does not use the services of a supplier, it must be approved by the ARR as a school which will distribute fruit and vegetables to children and apply for aid on its own; it is an option which schools very seldom choose),
– they accept products from suppliers, check their quality and, subsequently, distribute them to children,
– after the completion of deliveries, they fill in certificates of fruit and vegetable deliveries, which are attached by suppliers to their applications for aid,
– they keep the relevant records and store the required documentation,
– they place the poster of the School Fruit and Vegetable Scheme in schools,
– they carry out educational activities as part of the Scheme, in accordance with the guidelines of the MNE, and submit to the ARR information on the educational activities which have been implemented.

Parents/guardians:
– they are obliged to give their consent to a child’s participation in the Scheme,
– they participate in the educational activities carried out by schools (if they provide for parents’ involvement).

4. Accompanying measures
As part of the Scheme, the primary schools participating in the Scheme are obliged to implement accompanying measures of educational nature related to correct nutrition and the origin of fruit and vegetables. The MNE prepared the guidelines for the implementation of the abovementioned measures in the form of a catalogue of measures from which schools can choose (the Regulation of the Minister of National Education of 28.08.2014 on the manner of implementing accompanying measures which serve to ensure the efficient implementation of the School Fruit and Vegetable Scheme in schools). Schools choose and implement at least two measures in a term, in accordance with their preferences and circumstances. The catalogue of measures which schools can implement is diverse and also includes activities of participative and active nature (experiential learning). In the school year 2015/2016, the participative activities carried out by schools included (starting with the most popular ones):
– having the second breakfast together, coupled with the tasting of fruit and vegetables and the dissemination of the knowledge on healthy nutrition (64%),
– culinary workshops, coupled with the dissemination of the knowledge on healthy nutrition (8%),
– educational visits to farms and orchards etc. (4%), the establishment and cultivation of school gardens (4%).
Moreover, the activities carried out by schools also included:
– the dissemination of information on the benefits arising from the consumption of fruit and vegetables and their preserves, as well as the information on their origin and
cultivation by organising exhibitions, preparing presentations and publishing school newspapers (15%),
– thematic competitions and festivals on healthy nutrition (7%).

These activities were very frequently organised with the involvement and financial contribution e.g. of parents, suppliers and representatives of local communities. Schools do not receive additional financial resources for the implementation of these activities. The form, as well as degree of attractiveness and efficiency of the activities implemented in schools, are very diverse, depending on many factors: the engagement of schools and their understanding of the importance of the issues of children’s correct diet, the financial capacity of schools or their ability to find sponsors for these activities (e.g. suppliers) and the engagement of parents and teachers. Schools often use forms of implemented activities that do not generate any additional costs. In this situation, one could suppose that while deciding to carry out given types of activities (or not to carry them out at all), schools are primarily guided by the criterion of minimising the related financial burdens, instead – as they should – by the criteria of attractiveness of the activities and their efficiency in achieving the objective of the Scheme, i.e. a permanent change in children’s nutritional habits.

Note: Part I of the report contains a detailed analysis and assessment of the quality and efficiency of educational activities in respect of their impact on children’s nutritional habits; in particular, it shows information on fruit and vegetable consumption, children’s knowledge and conclusions on these issues.

5. System of the organisation of deliveries

– Fruit and vegetable deliveries are organised by approved suppliers. A list of approved suppliers is published on the website of the ARR. Suppliers are entities engaged in the production, trade or processing of fruit and vegetables. Apart from meeting the requirements set out in EU regulations, in addition, such entities must demonstrate at least 6-month experience in the production, trade or processing of fruit and vegetables. This requirement ensures the participation in the Scheme of suppliers specialising in these types of activities and has a favourable effect on the quality of their services. Over the successive years, the number of suppliers has stabilised. In the last year covered by the evaluation, deliveries were implemented by 118 approved suppliers.

– A primary school wishing to participate in the Scheme signs a contract with one of selected suppliers, who then organises deliveries and settles accounts with the ARR. Subsequently, copies of the signed contracts which define the number of children participating in the Scheme are submitted to Regional Branches of the ARR.

In case a school does not wish to use the services of a supplier, it must receive approval and then organise the distribution of fruit and vegetable portions to its pupils on its own and settle accounts with the ARR. This is a solution which schools very seldom choose (only 7 schools out of about 11,700 schools participating in the Scheme). The
overwhelming majority of schools use the services of suppliers, since this solution minimises the burdens for schools resulting from the participation in the Scheme.

