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DGE-Quality Standard for Meals in Daycare Centres

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DGE-Quality Standard for Meals in Daycare Centres

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Message from the Federal Ministry of Food and Agriculture

Dear readers,

setting the table, saying the grace and finally, it's time to eat: shared meals play an essential role in the daycare centre routine. Many parents recognise the phenomenon: at home, children are picky, but at daycare, they seem to be happy and patient eaters. Perhaps breakfast, lunch or snacks with their peers bring more fun and motivation.

More than 3.7 million children attend a daycare centre in Germany every day; most have at least 1 meal there. Regarding eating and drinking in the first years of life, daycare centres – alongside homes – are crucial places that shape tastes and preferences. This shows how important your work is.

The food offered in daycare centres also shapes later eating habits. That's why children should get to know the vast and colourful range of food right from the start. From an early age, we can teach children to appreciate and value food in a way that conserves resources – with the help of nutrition education.

The "German Federal Government's Food and Nutrition Strategy" aims to ensure good food for everyone in Germany. We want to improve the general conditions to promote healthy and sustainable nutrition. Catering in daycare centres is an important starting point impacting a significant number of children.

As persons responsible for daycare catering, you are challenged every day to creatively implement the knowledge of nutritional sciences. The German Nutrition Society (DGE) updated the "DGE-Quality Standard for Meals in Daycare Centres" to ensure that the offer is healthy and sustainable. In this update, sustainability aspects were specified, for example, further options for reducing food waste or increasing the proportion of sustainably produced food. It is also vital that minimum social standards are observed in food production.

The DGE-Quality Standard is an important basis for catering in daycare centres. In 2008 and 2009, networking centres were set up in the federal states to support those responsible for daycare catering. Since 2016, the "National Quality Centre for Nutrition in Daycare Centres and Schools" (NQZ) has coordinated the cooperation of all stakeholders committed to good daycare and school meals. We aim to ensure that the DGE-Quality Standard is implemented nationwide. All children in Germany deserve good food, food that is healthy, sustainable, and delicious. Join us so that all children – regardless of their social and economic background – can grow up as well as possible.

Kind regards

Federal Ministry of Food and Agriculture

Preface

Dear readers,
eating and drinking are an integral part of everyday life in daycare centres. In Germany, around 580 million lunches are offered there every year. This number increases significantly if you include breakfast and snacks. Knowing that the early years shape later eating habits, the offered food should be nutritionally balanced and sustainable. At the same time, it needs to suit the children's tastes. This requires various competencies.

More than ten years ago, the German Nutrition Society (DGE) and numerous experts from academia and practice developed the "DGE-Quality Standard for Meals in Daycare Centres" on behalf of the Federal Ministry of Food and Agriculture. Since then, it has been regularly updated and revised. The "DGE-Quality Standard for Catering in Daycare Centres" provides a holistic view of the catering situation in facilities and offers all those responsible a framework for the optimal design of catering services in daycare centres.

Health-promoting food that meets the children's needs is an important prerequisite for their development. Children should learn how to deal consciously with food and protect the environment at an early age.

Nutrition contributes to one-third of global greenhouse gas emissions. This fact was already considered in the last comprehensive revision of the DGE-Quality Standard in 2020, and relevant sustainability aspects were incorporated; these have been expanded and updated in this edition.

The structure of the DGE-Quality Standard established in 2020 has remained the same, so those responsible for catering can continue to use it in a process-oriented manner – from planning to serving and disposing of food. The updated edition, therefore, also focuses on practical implementation, making it easy to create healthy and sustainable catering.

The "DGE-Quality Standard for Catering in Daycare Centres" supports you in designing an offer for children that promotes health and contributes to sustainably conserving the earth's resources. Make a health-promoting and sustainable diet a flagship of your daycare centre or company. We support you. More information is available at www.fitkid-aktion.de. For individual questions, please get in touch with the team of "FIT KID – Die Gesund-Essen-Aktion für Kitas", who will gladly offer advice and assistance.

Sincerely yours,

Dr. Kiran Virmani
Managing Director of the German Nutrition Society

1

Background, Goal and Design

1.1 Daycare meals: An opportunity for more health and sustainability

Children's development depends largely on what they eat and drink. The offered food should be balanced, tasty and varied – not only at home, but especially at *daycare centres*. However, everyday eating at *daycare centres* is not always that simple. Many stakeholders are involved in the design and preparation of meals. Different wishes, demands and opinions come together and need to be reconciled. At the same time, there are certain general conditions and structures that set limits. Sponsors and *daycare centres* face the challenge of providing quality food that promotes a healthy and sustainable lifestyle for children and at the same time, take the limits of our planet into account.

It is unquestionable that nutrition has a decisive impact on health, performance, and quality of life. Especially for the physical and mental development of children, it is important to provide a sufficient amount of energy and nutrients through a wholesome diet. However, what is the situation in Germany regarding the consumption of food supplying sufficient energy and nutrients?

In the German Health Interview and Examination Survey for Children and Adolescents (KIGGS) conducted by the Robert Koch-Institute (RKI), the daily consumption of selected food, such as sweet beverages, sweets, vegetables, and fruit, was surveyed. The findings indicate a decrease in the consumption of sweet beverages in recent years and an increase in water consumption. The consumption of sweets declined among individuals aged 3 to 17, too. These positive developments should be further encouraged [1]. However, if we look at the consumption of fruit and vegetables, which are the main representatives of a *plant-based* diet alongside cereals, we see the following picture: only 16 % of children in the 3- to 6-year-old age group meet the recommendation of eating 5 portions of fruit and vegetables daily [2]. The 2016 study on "Catering in nurseries" (VeKiTa) showed that meat is offered too often and vegetables too rarely in *daycare centres*. At the same time, the study made it clear that the implementation of the DGE-Quality Standard has a positive effect. It provides an orientation to secure a health-promoting catering offer and creates trust among parents.

One way to reconcile health promotion and sustainability is to offer predominantly *plant-based* meals. *Daycare centres* are suitable places to introduce children to such offers. With its recommendations, the DGE-Quality Standard focuses precisely on these 2 elements and supports *daycare centres* in designing a health-promoting and sustainable catering offer. Daycare meals have expanded well beyond the traditional breakfast box.

In Germany, about 3.7 million children between the ages of 0 and 6 attend 1 of around 59,000 childcare facilities. The majority of them spend more than 7 hours a day there [4]. Approximately 2.9 million children benefit from the lunch offered at the childcare facility every day [5]. As a result, in the first years of life, not only does the family represent the central living environment for children, but *daycare centre*s are increasingly taking over tasks outside the family. Parents and *daycare centres* therefore need to work together to facilitate a **healthy and sustainable lifestyle** and to promote relevant daily life skills.

The above points clearly show that *daycare centres* are the **central place** to offer health-promoting and sustainable meals together with all stakeholders (e. g. *daycare centre* director, *meal providers*, *educational staff*, parents) and can thus contribute to prevention and health promotion. For this reason, shared meals and catering should always be part of the overall *educational concept* of *daycare centres*.

This is also confirmed by the Scientific Advisory Board on Agricultural Policy, Nutrition and Consumer Health Protection (WBAE) in its 2020 nutrition report. According to the council, daycare and school meals are an integral element of public service for the whole society and an important investment in the future [6]. In the statement "Nutritional poverty under pandemic conditions", published in 2023, the WBAE once again emphasizes the importance of daycare catering by describing it as a "safety net" for the health-promoting nutrition of children from households at risk of poverty [7]. The German Advisory Council on Global Change also emphasizes the significance of state and public institutions. Among other things, it attributes a pioneering role to daycare meals, as they are particularly promising due to their educational effect. The Council calls adequate attention for this topic [8].

Focusing attention on this area and accepting the corresponding challenge requires utilizing the **possibilities and opportunities** of the daycare setting to positively influence children's future eating habits.

Whether children develop competent and sustainable eating habits, even into adulthood, depends, among other factors, on the *food environment* during their early years.

A food environment in general is *a* place where eating decisions are made. Eating decisions are very complex, sometimes unconscious and go beyond the mere consumption of food [9]. Every *food environment* influences nutritional behaviour. This is because what and how children ultimately eat and drink depends, among other things, on what they see and perceive, what is accessible or offered to them and how they can make their choices. A *food environment* should, therefore, always be designed to be "fair".

A fair food environment is a *food environment* tailored to the needs of children, enables healthy and sustainable choices and is also easily accessible and available to children.

The implementation of the DGE-Quality Standard is key to creating a fair food environment by giving children access to healthier and more sustainable food offers. For example, offering more vegetable and fewer animal-based food can change and shape children's perceptions (exposition). The supposedly unpopular vegetables are perceived as "normal" ("new", social norm) in the long term.

In this way, *daycare centres* can set the course for the development of eating habits that often has a positive effect for many years to come. This forms the basis for health promotion and equal opportunities and has a broad "behavioural impact" [6].

