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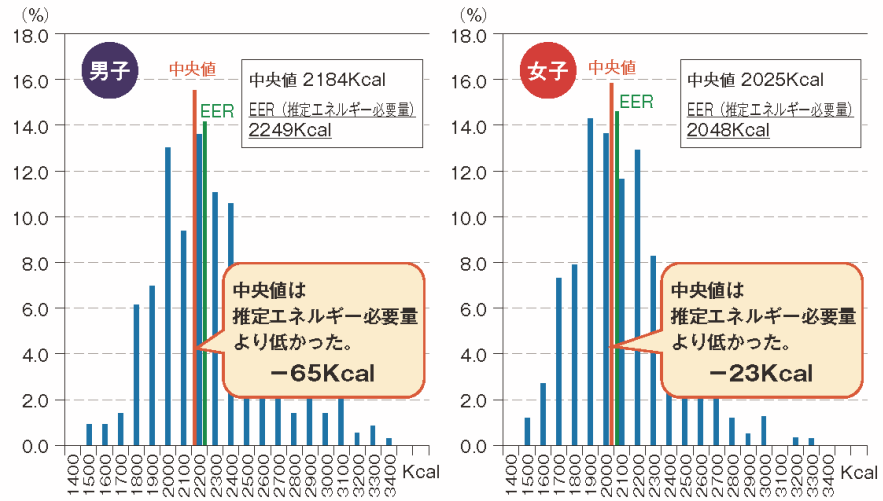
シリーズ 65 「健康教育をささえる」～栄養教諭・学校栄養職員の現場から～ ～子どもの食の実態を知る！小学校における食生活実態調査の結果を通して～ 福岡県大野城市立大野北小学校　栄養教諭　柗尾 真由美 (福岡県筑紫地区学校給食研究会　栄養教諭、学校栄養職員部会)	**Series 65** **“Supporting health education”—From the sites of practice of Diet** and Nutrition Teachers and School Nutritionists Find out the actual situation of our children’s eating habits! Outcomes of the dietary habits survey in elementary schools Mayumi Matsuo, diet and nutrition teacher, Onojo City, Ono-kita Elementary School, Fukuoka Prefecture (diet and nutrition teacher, School Lunch Study Group, Chikushi District, Fukuoka Prefecture/ Working Group for Diet and Nutrition Teacher)
１．研究の概要 　私たちが在籍する筑紫地区は福岡市に隣接し、年々人口が増加している４市１町(筑紫野市、大野城市、太宰府市、那珂川町)で構成されている。本調査研究は、筑紫地区の栄養教諭・学校栄養職員(42 名)において、子どもたちの生涯の健康のために、エビデンスに基づいた栄養管理と効果的な食に関する指導を探ることを目的としている。昭和 54 年度より 5 年ごとに行い、今回で 8 回目を迎えた。 　研究の目的と調査概要は次のとおりである。 【研究の目的】 １　児童の食生活の実態やその課題を把握する。 ２　学校給食摂取基準の運用、及び学校給食標準食品構成表の作成に活用する。	**1. Study overview** The Chikushi district to which we are affiliated is close to Fukuoka City, and is composed of four cities and one town (the cities of Chikushino, Onojo, and Dazaifu and the town of Nakagawa), with a population which is increasing year-on-year. This survey and study aims to explore instruction related to evidence-based nutrition management and effective diets for the lifelong health of children by diet and nutrition teachers and school nutritionists in the Chikushi district (42 persons). It has been carried out every five years since 1979, with the current survey representing the eighth iteration. 　The study aims and an overview of the survey are given below. **Study aims** 1. Facilitate an understanding of the actual circumstances and challenges related to the dietary habits of schoolchildren 2. Manage school lunch consumption standard and deploy it in drafting