- The total number of children participating in the Scheme in a given term is defined on the basis of the number of children indicated in the contracts. In order to ensure the necessary minimum frequency of the distribution of fruit and vegetables, it has been assumed that in each term a child should receive at least 20 fruit and vegetable portions. The exact number of portions to be distributed to a child in a given term (e.g. 22) is calculated according to the specific budget for the organisation of deliveries in a given term, total number of children and constant flat rate for a portion. The system designed in this way guarantees the highest budget utilisation rate.

- Suppliers are obliged to deliver to schools products which are ready for direct consumption by children (fresh, washed and cut, if necessary). The catalogue of products distributed to children includes both fresh fruit and vegetables as well as juice. In the last school year covered by the evaluation, i.e. 2015/2016, their shares were 83% and 17%, respectively, which seems to be correct proportions, taking into account the need to promote primarily the consumption of fresh fruit and vegetables. Each portion distributed to children consists of one fruit product and one vegetable product. In the period covered by the survey, the catalogue was successively expanded, mainly focusing on fruit and vegetable species which are traditionally cultivated in Poland and taking into account the seasonality of their production. In the last year covered by the evaluation, children received the following products:
  - fruit: apples, pears, strawberries and blueberries,
  - vegetables: carrots, peppers, radish, kohlrabi and cocktail tomatoes,
  - juice: fruit, vegetable and mixed juices.

- The aid was paid out on the basis of the system of a constant flat-rate aid for a fruit and vegetable portion delivered and distributed to children. The aid rate was laid down for a given year in the Regulation of the MARD which set out the rules of implementation of the Scheme in a given school year. The calculation was carried out on the basis of a defined basket of products distributed to children as part of 20 portions in each term. On the basis of the valuation of the basket of products, within which the composition and quantity of the particular products were determined exactly, the flat rate for one portion was established.

- During the 10 selected weeks in a term, each child received at least 20 fruit and vegetable portions, in accordance with the assumptions described above.

### 6. Uptake and appreciation of the School Fruit Scheme by the schools and the sector

Schools are not obliged to participate in the Scheme and their participation depends on the decision of a school and children’s parents. During the 5-year period covered by the evaluation, the Scheme gained very large popularity among primary schools and became an everyday component of almost all primary schools. In the period covered by the survey, the
number of schools participating in the scheme significantly grew from 9,733 in the school year 2011/2012 to 11,557 in the school year 2015/2016, just as the number of children did, growing from 891,600 in the school year 2011/2012 to about 1.476 million in the school year 2015/2016 (more than 91% of the target group). The Scheme was very much welcomed by primary schools. Schools appreciated numerous benefits which arose from the participation in the Scheme, including, among others, the impact of the Scheme on the shaping of children’s good nutritional habits, the improved nutritional value of children’s diet, the educational value of the Scheme and parents’ positive response to the free of charge fruit and vegetable distribution to children. The Scheme is also very well appreciated by children, who wait for fruit and vegetables and are eager to eat them. Part I of the report contains a detailed analysis of this issue.

The Scheme also met with suppliers’ involvement. In the period covered by the evaluation, the number of entities implementing deliveries to schools has stabilised. In the school year 2015/2016, the deliveries were organised by 118 experienced suppliers. These entities have often taken part in the Scheme since its launch and to a large extent have adapted their operations to the specificity and requirements of the Scheme, in particular in respect of taking care of the quality of products, adapting the distribution system to the working hours of schools etc. In order to ensure the efficient implementation of deliveries of high-quality products by approved suppliers, it is crucial to correctly select a list of products to be distributed to children, taking into account their seasonal availability and the factors related to quality maintenance in the preparation process and logistics.

7. Evaluation of the Scheme
The evaluation of the Scheme, including the effect of the Scheme on children’s nutritional habits and fruit and vegetable consumption, was carried out on commission from the ARR by the National Food and Nutrition Institute in Warsaw, an independent scientific research from the public health sector. Part I of the report contains the methodology, analysis and results of the survey.

8. Communication and information actions for the Scheme
As part of the communication actions relevant to the Scheme, the ARR carries out a number of actions designed to disseminate information on the Scheme and to promote it, including:

− The poster for the School Fruit and Vegetable Scheme.

Poster is a basic element of communication and identification of the Scheme. It can be found in every school participating in the Scheme and is placed in a visible place in the school hallway, informing that the school participates in the European School Fruit and Vegetable Scheme.