Therefore, high-quality daycare meals offer great potential in terms of health promotion and more sustainability because of the following aspects among others:

- **Wide reach**: A large number of potential meal participants are reached through catering, and many children may benefit from it.
- **Healthy development for everyone**: A health-promoting and sustainable diet promotes physical and mental development of children.
- **A place for everyone**: Eating and drinking together connects children from all parts of our society. This promotes social interaction, enables participation as well as emotional and social development of children.
- **Central place for prevention**: Children are able to experience a variety of tastes through health-promoting and sustainable meals in an appealing dining atmosphere. In addition, the *daycare centre* accompanies children in the first years of life and thereby can shape their eating habits throughout their lives and form a basis to take a responsible approach to their health.
- **More sustainability**: Health-promoting and sustainable daycare meals offer a wide range of opportunities for more sustainability in planning, purchasing, consumption, disposal and cleaning. In this way, "health" and "sustainability" go hand in hand. Children are able to experience and learn on a daily basis.

1.2 Who is the DGE-Quality Standard addressed to?

Providing health-promoting and sustainable daycare meals on a daily basis is a joint and complex task in which stakeholders from different areas are involved, as shown in Figure 6 (see chapter 5.1). First of all, there are the administrative bodies of the *daycare centres* and sponsors, as well as the *daycare centre* director and/or a *daycare centre* committee. Other relevant stakeholders are all those who plan, produce and/or offer catering services in *daycare centres*. These can be the kitchen management and -team, *housekeeping staff* and *meal providers*. In addition, there are parents and *educational staff*.

This DGE-Quality Standard addresses everyone who is in charge for daycare meals in their respective areas. In the following, these persons are referred to as **responsible persons for daycare meals**.

It is important that responsible persons for daycare meals work through the contents and criteria of the DGE-Quality Standard in a practice-oriented way for the different sections and also consider the general conditions on site. Numerous additional information and implementation tools are available on the website www.fitkid-aktion.de.

1.3 What is the goal of the DGE-Quality Standard?

The DGE-Quality Standard supports responsible persons for daycare meals in designing a health-promoting and sustainable meal offer in *daycare centres* in at least 1 menu line. This means that children may choose from a range of appropriate breakfast, snack and lunch options.

Based on current scientific data, the DGE-Quality Standard describes the **criteria** for optimal, health-promoting and sustainable daycare meals. Each *daycare centre* may implement this Quality Standard step by step at its own pace. Every quality improvement of daycare meals results in optimized, health-promoting and sustainable diets for children. The majority of the criteria relates to the catering design (see chapter 4). Criteria are presented along the process chain with the 5 steps of **planning, purchasing, preparation, serving** as well as **disposal and cleaning**. These process steps offer the potential to significantly influence the nutritional quality of food and beverages as well as to set the course for a more sustainable diet.

However, good daycare meals are more than just offering health-promoting and sustainable dishes. Therefore, the DGE-Quality Standard also focuses on stakeholders and general conditions that influence the quality and acceptance of meals as well as the enjoyment and pleasure of eating and drinking. These general conditions include, for example, staff qualifications, management of interfaces, environment in which eating and drinking take place, as well as communication around the offered meals (see chapters 2 and 5).

Figure 1 shows the process chain and the general conditions that are considered in daycare catering and therefore addressed in the DGE-Quality Standard. The process chain plays a central role as a "pivotal point" for a health-promoting and more sustainable offer. Usually, this is preceded by the tender and award procedure (however, this is not always mandatory) and, ideally, also by the development of a *catering concept*. This forms the basis for all process steps in daycare catering. It must be clear to all stakeholders what role daycare meals should play in the *daycare centre* concept.

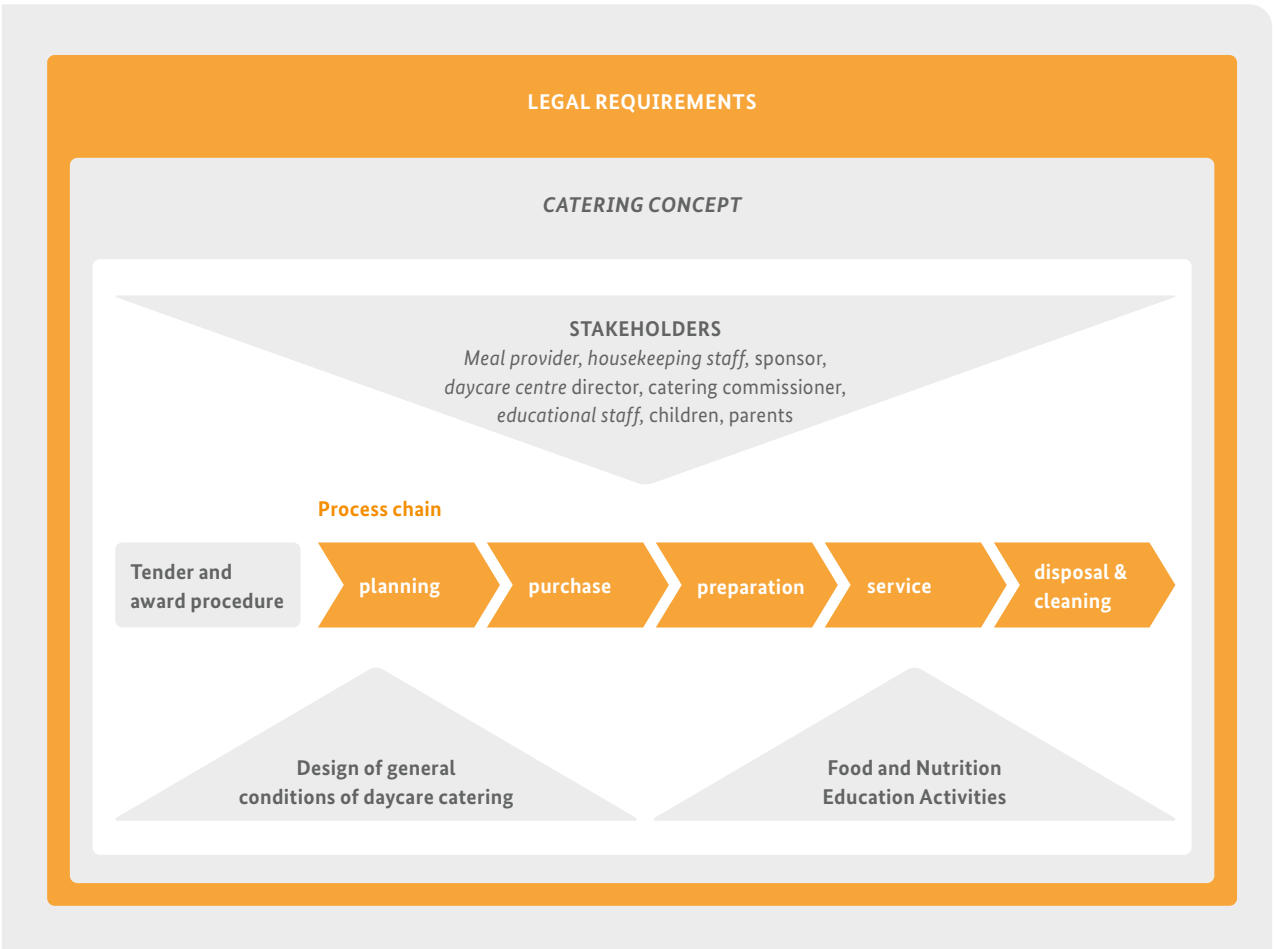


Figure 1: Aspects of health-promoting and sustainable daycare meals

1.4 How is the DGE-Quality Standard structured?

The DGE-Quality Standard includes 6 chapters with criteria and background information. Responsible persons for daycare meals find answers to the following questions:

› How does the DGE-Quality Standard support responsible persons for daycare meals on their efforts to improve the catering quality?
The role of the DGE-Quality Standard as an instrument of quality development and aspects that contribute significantly to more quality in daycare meals are explained in
↳ **chapter 2**.

› Which are the basic principles of the criteria for "designing health-promoting and sustainable meals"?
When talking about nutrition or catering, health and sustainability must be considered together. Underlying reasons and how the criteria described in chapter 4 are developed are discussed in
↳ **chapter 3**.

› How should a health-promoting and sustainable catering offer be designed?
Criteria for the catering design are described according to the process chain in
↳ **chapter 4**.

› What additional aspects need to be addressed?
Good daycare meals exceed the offer of health-promoting and sustainable food and beverages. Stakeholders and general conditions influencing catering quality are described in
↳ **chapter 5**.

› What is legally required?
Anyone who produces and serves meals must observe legal regulations. An overview of the laws and legal requirements that apply to mass catering can be found in
↳ **chapter 6**.

1.5 What to keep in mind when reading?

› **Criteria** describing an optimal catering situation are listed and explained in text boxes with this symbol. The **checklist** starting on page <?> provides a criteria summary.

› Background information and advice on **sustainability** are marked with this symbol.

› This symbol additionally indicates **interesting facts**.

› This symbol highlights topics for which **further information** is available on the website www.fitkid-aktion.de in the category DGE-Quality Standard.

› **Italic words or terms** are technical terms that are defined in more detail in the **glossary**.