３　食の行動変容に向けた効果的な食に関する指導の方法を探る。	of standard tables of food composition in school lunch 3. Explore instructional methods which are effective in modulating dietary behavior
【調査概要】 対象校：栄養教諭等在籍の小学校 28 校／ 48 校 対象者：小学校 5 年生及び保護者 707 名／ 4367 名 (男子 362 名、女子 345 名　合計 707 名)	**Survey overview** Target schools: Elementary schools with affiliated diet and nutrition teachers, etc. 28/48 schools Subjects: Fifth year elementary school students and guardians 707/4367 persons (362 males/345 females; total 707 persons)
※同意を得られた世帯から無作為で抽出し回答を得た。 調査内容は、「食事状況調査」「1 日の食事調べ」「食生活アンケート調査」の 3 つからなる。	*Responses obtained from a random sampling of households which consented to take part. The survey was comprised of the three components of “Meal Status Survey,” “Investigation of one day’s meals,” and “Dietary Habits Questionnaire.”
２．調査の仮説 食生活アンケート作成や調査後の解析にむけて次のような仮説を設定した。	**2. Hypotheses for survey** Following hypotheses were established towards the drafting of the dietary habits survey questionnaire, the post-survey analysis, and so on.
《仮説 1》児童の一日のエネルギー、各栄養素の摂取量から、学校給食の給与量の過不足が把握できるであろう。	[Hypothesis 1] It is assumed that it will be possible to gain an understanding of excesses and deficiencies in school lunch portions from the intake levels of energy and respective nutrients for one day of a schoolchild.
《仮説 2》 家族そろって食事をするなど、共食が、エネルギー、各栄養素や食品群の摂取量及び体の不調等と関連しているであろう。	[Hypothesis 2] It is assumed that the eating style, such as eating together with one’s family, is related to intake levels of energy, respective nutrients, and food groups and physical ailments.

《仮説 3》野菜は大好きなど、野菜の好き嫌いが、各栄養素や食品群の摂取量及び体の不調等と関連しているであろう。	[Hypothesis 3] It is assumed that likes and dislikes with regard to vegetables, such as being a good eater of vegetables, is related to intake levels of respective nutrients and food groups and physical ailments.
《仮説 4》 学校給食を全部食べるなど、学校給食がエネルギー、各栄養素や食品群の摂取量及び体の不調等と関連しているであろう。	[Hypothesis 4] It is assumed that school lunch intake, such as finishing school lunch, are related to intake levels of energy, respective nutrients and food groups and physical ailments.
《仮説 5》 朝食に主食、主菜、副菜をそろえて食べるなど、朝食の内容がエネルギー、各栄養素や食品群の摂取量及び体の不調等と関連しているであろう。	[Hypothesis 5] It is assumed that the content of breakfast, such as consumption of complete breakfasts consisting of staple foods, main dishes and side dishes, is related to intake levels of energy, respective nutrients and food groups and physical ailments.
３．調査内容と結果 今回の調査では、エネルギー、たんぱく質、n-3 系脂肪酸、葉酸など 14 種類の栄養素と、16 種類の食品群の習慣的な摂取量を求めた。	**3. Survey content and outcomes** In the current survey we looked at the habitual intake levels of 14 types of nutrients such as energy, protein, n-3 fatty acids and folic acid, and habitual intake amount of 16 types of food group.
(１)エネルギー摂取量と穀類摂取量との関係について	(1) Relationship between energy intake and intake of grains
エネルギー摂取量(図 1)について、男子は、身長の中央値から算出した推定エネルギー必要量が 2249 ㎉、中央値 2184 ㎉で、推定エネルギー必要量と中央値との差は、65 ㎉。女子は、推定エネルギー必要量が 2048 ㎉、中央値 2025 ㎉で、推定エネルギー必要量と中央値との差は、23 ㎉。男女いずれも低い値を示した。ただし、たんぱく質摂取量については、推奨量の 50 ｇを超える男子が 99%、女子が 98%。脂質摂取	For energy intake (Figure 1) the Estimated Energy Requirement (EER) for boys calculated by median height was 2249kcal with a median value of 2184kcal for a difference of 65kcal in the EER and median value. For girls, the EER was 2048kcal with a median value of 2025kcal for a difference of 23kcal in the EER and median value. Low values were indicated for both boys and girls. However, 99% of boys and 98% of girls exceeded the recommended amount of protein intake of 50g. For intake of fats, both boys and girls significantly exceeded the