− Information and promotion campaigns

During the period covered by the survey, a large number of measures were carried out to promote the Scheme. They were addressed to a wide audience, including media such as radio and television, the Internet (including a dedicated website) and social portals. One of
the media campaigns was carried out in the last year covered by the evaluation, i.e. the school year 2015/2016. The main purpose of the campaign was to draw the attention of the general public to the problem of pupil’s correct diet, in particular to fruit and vegetable consumption, in order to build a positive image of the Scheme and to mobilise the schools which had not joined the Scheme to participate in it. Well-known and popular actors took part in the campaign. Its main component was a song created specifically for this purpose, which encouraged listeners to become interested in the Scheme. This campaign was characterised by a high rate of efficiency in reaching the respondents (e.g. it reached 84% of the target group of the TV campaign). It was appreciated and distinguished as one of the most popular health-promoting campaigns carried out on the Internet (the 4th position on the list of the 10 most popular campaigns). It was also appreciated by the public television (TVP S.A.) and qualified as a social campaign eligible for free of charge broadcasts. It is also important to note that after the campaign had been carried out, in the following school year the number of the schools participating in the Scheme grew by 240 establishments in I semester and by additional 94 establishments in II semester of the school year 2015/2016.  

- Conferences and open-air events
In the period covered by the survey, promotion actions directly addressed to children and parents were also carried out in the form of numerous picnics and open-air events, which were organised locally with the participation of schools and Regional Branches of the ARR. Numerous conferences for teachers and school representatives were also held to promote the Scheme. Initially, they were organised in 16 Voivodships and in the subsequent school year 2015/2016 they were held in the Voivodships with the lowest percentage shares of schools participating in the Scheme. The lessons learned in this scope indicate that in order to ensure a success of a conference, it is crucial to correctly select its topic and a formula which enables an exchange of the best experiences related to the implementation of the Scheme. In case of open-air events, it is crucial to select a suitable date and location (e.g. to promote the Scheme in smaller agglomerations).

- Publications, information brochures and promotion gadgets
The information campaigns carried out in the period covered by the evaluation were supported by appropriate publications (brochures, leaflets) containing basic information on the Scheme and emphasising the benefits arising from the participation in it, as well as small gadgets promoting the Scheme, which were intended mainly for children and parents.
II. Impact of the parameters of the Scheme on its effectiveness, efficiency and relevance

1. Types of schools participating in the Scheme and reasons for participation
In Poland, the Scheme is addressed to primary schools. At the stage of defining the target group, consideration was given to the available Scheme budget and an effective manner of using these resources. In light of the above, it was decided that children going initially to Forms I-III and subsequently to Forms 0-III (aged about 6 to 9 years) would be able to participate in the Scheme in Poland. The Scheme was addressed to children covered by early school education on the basis of the assumption that it was easiest to shape children’s nutritional habits in their youngest possible age. Moreover, consideration was given to the budget constraints and the need to maintain the frequency of the fruit and vegetable distribution, which would ensure the efficiency of the measure, i.e. a change in nutritional habits. Therefore, it was decided that it would be better for a more intensive scheme to address a smaller group of children rather than to let it cover a large group of children, but at the same time with a lower frequency of deliveries. A drawback of the present system, according to which only a part of children going to the primary school can receive fruit and vegetables, is the fact that it leads to the situation when children going to one school are unfavourably segregated. Moreover, there is no doubt that the possibility of a child’s participation in the Scheme, e.g. throughout his/her entire education in the primary school, would improve the effectiveness and efficiency of the Scheme. However, given the available level of financing for the Scheme from the EU budget, to date it has not been possible to expand the target group. Indeed, it should be stressed that this solution should not be taken at the expense of the number of fruit and vegetables received by the child (in Poland children receive as a minimum 2 fruit and vegetable portions a week).

The issues related to the participation of schools in the Scheme and their reasons were analysed in Part I of the report.

2. Participation of the children in the target group
As the report has already described, the Scheme is characterised by a high coverage rate. In the period covered by the survey, the number of schools and children participating in the Scheme grew from year to year. This was also an effect of the changes introduced in the education system and the expansion of the target group to include the children in Forms 0 in primary schools. At the end of the period covered by the survey, i.e. in the school year 2015/2016, more than 1.476 million children, i.e. 91% of the target group, participated in the Scheme. Such a large interest in the Scheme and the continuously growing number of its participants demonstrate that the Scheme is an attractive tool for schools which supports the shaping of healthy nutritional habits and thereby contributes to the implementation of health-promoting policy in schools.
3. Frequency of distribution and the number of portions provided per child
In Poland, in the period covered by the evaluation, children received fruit and vegetables at least twice a week for about 10 weeks in each term (20 weeks, 40 portions as a minimum). The ultimate number of portions received by children (as a rule, twice or three times a week) depends on the number of children participating in the Scheme in a given term. The issues related to the distribution frequency and its impact on the efficiency of the Scheme were analysed in Part I of the report as one of the key factors affecting the efficiency of the Scheme.