2

Developing quality catering for daycare centres

This chapter explains what is defined as catering quality in the DGE-Quality Standard. It shows how those responsible may continuously develop the catering quality and thus improve their daycare meals. In addition, aspects that contribute and support this process are described. For all kitchens, caterers, and *daycare centres* that already realise the DGE-Quality Standard, it is also recommended to take a regular look at the current daycare meals in order to identify possible deficiencies and initiate improvement strategies.

2.1 Quality of daycare meals

Daycare meals according to the DGE-Quality Standard promote the health of children and are sustainable. All Children should be able to participate in daycare meals and their needs and wishes should be considered.

Thus, the criteria of the DGE-Quality Standard describe an ideal catering situation. *Daycare centres* may use them as orientation and benchmark for improving their catering service. Importantly, the persons responsible for catering should set priorities for criteria to be implemented first at their *daycare centre*.

DGE-Quality Standard
as part of the daycare's individual *catering concept*
The development of a *catering concept* is an important first step. Each *daycare centre* should develop its own concept. It defines daycare-specific demands on the catering, describes the meals offered and served and reflects the structures on site. As part of such a *catering concept*, the DGE-Quality Standard defines the criteria for a health-promoting and sustainable diet and thus ensures that an appropriate offer is available for every meal. The question "Who is served where, when and how?" is therefore answered.

DGE-Quality Standard –
a quality development instrument
Through quality development, the menu might become the *daycare centre*'s flagship. The responsible persons for catering should initiate a joint development process towards health-promoting and sustainable daycare catering. **With the help of the criteria defined in the DGE-Quality Standard, all stakeholders are able to improve the quality of daycare meals gradually together.**

Catering affects all stakeholders in *daycare centres* – employees of the *meal provider*, sponsor, *daycare centre* director, quality manager, *educational staff* and parents. Therefore, it is recommended to invite all stakeholders to an exchange. For example, a working group in form of a "round table" or a *catering committee* that meets on a regular basis might be established. This way, everyone has the opportunity to participate, to learn about the different points of view, and wishes, suggestions and creativity can be expressed. A common future-oriented *catering concept* that enables a healthy and sustainable diet may be developed and implemented together.

The collaborative, process-oriented quality development involves 5 steps that enable a continuous development towards health-promoting and sustainable meals. These are shown in Figure 2. The DGE-Quality Standard supports each of these steps.

ANALYSIS

In this step, the current catering situation – the **actual situation** – is examined. The catering, beginning with the presentation in the menu and ending with the dining atmosphere at the *daycare centre*, as well as individual steps from planning to disposal and cleaning, are examined thoroughly. The checklist starting on page 78 helps to verify which criteria are already met by the daycare's catering offer and which are not.

Based on the analysis and description of the current catering situation, all stakeholders have the opportunity to discover which points are already implemented and what should and might be changed in the future. It is important that all stakeholders (see chapter 5.1) assess the situation and reflect on the conditions and structures prevalent at the *daycare centre*.

Checklist criteria starting on page <?> that have not been implemented in the daycare catering so far may serve as targets for further quality development. It is recommended to prioritise and select those that could be implemented first. This way, it is possible to implement targets and the DGE-Quality Standard gradually. The partial implementation of a criteria is also an important positive progress. For instance: if the objective is to offer a meat dish at lunch at maximum only **once a week**, while currently it is offered **daily**, resp. 5 times a week, initially reducing meat to **3 times a week** counts as an important quality improvement.

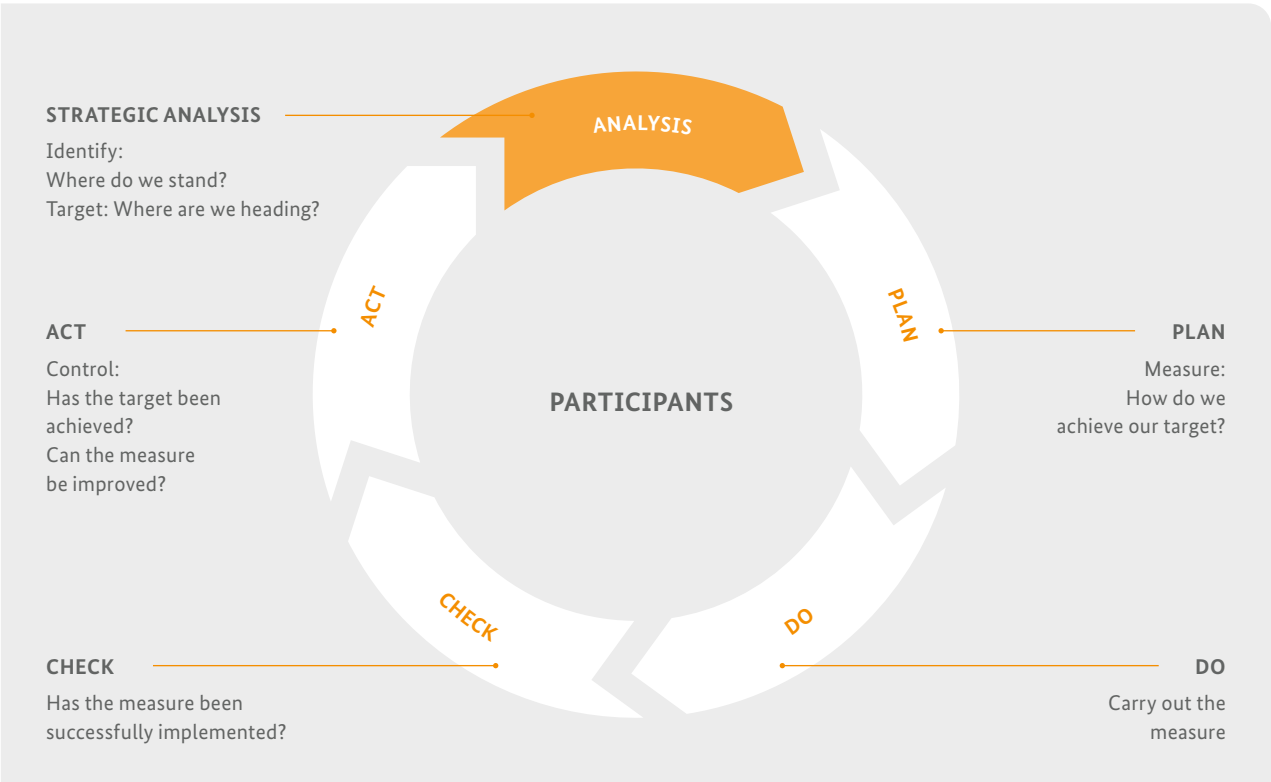


Figure 2: The 5 steps of collaborative, process-oriented quality development (PDCA-model, modified according to (10))

PLAN
Once the targets are defined, specific measures to achieve them might be planned together. **Which** measures should be prioritised, **who** should implement them and **when**, and **with whom** should she/he work together? Therefore, it is helpful to prepare a plan describing the measures as precisely as possible. For example, measures may include changes in the food offer and the preparation of dishes, or the remodelling of the dining area at the *daycare centre*. Beforehand, all those involved should be thoroughly informed about the planned steps and the targets they are pursuing.

DO
Afterwards, the planned measures can be implemented. At the beginning of the new work process, structures, recipes or products are often unfamiliar for those involved. Therefore, the measures should be guided, and a contact person should be appointed for queries.

CHECK
Once the measures have been implemented, they are systematically reviewed and evaluated with the stakeholders. Could the measures be implemented as planned?

ACT
Has the chosen target been achieved? Are there possible improvements for the future implementation of the measures? Should other measures and targets be adapted?

These experiences form the basis for a joint strategic analysis of the entire catering situation. The collaborative, process-oriented quality development is thereby repeated. Hence, it is possible to implement targets step by step and to continuously improve meals in agreement with all stakeholders.

The following criteria apply:

- ☐ **A *catering concept* is in place.**
  The *catering concept* defines the daycare-specific requirements for catering, considering the structures on site. In addition, it contains statements on the organisation, break periods and regarding food and drinks brought from home. The participation of children – e.g., designing the menu, or communication with parents are also included.

- ☐ **Parents receive information regarding the *catering concept*.**
  Parents should know from the beginning how the meals are organised in the *daycare centre*. The admission interview is a good opportunity to provide all relevant information (preferably in written form).

- ☐ **All stakeholders are involved.**
  To ensure the participation and involvement of all stakeholders, a working group in the form of a “round table” or a *catering committee* which meets at regular intervals might be established. Ongoing communication helps to clarify questions and problems, but also to develop a *catering concept*. This increases acceptance and appreciation and ensures the continuous development of the catering service.

2.2 Interface management

Health-promoting and sustainable daycare meals are a joint task in which several professions and groups of people participate (see chapter 5.1). Interfaces are points at which one person or group of people completes their work process and passes the outcome to another. To ensure that the joint goal is achieved, it is advisable to:

- describe individual activities and work processes as precisely as possible (what, how, when, with what goal),
- define competences and responsibilities as well as rules for substitutes for the work processes (who),
- identify and regulate interfaces in work processes (who is responsible, who participates, to whom is information passed on).

Proper interface management improves the workflow, promotes communication and cooperation and ultimately saves time.