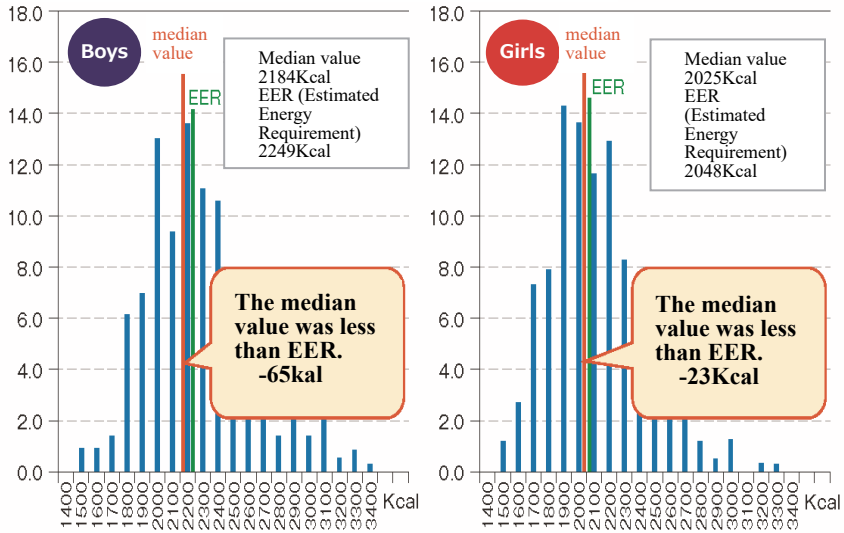
量については、男女ともに、エネルギー摂取量の 20%～ 30%の目標量を大きく上回っていた。

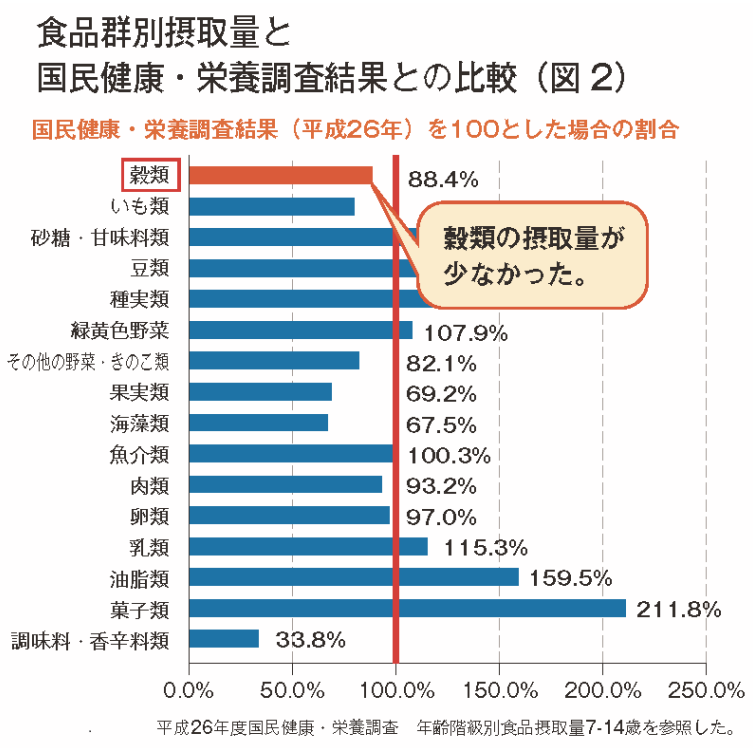
エネルギー摂取量分布グラフ（図 1）



target levels of energy intake, by between 20–30%.