4. Products delivered
The diversity and high quality of delivered products are of key importance for the success of the Scheme, as they directly affect the reception of the Scheme by children and also its assessment e.g. by parents. In the period covered by the evaluation, the diversity of products delivered essentially improved. The characteristics of products delivered were described in Section I of Part II of the report.

5. Cost of the products and of their distribution, cost of portion and cost per child
In Poland, the aid for delivered fruit and vegetable portions is awarded in the form of a flat rate for a delivered portion of fruit and vegetables, the value of which is set every year by the MARD. The level of the rate is directly related to the catalogue of products which a child is to receive in the school year and their costs, as estimated by the National Food and Nutrition Institute. The ultimate level of the rate results from the price levels and the types and quantities of products distributed to children in a given year; therefore, its value is variable and it is set every year. At the end of the period covered by the evaluation, i.e. in the school year 2015/2016, a fixed aid rate was set at a level of PLN 1.32 (i.e. EUR 0.31). Taking into account the fact that a child received a total of 43 fruit and vegetable portions in a year (22 portions in term I and 21 portions in term II), the total cost of the portions distributed per child in a given year was PLN 56.76. The lessons learned to date indicate that the rate levels set for the particular school years were adequate. At the same time, it should be emphasised that the introduction of the system of settling accounts based on a fixed aid rate per portion has a positive effect on simplifying and improving the process of awarding the aid, as well as ensuring the transparency and clarity of the rules governing the granting of the aid. Transparent and simple rules in this scope certainly contribute to inducing suppliers’ interest in the participation in the Scheme.

6. Parental financial contribution
In Poland, fruit and vegetable are distributed to children free of charge, without parental financial contribution. Such a solution prevents the situation when children from economically disadvantaged families would find it more difficult to join the Scheme. The free of charge distribution of fruit and vegetables prevents the exclusion and segregation of
children in light of their socio-economic situation, providing them instead with equal opportunities for participating in the Scheme.

7. Public or private co-financing
The required national co-financing (initially it was 25% and it is 12% since the school year 2014/2015) is totally covered by the state budget. The introduction of changes in this scope, e.g. those that would impose on schools the obligation to find sponsors for the Scheme, as is the case in certain Member States, would have a very negative impact on the implementation of the Scheme, since it would pose a very probable risk that schools may completely withdraw from the Scheme. Ensuring the required co-financing for the Scheme from the state budget seems to be the optimum solution which enables the implementation of the Scheme on such a large scale.

8. Work burden and financial burden for the school
The rules of the Scheme implemented in Poland have been designed following the principle of the maximum benefits for the school and the minimum burden for the school. This means that, when primary schools apply to join the Scheme, they take certain commitments and responsibilities upon themselves; however, to a large extent, the burden related to the participation in the Scheme, especially in the scope of settlements, has been shifted onto suppliers. The overwhelming majority of schools use the services of suppliers, since it causes much lesser burdens. The main obligation of the schools participating in the Scheme is to keep ongoing delivery records and to carry out educational activities related to the Scheme. School is a natural environment for the implementation of a variety of educational initiatives and activities; therefore, it seems that the obligations related to its participation in the Scheme should be integrated into the life of a school in a natural manner and it should not be an excessive burden. At the same time, the burdens for schools have been reduced, since the Scheme is free of charge. This means that the school is not obliged to mobilise financial resources from parents, which limits the possible related burdens.

9. Socio-economic environment of the school
In Poland, no special conditions which would result from the diversification of the socio-economic environment of schools have been introduced for the Scheme. Primary schools, both in urban and rural areas, attended by children originating from different communities and diversified economic background, participate in the Scheme on an equal footing.

10. Information for parents and children
Intensive communication actions for the purposes of information and promotion are carried out as part of the implementation of the Scheme. The scope of the actions carried out to date was described in the present study (Section II in Part II). These actions are expected to provide information on the Scheme to different groups of the addressees of the Scheme (in particular parents) and also encourage schools to participate in it. It seems that these actions bring the sought effect, given the scale of the Scheme, the growing interest in it and
its recognisability. At the same time, it should be pointed out that school is an important source of information on the Scheme for both parents and children. In order for a child to be able to participate in the Scheme, its parent must be informed of the Scheme by the school and consent to the child’s participation in it.