Examples of interfaces in daycare catering:

- **Sponsor – *daycare centre* director**
  The sponsor decides on the catering design in the facilities. This involves the catering system, developing a comprehensive *catering concept* for all *daycare centres*, and deciding on its integration into the *educational concept*. It may contribute significantly to the implementation of a health-promoting and sustainable offer by supporting the material and personnel framework that enables the practical implementation of catering according to the DGE-Quality Standard. At the same time, the sponsor controls the tender and award procedure of the catering service. It is optimal if the sponsor establishes a *catering committee* that is involved in the processes from the beginning. The sponsor passes on all regulations on the topic of catering to the *daycare centre* director.

- ***Daycare centre* director – *educational staff*:**
  The *daycare centre* director is responsible to ensure that the regulations of the sponsor are implemented by the *educational staff*. In addition to constructive support, the *daycare centre* director also plays a special part as a role model for staff, parents and ultimately for the children. At the same time, the *daycare centre* director may define further responsibilities. It guarantees the communication between the *educational staff*, the kitchen team/*meal provider* and the parents.

- ***Educational staff – meal provider*:**
  Within their sphere of influence, the *educational staff* is responsible for the actual eating as well as the teaching of skills and abilities related to eating and drinking. Often, *the educational staff* is also responsible for serving the meals. Within the framework of educational activities related to eating and drinking, they are in contact with the kitchen team or the *meal provider* to enable the best possible coordination of catering and educational offers. In addition, the kitchen team and the *meal provider*s are informed about food returns. Understanding the reasons behind food returns is crucial for the kitchen to improve

calculations and minimize food waste. This exchange and mutual motivation are essential aspects for a successful and sustainable food waste reduction [11,12].

Each *daycare centre* should have a catering commissioner for internal quality assurance. This person is not only the contact person for all stakeholders, but also mediates the interfaces. This challenging task demands knowledge about the requirements and wishes for catering and the dining environment. In addition, these requirements and wishes must be coordinated in the interest of all and in consideration of the general conditions in the respective *daycare centre*. This task is often performed free of charge, as an honorary position, by *daycare centre* staff or parents.

For instance, the following persons or groups of people may be considered as catering commissioners:

- a person responsible for catering, like a representative of the sponsor or the kitchen management,
- an external consultant with appropriate professional qualifications in the field of nutritional science, dietetics, home economics or catering,
- an employee of the *meal provider* as well as
- *educational staff*, who has the necessary basic knowledge due to professional requirements or further training. To enable this person to focus on the meals, he/she should be partially released from his/her other duties.

The following criterion applies:

☐ **A catering commissioner exists.**
This may be the sponsor or an appointed person. The catering commissioner should be aware of all requirements and wishes regarding nutrition and the corresponding conditions, combine them with the prevailing conditions at the *daycare centre* and coordinate them in the interest of all.

2.3 Staff qualification

In order to provide health-promoting and sustainable meals, employees with different professional qualifications, each with their own input, are required. The DGE-Quality Standard focuses on the management of the catering sector as well as on the kitchen and serving staff. The job profiles differ depending on the field of responsibility:

Catering management
The catering management requires a specific professional qualification. This includes professions and qualifications like:

- (operations) manager of home economics,
- home economist,
- chef,
- cook,
- nutritionist or dietician, if necessary, with additional business qualification as well as
- food service business economist.

Preparation and serving of meals
Staff skills and knowledge help to ensure consistent catering quality. Kitchen and service staff should therefore preferably have adequate vocational training. However, kitchen and service staff may also be employed without such qualifications, as long as they are instructed by qualified staff. In the *daycare centre*, the *educational staff* is often the serving staff at the same time. This certainly makes sense because eating and drinking are closely connected to the educational tasks (see chapter 5). Therefore, they should also have the appropriate expertise or qualifications.

The communication of the *educational staff* during serving and distribution of food contributes significantly to the acceptance of the meals by the children. They should provide information about the meals offered and their composition, name individual components and motivate the children to choose a healthy and sustainable option. A friendly manner, age-appropriate communication and educational skills are therefore crucial.

Further education and professional advanced training promote the staffs' competence, update the knowledge and give confidence in the daily work. The catering manager should regularly attend training courses in the areas of nutrition and sustainability in order to put new insights into practice. Topics that are suitable for all catering staff are, e.g.:

- basics of a health-promoting and sustainable diet,
- regeneration of "Cook & Chill" or "Cook & Freeze" dishes/components,
- basic knowledge of ways to avoid food waste,
- preparation of creative vegetarian/vegan recipes,
- ways to implement and increase the percentage of organically grown food in mass catering as well as organic certification,
- allergen management and labelling,
- feedback management,
- communication and handling children during mealtime,
- development of eating habits as well as
- design of an age-appropriate menu.

Further information:
www.fitkid-aktion.de
Keyword: Fortbildungsangebote

Mass catering staff carries a high responsibility regarding food hygiene. Regular instruction, e.g., on the Infection Protection Act, is obligatory for all employees who work with food (see chapter 6).

The following criteria apply:

- ☐ **Catering staff receive continuous training.**
  Staff skills and knowledge help to ensure consistent catering quality.
- ☐ **Ergonomic workplaces and workflows are in place.**
  This includes, for example, back-friendly working heights, heat and noise protection as well as variety in tasks. Ergonomic workplaces and work processes maintain health, performance and satisfaction of employees.
- ☐ **Employees are valued.**
  Appreciation promotes satisfaction and motivation. Valuing employees is expressed through fair payment, open and objective communication and constructive interaction with each other.

2.4 Feedback management

Dealing professionally with praise and criticism – feedback management – contributes to the evaluation of measures and to set targets in a joint quality development. It is important that praise and recognition as well as wishes, complaints and suggestions may be voiced by all stakeholders. Nevertheless, in mass catering it is certainly not possible to satisfy every wish of children, parents and staff. Therefore, it is even more important to listen to all stakeholders and to discuss wishes and possibilities in a constructive way, as well as to develop realistic solutions. This increases mutual understanding and the willingness to reach a consensus. Feedback management means also a continuous process that includes the following steps:

Step 1:
Receive praise and criticism
Expressing praise and criticism requires a certain linguistic competence. Especially with younger children, the development of language is not yet so advanced that they can differentiate between what they liked and what they did not like. A “yuck” may refer to the whole meal, to individual components, certain food or even just ways of preparing it. Another reason for not liking something is that the best friend doesn’t eat it. That is why it is important to observe children closely when they eat and drink. Sometimes it is only small expressions, such as “I want more”, that allow a conclusion about the food on offer. The children’s satisfaction may also be actively asked for. For example, neutral, happy and sad smileys might be used to support the survey.

The children’s opinions are important. Parents’ feedback on the catering offer is also part of participatory quality development. Feedback management starts when spontaneous feedback (e.g. “on the fly”) on the meals is expressed. This should always be seen as an opportunity to improve the offer. Feedback should also be actively asked for at regular intervals. It is important to have the opportunity both to report appreciation and praise as well as to criticise and give suggestions for improvement in order to optimise processes. Often no negative feedback is equated with praise. Thereby, an opportunity to motivate staff and stakeholders

is missed. Appreciation and praise may mean a lot, lack of praise can be frustrating. Possible ways are the personal dialogue, which can take place at the "round table", as well as written or digital feedback, for example by using evaluation forms and/or post boxes for parents. In addition to praise and criticism, the reasons behind them and specific suggestions for improvement should also be asked for.

Step 2:
Document and evaluate feedback
All feedback should be systematically documented and evaluated. If necessary, interventions for improvement are planned together with those involved. Praise is passed on to the addressed catering staff members.

Step 3:
Implement interventions and inform about them
The interventions in response to the feedback and the achieved results should be made visible to all. Parents and children are happy to be involved in the process, and employees are proud of their efforts and feel that their work is valued.

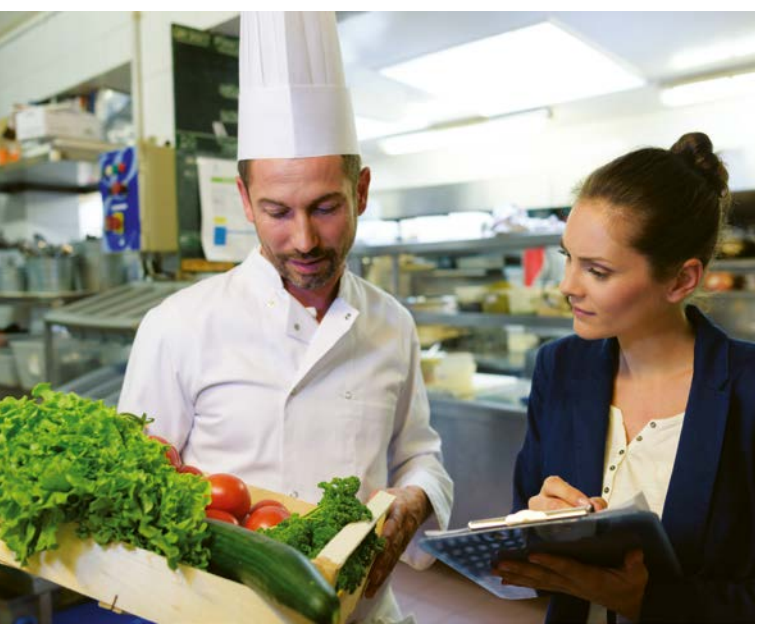
The following criterion for feedback management applies:

☐ **Feedback on the menu is regularly obtained, evaluated and measures are derived.**
The children should be given the opportunity to express wishes and criticism about the food. This feedback provides helpful suggestions on the meal design as far as possible in line with the requirements and thus ensure that the food is well accepted. This can be done, for example, through a joint talk at the table or with the help of an illustrated feedback sheet.