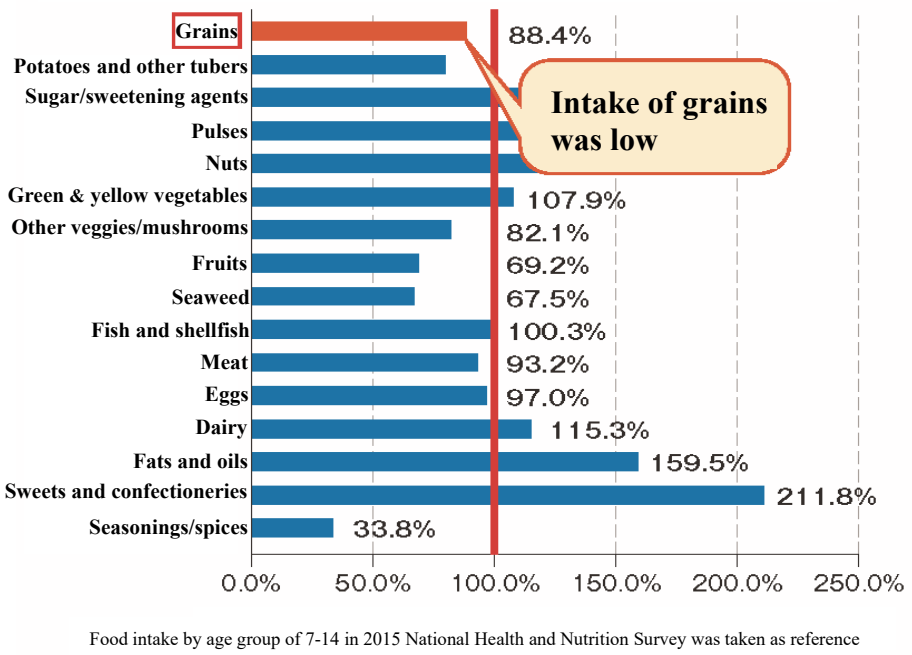
Energy intake distribution graph (Figure 1)





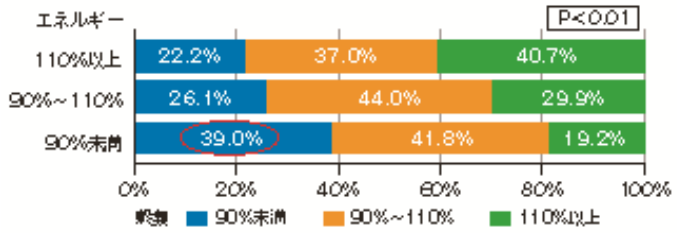
食品群別摂取量と国民健康栄養調査との比較(図 2)では、平成 26 年度国民健康栄養調査の結果を 100 として比較すると、穀類が 88.4%で、全国平均より低い値となった。さらに、エネルギー摂取量と穀類摂取量の関係(図 3)では、エネルギー摂取量が 90% 未満の区分で穀類摂取が 90%未満の児童の割合が多い結果となり、穀類の摂取量がエネルギー摂取量(エネルギー産生栄養素バランス)と関係していると考えられる。

Comparison between intake by food group and National Health and Nutrition Survey outcomes (Figure 2)



In the comparison with the intake levels by food group and the National Health and Nutrition Survey (Figure 2), this was a lower value than the national average at 88.4% of grains when the result of the FY 2014 Japan National Health/Nutritional Survey is taken as 100. Further, in the relationship between energy intake and intake of grains (Figure 3), the rate of the group of grain intake less than 90% was considerably

エネルギー摂取量と穀類摂取量の関係（図 3）

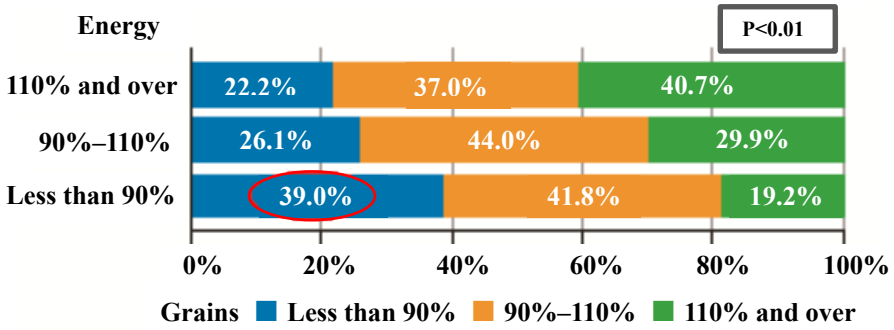


４．クロス集計と分析

全項目において、クロス集計と分析を行った。関連した項目から、「何もやる気がおこらないと感じますか」という問いと n- ３系脂肪酸摂取量の関係(図 4)では、n-3 系脂肪酸摂取量が 90%未満の区分では、何もやる気がおこらないことをいつも(週 6 ～ 7)感じている児童の割合が、多い結果となった。その他に、「何もやる気がおこらない」と感じる頻度は「給食の好き嫌い」や「毎日朝食を食べること」「野菜の好き嫌い」「食事づくりなどの手伝い」と関連していた。また、「家族そろって食べる回数」が多い児童は、魚介類、n-3 系脂肪酸の摂取量が多い傾向であった。

high in the group of energy intake less than 90 %, which indicates that the amount of grain intake affects energy intake levels (energy-providing nutrients balance.)