11. Cost and time required for the evaluation

The evaluation of the Scheme, including the effect of the Scheme on children’s nutritional habits, was carried out on commission from the ARR, under a contract, by the National Food and Nutrition Institute in Warsaw, an independent scientific research from the public health sector. The survey was successively carried out in the 5-year period covered by the evaluation and completed with the preparation of the final report. Detailed information on the methodology of the survey and its course was given in Part I of the report. Payments were made for the activities carried out by the Institute in a given period of its operations, in accordance with the contract, specifying the cost and scope of activities implemented in the particular school years. The costs of the activities carried out in the successive years were as follows:

- the school year 2011/2012: PLN 213,500
- the school year 2012/2013: PLN 522,000
- the school year 2013/2014: PLN 451,000
- the school year 2014/2015: PLN 490,000
- the school year 2015/2016: PLN 490,000
- the school year 2016/2017: PLN 310,000

The total cost of the activities carried out in relation to the evaluation survey performed by the National Food and Nutrition Institute in the period covered by the evaluation together with the preparation of the final report amounted to: PLN 2,476,500. In accordance with the EC guidelines of 16.01.2013, the report prepared by the National Food and Nutrition Institute was complemented with an administrative evaluation (Part II). The adopted system is appropriate for the subject matter of the survey and meets the EC guidelines in this respect. It ensures the robust and professional implementation of the evaluation process and, in consequence, provides constructive and objective observations and conclusions as to the further direction of development, without constituting an excessive administrative or financial burden for the Scheme.
III. Lessons learned and suggestions for modification

In conclusion, it should be stated that the School Fruit and Vegetable Scheme established in Poland is an efficiently functioning scheme, which corresponds with the local circumstances and effectively – i.e. using appropriately selected means and within the available financial capabilities – achieves its preset objectives. The Scheme is a very good tool at the disposal of schools and parents, which they can effectively use in the process of shaping children’s correct nutritional habits. However, the ultimate effect of the Scheme and the extent of its efficiency to a large extent depend on the understanding and involvement in its implementation by schools, teachers and children’s parents.

Based on the lessons learned so far in the implementation of the School Fruit and Vegetable Scheme and with a view to ensuring the further development and enhanced effectiveness of this form of action in the new formula of the Scheme for schools, it seems that desirable directions of change at the national level include:

- Enhancing the efficiency of the Scheme through its intensification, i.e. increasing the frequency of the distribution of products, extending the duration of the Scheme in the school year and expanding the target group, so that a child can participate in the Scheme for a period longer than 4 years (as is the case now). The purpose of these modifications would be to ensure that the Scheme exerts a more efficient impact on the shaping of children’s nutritional habits, since in the present formula of the Scheme its effectiveness in this respect is limited. The implementation of the abovementioned modifications would involve the need to mobilise increased financial resources for the implementation of the Scheme than those available now. Ultimately, it is necessary to select the most efficient form of action within the available financial limits.

- Strengthening the educational activities, which constitute a very important and integral component of the Scheme. It is not sufficient to support and develop the component consisting in product deliveries only, since in order to ensure that the Scheme can operate efficiently, the distribution of products should be accompanied by well-thought-out and appropriately conducted educational activities. There is no doubt that the desirable direction of change would be to ensure that these activities can be supported by making it possible to allocate financial resources for this purpose from the budget of the Scheme and using them in an effective manner, guided by an analysis of the situation and the needs notified by schools. This would make it possible to strengthen the activities carried out so far by schools. It can be achieved by improving the activities’ quality and attractiveness, which to a large extent depend on teachers’ preparation and involvement. The need to strengthen educational activities was also indicated by the National Food and Nutrition Institute as one of the major conclusions drawn from its evaluation of the efficiency of the Scheme. An analysis of
the issues related to the implementation of accompanying measures and the conclusions and recommendations in this scope can also be found in Part I of the report.

- Strengthening of the identification of the Scheme as an educational programme within which children are expected to learn to independently take good nutritional choices and rebuild the awareness of the origin of the products consumed. It is also necessary to build and disseminate a positive image of the Scheme in schools, among parents and the general public.

- The lessons learned to date also indicate that, although the Scheme is funded from the resources of the Common Agricultural Policy, its correct and efficient organisation requires close cooperation with the Ministries of Health and Education. This cooperation should be strengthened at all the levels in different aspects of the implementation of the Scheme; in particular, in the context of the preparation of educational activities and the adoption of the key assumptions of the Scheme, as well as their subsequent implementation.