2.5 External quality control

Whether the offered meals meet the set goals may be verified in an independent quality control. Usually, this is carried out by an external institution on the basis of different audit systems and audit criteria. In this way, the responsible persons for catering ensure the quality of the offer and are able to demonstrate the performance publicly with an external seal of approval.

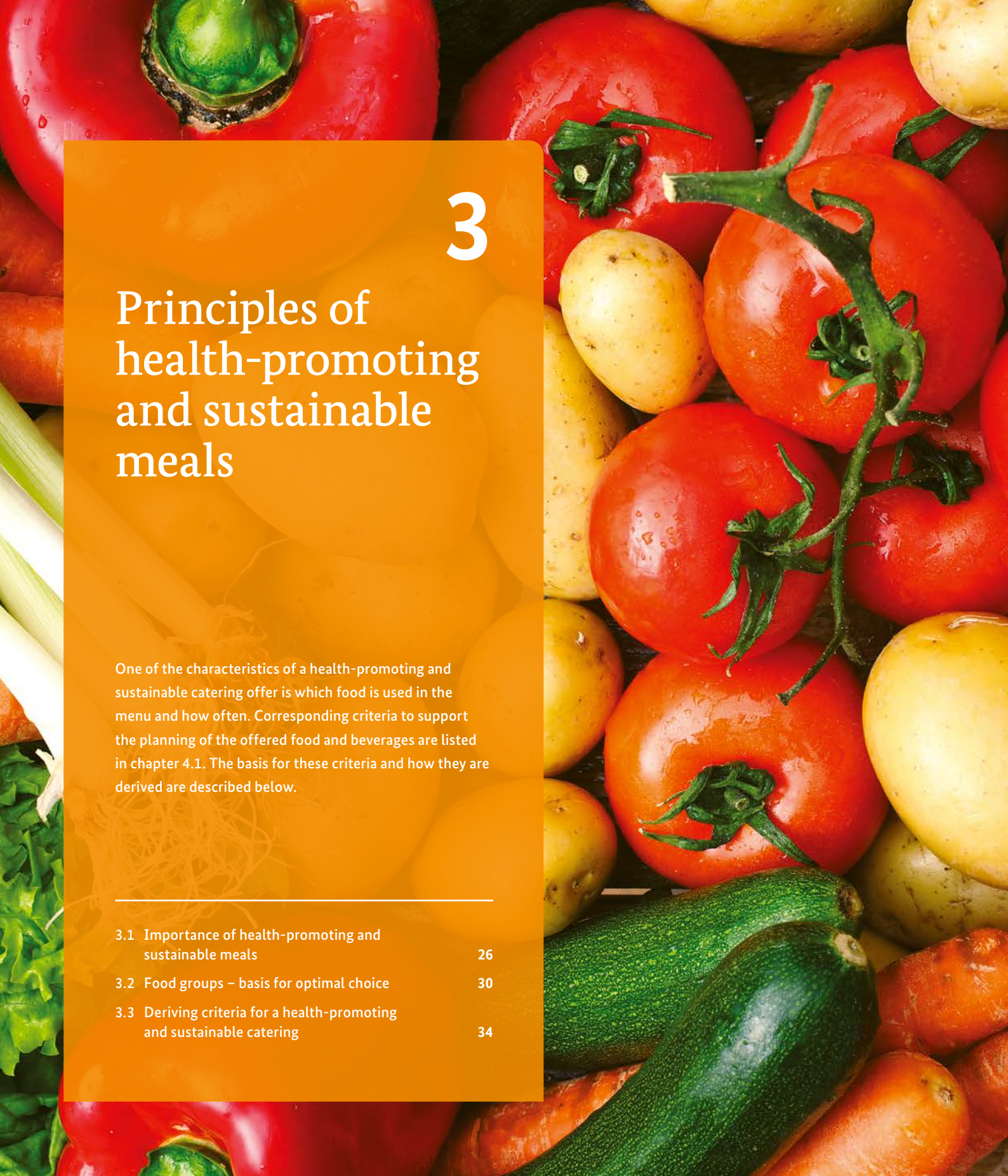
Further information:
www.fitkid-aktion.de
Keyword: Externe Qualitätsüberprüfung



2.6 Specification for tenders

When a daycare's catering is not organised and prepared by the *daycare centre* itself or by its own staff, but is outsourced, a specification for tenders must be established within the context of public tenders. This serves as the basis for the tender process and defines the type and scope of the catering service. For the compilation of a specification for tenders, the DGE-Quality Standard may serve as a reference. The more detailed the requirements like preparation methods, serving system or the use of qualified staff, the easier it is to compare different offers. It is not recommended to demand the implementation of the DGE-Quality Standard in general, but to describe in detail which of the individual criteria have to be fulfilled. The specification for tenders is fundamental for the contract between the contracting authority (e.g., sponsor) and the contractor (e.g., *meal provider*). It is recommended to write a specification for tenders supported by external professionals who might also assist in the tender process.

Further information:
www.fitkid-aktion.de
Keywords: Ausschreibung und Vergabe
and Beratung und Coaching



3

Principles of health-promoting and sustainable meals

One of the characteristics of a health-promoting and sustainable catering offer is which food is used in the menu and how often. Corresponding criteria to support the planning of the offered food and beverages are listed in chapter 4.1. The basis for these criteria and how they are derived are described below.

3.1 Importance of health-promoting and sustainable meals

We affect our health, quality of life, and well-being through what we eat and drink. A wholesome diet according to the recommendations of the German Nutrition Society (DGE) provides an adequate amount of energy and sufficient fluids. This diet ensures a balanced supply of the energy-supplying nutrients fat, carbohydrates, and protein. Nutrients like vitamins, minerals, dietary fibre and phyto-chemicals are also contained in sufficient quantities. A wholesome diet also makes a decisive contribution to the prevention of diet-related diseases such as *obesity*, type 2 diabetes and cardiovascular disease. The wholesome diet is diverse and highlights the consumption of vegetable food [13–15].

However, eating and drinking is more than just the intake of energy and nutrients. How we eat affects not only our own well-being, but also the well-being of present and future generations. The so-called Brundtland Report already characterised "sustainability" in 1987 as a development "that meets the needs of the present without compromising the ability of future generations to meet their own needs" [16], p. 43. In 2015, the United Nations adopted the UN 2030 Agenda, with 17 Sustainable Development Goals (SDGs).

The EAT-Lancet Commission Report [17], published in 2019, uses a global reference diet (Planetary Health Diet) to show the supply for a future world population of 10 billion people in 2050 while respecting planetary boundaries. This could prevent around 11 million cases of early death worldwide each year due to malnutrition. In a strict sense, the Planetary Health Diet is not a nutritional recommendation; it merely provides a framework for orientation. It is, therefore, necessary to realize country-specific adaptions of the food choices and quantities, as well as the locally available resources [17, 18]. The food-based dietary guidelines for Germany are issued by the DGE. In this DGE-Quality Standard, these are transferred to mass catering (see chapters 3.3 and 4) and are largely consistent with the statements of the Planetary Health Diet [19]

Further information:
www.fitkid-aktion.de
Keyword: Planetary Health Diet

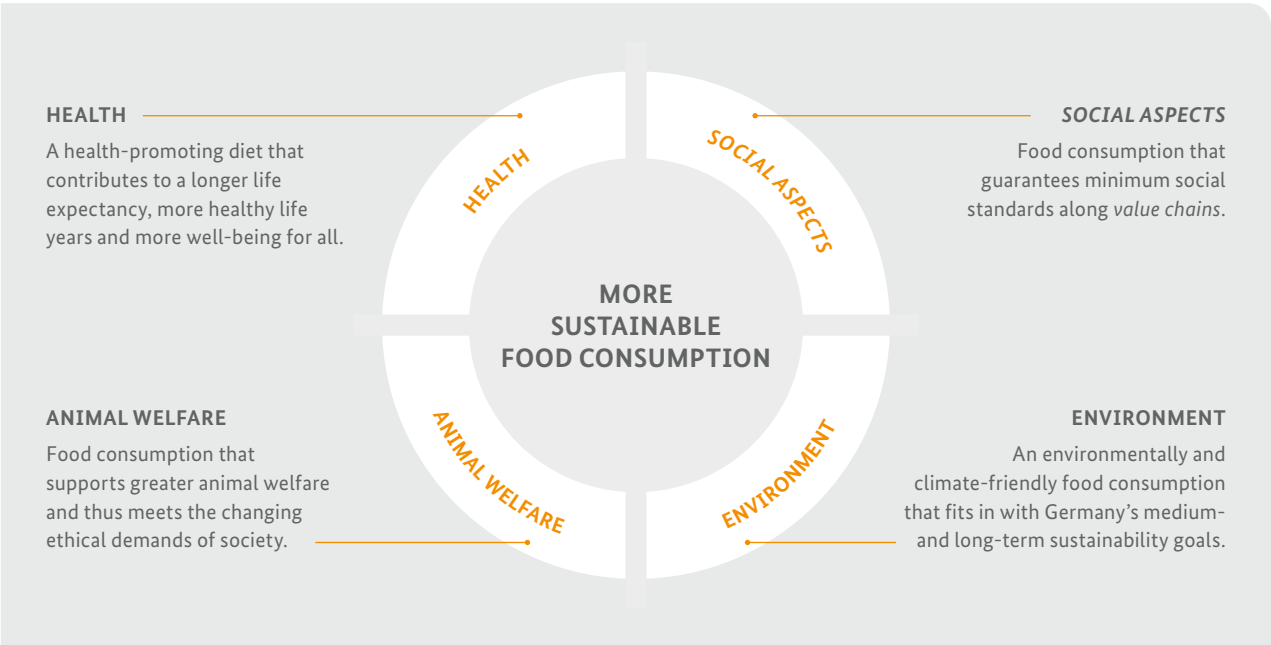


Figure 3: Goal dimensions of a more sustainable food consumption [6]