Relationship between energy intake and intake of grains (Figure 3)



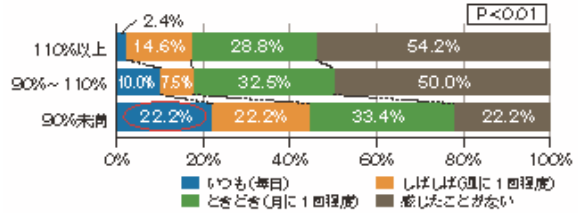
4. Cross-tabulation and analysis

A cross-tabulation and analysis was conducted for all items. In the relationship between the question “Are there times when you feel no motivation?” and intake level of n-3 fatty acids (Figure 4), the rate of schoolchildren who said that they felt a lack of motivation (6-7 times per week) was remarkably high in the group of n-3 fatty acids intake less than 90%. In addition, the frequency with which they answered that they felt a “Complete lack of motivation” was related to “Likes and dislikes with regards to school lunch,” “Eating breakfast every day,” “Likes and dislikes with regards to vegetables,” and “Helping with meal preparation,” and so on. Also, children who had a high “Frequency of eating together with one’s family”, tended to have a

「その他の野菜摂取量」と「朝食を家族そろって食べている回数」の関係(図 5)では、その他の野菜摂取量が 90%未満の区分では、朝食を家族そろって食べる頻度が低いという結果となり、朝食における共食の頻度と野菜の摂取量に関連があることがわかった。

さらに、「朝食を家族そろって食べている回数」と関連した項目は、(図 6)のように、穀類、種実類、n-3 系脂肪酸、食物繊維など多数あり、不足しがちな栄養素や食品群の摂取量と関連を示し、共食が食事内容と関係していると考えられる。

n-３系脂肪酸摂取量の関係と
「何もやる気がおこらない（児童回答)」(図 4)

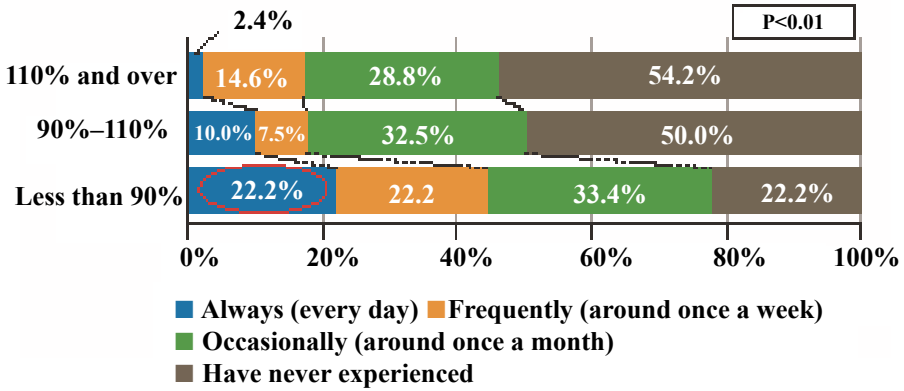


higher intake of fish and shellfish and n-3 fatty acids.

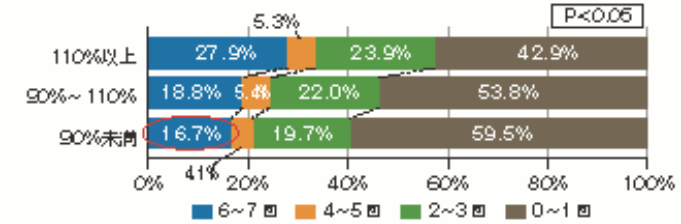
In the relationship between “Intake of other vegetables” and “Frequency of eating together with one’s family” (Figure 5), in those classified as having less than 90% of intake of other vegetables, there was a low indication of frequency of eating breakfast together as a family, and from this it is understood that there is a relationship between the frequency of eating together and the intake of vegetables.

Furthermore, a significant number of items such as grains, nuts, n-3 fatty acids, dietary fiber, etc., relating to “Frequency of eating breakfast together with one’s family,” are seen in (Figure 6). From this, it can be thought that the intake amount of these nutrients and food groups which have a tendency to be lacking is related to eating together, which affects the meal menu composition.

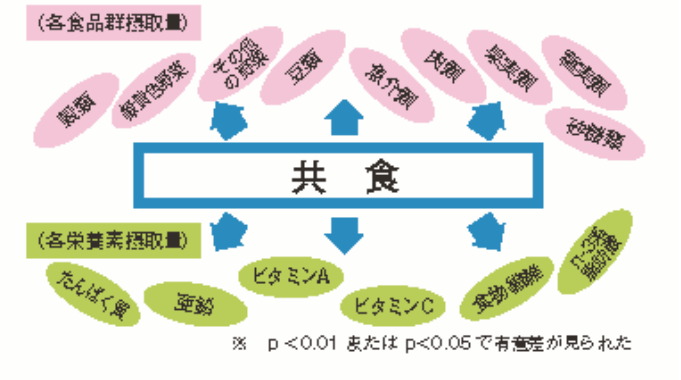
Relationship between “Complete lack of motivation (indicated by schoolchildren)” and n-3 fatty acid intake (Figure 4)



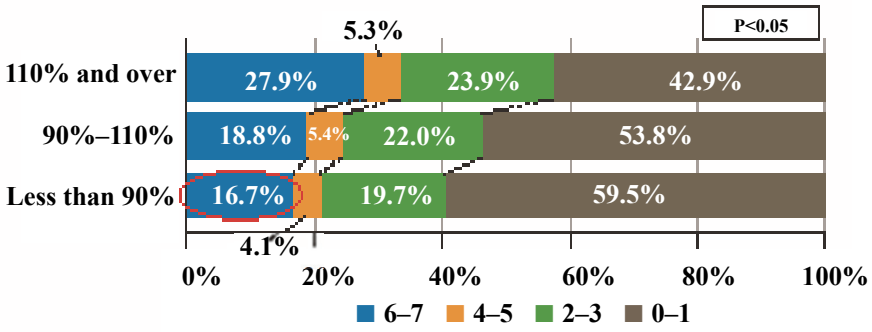
「その他の野菜摂取量」と「朝食を家族そろって食べている回数」(図 5)



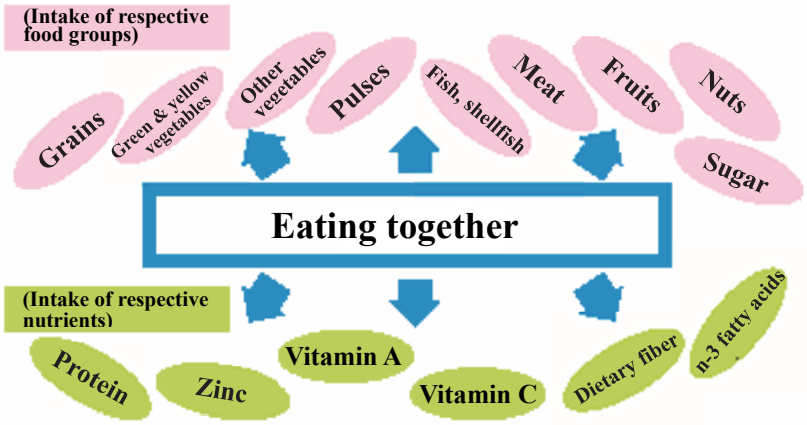
「朝食を家族そろって食べている回数」と関連した項目（図 6）



Relationship between “Intake amounts of other vegetables” and “Frequency of eating breakfast together as a family” (Figure 5)



Items relating to “Frequency of eating breakfast together as a family” (Figure 6)