Based on different definitions of sustainable nutrition [20-23] the Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection (WBAE) [6] has formulated 4 central goal dimensions – health, environment, *social aspects*, animal welfare – for a more sustainable diet, which are explained in Figure 3. The DGE aligns its activities with these 4 goal dimensions, as set out in the "DGE position statement on a more sustainable diet" [24]. Accordingly, this DGE-Quality Standard follows these principles.

Many foods we consume cause a significant "footprint" in terms of environment, climate, *social aspects* and animal welfare [6]. Increasingly, our food is produced in complex and global **value chains**. The food value chain covers the input factors for agriculture, the agricultural production, up to processing, trade, and consumption. Aspects of sustainability, like environmental impact, can be tracked along these chains (see Figure 4). Therefore, the **entire life cycle of a product** must be considered in the evaluation of food.

The carbon footprint is one indicator of the environmental impact of food. It quantifies the amount of greenhouse gas emissions generated along the food value chain. It therefore represents its climate impact. In view of the limited availability of certain resources and the loss of biodiversity, other ecological footprints of food production, such as water, land, or biodiversity footprints, are also increasingly being considered [24, 25].

One-third of the worldwide *greenhouse gas emissions* are caused by the food system [27]. Food production generates emissions of greenhouse gases like carbon dioxide (CO_2), methane (CH_4) or nitrous oxide (N_2O), e.g., through tractors or harvesting machines, fertiliser for the fields, heated

	manufacturing the means of production, production	processing	trade	consumption, disposal
Health dimension	› reduction of diversity of species and cultivar › pesticide load › inadequate working conditions	› *convenience food* with high salt, sugar, and fat content › elevated levels of additives in ultra-processed products	› advertising for products that are not health-promoting › large number of foods that are not health-promoting › absence of easily identifiable nutrition labels (Nutri-Score)	› absence of *fair food environments* › absence of mandatory Quality Standards for catering in different living environments
Environment/ climate dimension	› usage of non-renewable resources such as phosphate › nitrate leaching › loss of biodiversity › soil degradation › high water consumption	› emissions and usage of resources through transport, processing, storage	› usage of resources through transport, refrigeration, and packaging, › food losses	› food waste › inefficient workflows › resource consumption (energy, water, space)
Social dimension	› low wages › risk of poverty › inadequate labour protection › [+]	› high physical burden › poor workplace ergo-nomics & equipment › insufficient communication & organisational options › [+]	› lack of appreciation of employees › absence of options for further education and training	› absence of *fair food environments* › food poverty › lack of commensality
Animal welfare dimension	› no species-appropriate livestock husbandry › high stocking density › animal diseases › antibiotic resistance	› only processing selected parts of animal carcasses	› price war & cheap meat offers › no adequate compensation for producing animal-based food products › lack of labelling of animal welfare criteria	› lack of labelling of animal welfare criteria › preferences for cheap quantity & low will to pay › absence of appreciation for quality

Figure 4: Examples of potential problem areas across the 4 goal dimensions of more sustainable nutrition and the value chain, modified according to [24]

greenhouses, and animal stables and by the animals themselves, food industry, through cooling or freezing food, its transport and ultimately the preparation of meals. In addition to *greenhouse gas emissions*, intensive agriculture has numerous other impacts on the environment and, as an open system, affects soil, water, animals, and plants. For example, intensive tillage can increase the risk of erosion, lead to soil compactness and may cause the loss of soil fertility in the long term [28]. Intensive animal husbandry partly carries the risk of resistance due to the excessive use of antibiotics [29]. The application of fertilisers and pesticides significantly affects the biodiversity of plants and animals [30], and intensive nitrogen fertilisation is responsible for water contamination with nitrate [31].

Therefore, it is not sufficient to adjust nutrition and catering in *daycare centres* to aspects of health promotion only. Rather, it is essential to design diets and catering options in a way that minimizes the impact on the climate and the environment and consider the other goals of a more sustainable diet, such as animal welfare and *social aspects*.

According to calculations of the project "KEEKS – Climate-friendly School Kitchens", it is possible to save approximately 40 % of greenhouse gas emission in school kitchens [32]. According to the data, about 3/4 of the *greenhouse gas emissions* in school catering are caused by food selection. Around 1/4 of the greenhouse gases are caused by kitchen technology, preparation, and food waste.

The production of animal-based food like meat, eggs, milk, and dairy products (especially those derived from ruminants like cattle, sheep, and goats) causes particularly high *greenhouse gas emissions*. In contrast, the share of vegetable food like grains, vegetables and fruits in *greenhouse gas emissions* is usually much lower. Generally, there are also differences within a food group. For example: Tomatoes from Germany grown in greenhouses heated with fossil fuels in winter cause 10 times higher *greenhouse gas emissions* than seasonally harvested German tomatoes from unheated greenhouses or open field [6, 26].

Overall, in many cases the choice between different food groups makes the biggest impact on the environment, as differences between food groups are usually significantly higher than differences within a food or product group. For example, 1 kg of beef causes on average about 14 kg of *CO_2-equivalents* – whereas the same amount of ready-to-eat lentils causes 1.7 kg of *CO_2-equivalents* [26].

Even the production of nutritionally significant food like milk and dairy products, fish or nuts may have comparably negative impacts on the environment. Nevertheless, this food should be integrated into the diet in accordance with their recommended frequency and quantity due to their health-promoting impact (see Tables 2 and 3).

Table 1 compares the estimated *greenhouse gas emissions* of selected food, expressed in kg of CO_2-equivalent. The data shown provide orientation and may vary if conditions change.

Table 1: Estimated *greenhouse gas emissions* of selected foods [24]

vegetable food		kg *CO_2-equivalent*
grains, grain products and potatoes	1 kg rice	3.1
	1 kg bulgur	0.6
	1 kg pasta	0.7
	1 kg potatoes, fresh	0.2
vegetables and *salad*	1 kg lentils, dry	1.2
	1 kg carrots	0.1
	1 kg lamb's lettuce	0.3
fruits	1 kg pineapple, fresh, average	0.9
	1 kg apples, average	0.3
	1 kg walnuts, with shell	0.9
oils and fats	1 kg margarine, whole fat	2.8
	1 kg rapeseed oil	3.3

animal food resp. alternative vegetable products		kg *CO_2-equivalent*
meat, sausage, fish and egg and vegetable meat alternatives	1 kg beef, average	13.6
	1 kg chicken, average	5.5
	1 kg pork, average	4.6
	1 kg fish, aquaculture	5.1
	1 kg egg	3.0
	1 kg seitan	2.5
	1 kg tofu	1.0
milk and dairy products and vegetable milk alternatives	1 kg cheese, average	5.7
	1 kg yoghurt, plain	1.7
	1 kg whole milk, ESL	1.4
	1 kg milk alternative, oatmilk	0.3
	1 kg milk alternative, soymilk	0.4
oils and fats	1 kg butter	9.0

The data shown and the fact that in Germany annually, around 580 lunches are provided at *daycare centres* [2] illustrate that catering with predominantly vegetable food may make a major contribution to climate protection. Kitchen technology and food waste prevention also play a crucial role. Preparing, cooling and keeping ingredients and food hot may have a significant environmental impact. This is where infrastructure, production planning and staff behaviour are essential [32-35]. Once food is discarded, all invested resources and all steps from farm to fork – and thus the linked *greenhouse gas emissions* –were wasted. In addition, the disposal process itself produces small amounts of greenhouse gases.

The "DGE-Quality Standard for Meals in Daycare Centres" combines aspects of health promotion and sustainability. In chapter 4, this DGE-Quality Standard specifies minimum frequencies for food and food groups that are particularly recommendable from a health promotion and sustainable perspective. These include vegetable products as vegetables including *legumes* and *salad* as well as wholemeal products and fruits. Additionally, a maximum frequency is specified for food and food groups like meat, as well as ultra-processed and deep-fried products. There is scientific evidence that limiting these products is beneficial in terms of nutritional physiology and sustainability [36]. Regarding food qualities, the DGE-Quality Standard refers, as an example, to fish from sustainable fisheries or aquaculture and to meat that complies with certain animal welfare criteria (see chapter 4.2).

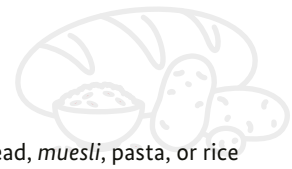
Furthermore, chapter 4 describes criteria for the design of a health-promoting and sustainable diet along the process chain – from planning to disposal. In this context, the reduction of avoidable food waste plays an important role.

Further information:
www.fitkid-aktion.de
Keyword: Nachhaltigkeit

3.2 Food groups – basis for optimal choice

The food-based dietary guidelines of the DGE for a wholesome diet – as presented in the "DGE Nutrition Circle", the "Three-Dimensional DGE Food Pyramid" and the "10 Guidelines of the DGE for a wholesome diet" – are based on the *"Reference values for nutrient intake"* and the DGE's evidence-based guidelines regarding fat and carbohydrate intake [13, 44, 37-39]. Recommendations for children are based on these as well, and also serve as basis for health-promoting and sustainable mass catering. The **food quality** – as **optimal choice** from each of the 7 food groups of the DGE Nutrition Circle shown in Tables 2 and 3 – combines the recommendations from the models mentioned above. Thus, there is food that should be consumed in different quantities and frequencies due to their nutritional composition, e.g., their *energy and nutrient density*, dietary fibre content and fat quality. For each food group, additional background information and aspects of sustainability are listed below, along with practical advice for the use in daycare meals.

Food group grains, grain products and potatoes



Grains and **grain products** like bread, *muesli*, pasta, or rice are important sources of energy, carbohydrates and dietary fibre. *Pseudocereals* or products made from them also belong to this group. Wholemeal varieties offer a higher *nutrient density* and are more filling than products made from refined flours or polished rice. *Parboiled* rice and other processed grains also provide a higher nutrient content than the polished variety.

Potatoes are among the possible sources of carbohydrates with high *nutrient density*.

Rice is a side dish containing starch with a comparatively large climate impact, as its cultivation releases larger quantities of climate-damaging greenhouse gases than potatoes or grains. Therefore, rice should only occasionally be integrated into the diet or replaced by local alternatives like spelt or green spelt.

Practical advice: Food from this group should be offered in different ways, for example as mashed potatoes or pasta with tomato sauce. Ideally, grains and grain products are offered as wholemeal products. A slowly transition to the wholemeal alternative promotes acceptance among the children. For example, it is recommended to mix a portion of wheat pasta with wholemeal pasta at the beginning and to gradually increase the amount of wholemeal pasta.

Food group vegetables and *salad*

Vegetables and *salad* are rich in vitamins, minerals, dietary fibre and phytochemicals. Thus, they provide many nutrients, little energy and contribute to a satiety feeling.

Vegetables and *salad* usually cause comparatively low *greenhouse gas emissions*. In particular, *seasonal* and locally produced vegetables and *salad* grown open-field or in unheated greenhouses are especially climate-friendly. Furthermore, local production strengthens the local economy.

Legumes like beans, lentils and peas also belong to this food group. They are an important protein source in a *plant-based* diet [19]. In addition, they contain a lot of dietary fibre and provide other nutrients such as vitamins B_1, B_6, folate and the minerals iron, magnesium, and zinc, as well as phytochemicals. Combining food from this group with cereals, cereal products, potatoes, or animal-based products, increases the meal's *protein quality*. Examples include bean stew with potatoes, pasta salad with kidney beans, lentil bolognese with wholemeal pasta and (wholegrain) bread with hummus.

Moreover, *legumes* excel in terms of sustainability; during growth, the crops fix the required nitrogen from the air, which is why less fertilizer is needed [40]. At the same time, they ensure more biodiversity in agriculture. Legume-based dishes should therefore be a regular part of the diet. The "Protein Crop Strategy" of the Federal Ministry of Food and Agriculture (BMEL) aims, among other things, to increase domestic production [41, 42].

Practical advice: The possibilities for preparing vegetables and *salads* are as great as their variety. Whether as *raw vegetable* sticks with dip, classic side dish, stew, salad dish, vegetable casserole or patty – there are no limits for creative preparation. Fresh or frozen vegetables are the optimal choice.

Legumes are more digestible if the dry goods are soaked overnight, and the soaking water is then discarded. Adding herbs such as savoury, marjoram, rosemary or caraway and pureeing cooked *legumes* may also improve digestibility. Some varieties, such as red or yellow lentils, are already peeled and thus often easier to digest.

Further information:
www.fitkid-aktion.de
Keyword: Gemüse und Obst

Food group fruits

Fruits are rich in vitamins, minerals, dietary fibre and phytochemicals and therefore have a high *nutrient density*. From a botanical point of view, nuts also belong to fruits. Being important sources of nutrients, they are part of a health-promoting diet.

Practical advice: Fruits should be available fresh or frozen, without added sugar or other *sweeting ingredients*, offered in a variety of ways on the menu. Examples are fresh fruits for breakfast or snack, briefly steamed for a sweet entrée, as fruit puree in yoghurt or cut into small pieces in *muesli*. If children are too young to chew nuts, they may be ground and offered in yoghurt, for example. In terms of taste formation, children should have the opportunity to get to know fruits in the "natural" form. Therefore, fruits should be offered as often as possible as *whole fruit* as soon as the children have reached an age where they can chew it independently.

Further information:
www.fitkid-aktion.de
Keyword: EU-Schulprogramm

Food group milk and dairy products

Milk and **dairy products** the primary calcium source. Along with vitamin D, this is especially important for growing children – for bone formation as well as for healthy teeth. Cheese in particular contains a lot of calcium but compared to other dairy products often has a high fat content. Cheese should be offered regularly, and varieties with an *absolute fat content* of maximum 30 % should be preferred. Milk and dairy products also provide high-quality protein, iodine, and vitamins A, B_2 and B_{12}, among others.

Practical advice: The range of breakfast and snack options may be expanded for example to include porridge, overnight oats or *muesli* with milk as well as fresh fruits with yoghurt.

Food group meat, sausage, fish and eggs

Meat is a good source for protein and, among others, for Vitamin B_{12}, selenium and zinc. In addition, it is a source of well available iron and high-quality protein. However, meat, especially in processed form like sausage also contains unfavourable ingredients. For example, it has a high proportion of saturated fatty acids which can have a negative effect on the concentration of certain blood lipids. This is why lean meat is preferable. Sausage also contains a lot of salt.

However, as part of a health-promoting and sustainable diet, a small amount of meat can complement the choice of vegetable food, making it easier to obtain essential nutrients.

Due to their ingredients as well as the high *greenhouse gas emissions* of animal-based food – especially products derived from ruminants like cattle, sheep, and goats – they should be moderately included in the diet.

Further information:
www.fitkid-aktion.de
Keyword: Tierwohl/Fleisch

Practical advice: The meat component in dishes may be reduced in favour of the vegetable and/or grain component. A more sustainable diet also includes the aspect of animal welfare. Organic farms and, for example, the Neuland Association advocate for meat from species-appropriate animal husbandry.

Fish is a good protein source as well. Fatty fish species, which include both freshwater and saltwater fish (see box), are rich in valuable long-chain omega-3 fatty acids. Sea fish is also a good source of iodine.

Good sources for Omega-3 fatty acids
trout, herring, salmon, mackerel

Examples for iodine-rich fish:
cod, haddock, pollock

Practical advice: Many children know and like fish, especially breaded. It may complement the menu. If children refuse to eat fish, imagination, creativity, and some patience are needed. In this case, fish, like other food with low acceptance, should be offered repeatedly. It usually takes a while before unfamiliar food is accepted. One possibility is to combine fish with something familiar that children like, for example fish filet with tomato sauce and pasta, fish patty in a burger or even using it in sauce or lasagna.

Today, many fish species are overfished. When buying fish, it is therefore important to look for fish from sustainable fisheries or aquacultures. The labels of the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC), for example, offer orientation.

Further information:
www.fitkid-aktion.de
Keyword: Fisch

Eggs are a good source of high-quality protein and fat-soluble vitamins. At the same time, the yolk is high in fat and cholesterol. Based on current studies, no upper limit for egg consumption can be derived for nutritional reasons. In the context of a *plant-based* diet, however, an unlimited amount is not recommended (see tables 2 and 3).

Food group oils and fats

Since fat provides twice as much energy as carbohydrates and protein, so **oils** and **fats** should be used consciously. In addition to the quantity of fat, the quality of the fat, e.g., the fatty acid composition, is of special importance for health. Oils and fats contain saturated, monounsaturated as well as polyunsaturated fatty acids and vitamin E.

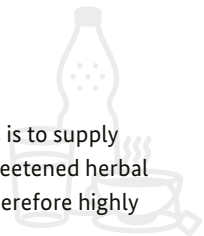
Consuming less saturated fatty acids, which are mainly found in animal-based food, has a positive effect. Instead, more food with unsaturated fatty acids should be used. Good sources are, e.g., vegetable oils, margarine, nuts or fatty fish.