*Significant differences where observed at p<0.01 or p<0.05

５．調査結果を活かした取り組み

今回の調査結果をうけて、学校給食の内容の見直しや、家庭への啓発を行っている。

その一つが、主食の量が不足している児童が多いと考えられる結果への対応である。今年度、学校給食の主食量の見直しを行った。その結果、昨年度と今年度の同月(6 月)で比較すると、炭水化物エネルギー比は 55.6%から 57.8%となった。

また、家庭への啓発として、調査結果から課題と考える共食や食事づくりなどの項目を、リーフレット(図 7)にまとめ、配付した。

このリーフレットを読んだ保護者の感想として、「子どもと一緒に食事作りをしたい」と回答した保護者が 47%で一番多く、98%の保護者が、今後の食生活に活かしたい内容があると答えた。

現在、この調査結果を踏まえ筑紫地区の学校給食標準食品構成表の作成及び、朝食内容の改善など子どもたちの行動変容へむけて、具体的な指導の検討を行っている。

今後も筑紫地区の子どもたちが生涯を健康に生きていくために、学校給食が果たす役割を検証するとともに、望ましい食生活へと導く方策を究明していきたいと考える。

(集計、分析に使用したソフトウエア)

食事状況調査は「エクセル栄養君 Ver.7.0」「食物摂取頻度調査 Ver.4.0」(建帛社)のソフトを用いた。統計処理は、統計解析アドインソフト「エクセル統計 2015 版」を用いて解析を行った。

5. Initiatives using survey results

We are conducting reviews of the composition of school lunches and enlightenment activities for households taking into account the outcomes of the current survey.

One of these involves dealing with those results where there are indications that many schoolchildren consume deficient quantities of given staple foods. We conducted a review of the amounts of staples in school lunches this fiscal year. As a result, the current carbohydrate energy ratio was increased to 57.8% from 55.6% in the same month a year ago (June).

As enlightenment activities for households, we also compiled and distributed a leaflet (Figure 7) of the items such as eating together, meal preparation, etc., which are challenges derived from the survey result.

Feedback from guardians who read this leaflet which indicated that they “Wish to prepare meals with my child” was highest at 47% and 98% of guardians answered that these materials had content which they wished to apply to their ongoing dietary habits.

At present, we are studying specific instruction towards modulating the dietary behaviors of children, such as drafting a standard table of food composition in school lunch for the Chikushi district based on the survey outcomes, and improving the content of breakfast.

We hope to continue to seek measures for desirable dietary habits while verifying the role of school meal, in order that children of the Chikushi district maintain lifelong health.

(Software used in count and analysis)

The Meal Status Survey used the software “Excel Eiyo-kun Ver. 7.0” and “Food Frequency Questionnaire Based on Food Groups Ver. 4.0” (Kenpakusha). Statistical processing was conducted using add-in software for statistical analysis “BellCurve for Excel 2015 version”.

保護者への啓発リーフレット(図 7)	Leaflet used in guardian outreach (Figure 7)
参考文献	Bibliography
平成 22 年度児童生徒の食事状況等調査報告書　(日本スポーツ振興センター)	“FY 2010 Survey of Dietary Status of Schoolchildren Report.” Japan Sport Council.
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2015 年版日本人の食事摂取基準	“Dietary Reference Intakes for Japanese (2015).”
平成 23 年度県民健康作り調査　食品番号表　(厚生労働省)	“FY 2011 Prefectural Residents Health Improvement Survey.” Ministry of Health, Labor and Welfare.
調理のためのベーシックデータ第４版　(女子栄養大学出版部)	“4th Edition, Basic Data for Food Preparation.” Kagawa Nutrition University Publishing Division.
簡単！食品カロリー早わかり BOOK　(吉田美香　主婦の友社)	Mika Yoshida. *Kantan! Shokuhin karorii Hayawakari Book* [*It’s Easy! The book of quick and easy calorie counting*]. Shufunotomo Co., Ltd.
食品解説つき　新ビジュアル食品成分表増強版　新しい食生活を考える会　(大修館書店)	Association for Considering New Eating Habits. “New Visual Food Composition Table with Food Explanations.” Taishukan Publishing.

[End]