The preferred oil is rapeseed oil, a perfect all-rounder. It contains the lowest proportion of saturated fatty acids and at the same time a high content of monounsaturated and polyunsaturated fatty acids as well as vitamin E. The positive ratio of omega-3 to omega-6 fatty acids should also be highlighted.

Other recommendable oils with a notable content of omega-3 fatty acids are linseed, walnut and soybean oil. Olive oil with its high content of monounsaturated fatty acids is also a good choice. Margarine made from the above-mentioned oils has a higher content of unsaturated fatty acids compared to butter and thus a better fatty acid composition. Additionally, margarine has a significantly lower impact on the environment [43,44]. In contrast, coconut oil, palm (kernel) oil and palm (kernel) fat, as well as animal lard, contain large amounts of saturated fatty acids, which have a particularly unfavourable effect on blood lipids.

The cultivation of plants yielding coconut oil, palm oil and palm fat is primarily conducted in *monocultures* causing substantial impacts on biodiversity and must hence be accessed as negative from an ecological perspective [45–47].

Practical advice: Rapeseed oil is multifunctional for cooking. It can be heated, offers neutral taste and is available everywhere. To promote flavour diversity, linseed, walnut, soy or olive oil can be used for typical dishes or even *salads*.



Food group beverages

Fluids are important. The task of beverages is to supply the body with water. Water as well as unsweetened herbal and fruit teas contain no calories and are therefore highly recommended.

The *guiding value* for the drinking amount for children at the age of 1 to under 7 years is about 0.8 to 1 L per day. In some situations, the body needs more fluid, for example in very hot or extremely cold weather or during physical activity like sports.

Avoiding bottled water contributes to climate protection. Tap water offers a climate-friendly and at the same time cost-saving alternative, as packaging materials and transport routes are no longer required.

Lemonades, cola and fruit juice drinks, fizzy beverages, nectars, fruit juices, iced teas, energy drinks and milkshakes are not suitable thirst quenchers. They contain a lot of sugar and thus provide many calories. So-called "flavoured water" may also be sweetened with sugar.

Further information:
www.fitkid-aktion.de
Keyword: Getränke

Practical advice: Drinking water is always available for the children and part of every meal. Drinking is often forgotten during playtime. Regular hydration breaks are recommended. Juice spritzers should be the exception rather than the rule on special occasions such as birthday parties [48].

3.3 Deriving criteria for a health-promoting and sustainable catering

The way recommendations for a wholesome diet translate into criteria for mass catering on a scientific basis is described below. Figure 5 illustrates this path in 4 steps, which are explained in more detail in the following text.

From the background...
Basis for the derivation of criteria for health-promoting and sustainable catering, especially the food qualities and frequencies in chapter 4.1, are the scientifically based *"Reference values for nutrient intake"* [39] and the evidence-based guidelines regarding fat and carbohydrate [37, 38]. The former specifies amounts for the daily intake of energy and nutrients, including water and dietary fibre. These amounts are formulated for a total of 12 different age groups, each separately for both sexes. In addition, the food-based dietary guidelines of the DGE form a basis, like the "DGE Nutrition Circle", the "Three-Dimensional DGE Food Pyramid" and the "10 guidelines of the DGE for a wholesome diet".

... to theoretical derivation ...
Because of organisational and economic reasons, in mass catering it is not possible to provide meals whose energy and nutrient contents correspond to the respective age- and gender-specific reference values of the guests. Therefore, summarised values for the different living environments of mass catering were derived from the *"Reference values for nutrient intake"* as follows:

Children up to the age of 7 usually attend a *daycare centre*. Infants under 12 months are fed individually and are not taken into account for the field of mass catering (see chapter 4.6.4). The "*Reference values for nutrient intake*" for the age groups 1 to under 4 years and 4 to under 7 years were used for daycare meals. The *Physical Activity Level* (PAL) 1.4 was used to derive the *guiding values* for energy intake

in the age groups mentioned. Within these age groups, the *guiding values* of girls and boys were combined, and the average value (arithmetic mean) was calculated. A different approach was used for the derivation of the reference values for vitamin and mineral intake: If the values for boys and girls differed, the higher reference value was used in order to ensure a minimum intake for all.

... and calculation...

Based on these principles, nutrient-optimised menus for both a mixed diet and *ovo-lacto-vegetarian* diet including breakfast, snacks, lunch and dinner were composed. They are exemplary for 4 weekly menus respectively 20 catering days and considering the usual eating habits in Germany. The following aspects were taken into account:

- reaching the derived *Reference values* for mass catering for groups of people aged 1 to under 4 years and 4 to under 7 years,
- activity level (*PAL*) 1.4,
- energy is distributed to the individual meals according to the so-called "quarter approach": 25 % each to breakfast, lunch, and dinner and 12.5 % of the *guiding value* for energy intake to each of the 2 snacks,
- corresponding food qualities (see chapter 3.2),
- "5 a day" campaign (at least 3 portions of vegetables and 2 portions of fruit), and
- with 90 % of the total energy, 100 % of the recommended reference values of nutrients (vitamins and minerals) are met, so that 10 % of the total energy may be allocated to food with low nutrient and high *energy density*, like chocolate, jam or potato chips.

... to food-related criteria for health-promoting and sustainable catering

Based on the nutrient-optimised menus for 20 catering days, corresponding quantities per day or per week were determined for each food group. These orientation values for food quantities create the basis for the derivation of corresponding food frequencies. Once these food quantities and frequencies are implemented in practice, and the defined food qualities are considered (see chapter 3.2), it can be expected that most likely all nutrients will cover the reference values.

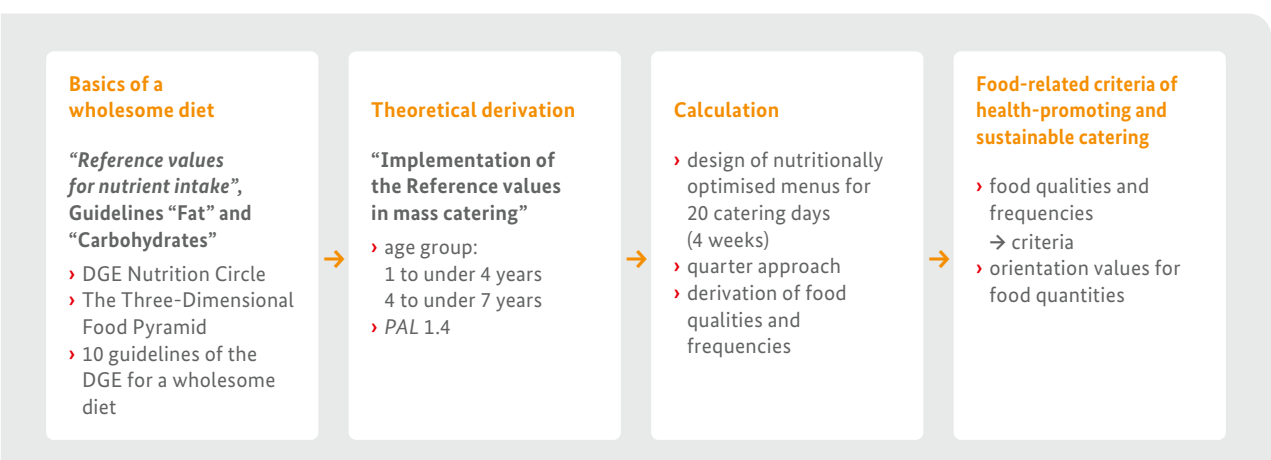


Figure 5: Path from the basics of a wholesome diet to food-related criteria for health-promoting and sustainable catering

4

Designing health-promoting and sustainable meals

This chapter provides assistance in the design and implementation of health-promoting and sustainable food and beverages in *daycare centres*. The process chain is used to illustrate a catering offer for breakfast, snacks and lunch that is tailored to the needs and requirements of children from 1 to under 7 years of age. Optimally composed, this offers children the opportunity to make a healthy and sustainable choice for every meal.

4.1 Planning

Planning | Purchase | Preparation | Service | Disposal & cleaning

Anyone who wants to provide a catering service must know upfront which or how many meals the *daycare centre* will offer (see also chapter 2.1). If, for example, only lunch is delivered by a *meal provider*, the planning will differ from the planning for breakfast, snack and lunch.

Creating health-promoting and sustainable meals begins with planning. In this process step, among other things, the range of food and beverages is compiled, new recipes are developed, or existing ones are adapted, and the length of the *menu cycle* is determined. Proper planning not only affects the nutritional quality of the meals but may also contribute to reducing food waste and therefore to sustainability and economic efficiency [49].

The analysis of waste measurements in mass catering shows that an increased amount of food waste is caused by overproduction, lack of order system and food returns. Adequate planning of production in alignment with demand becomes challenging without a well-functioning order system or close coordination with the *daycare centre*. It is essential to be promptly informed about the absence of children, such as due to illness or field trips, to facilitate accurate production planning. Communication channels for registration and cancelling of meal participants must be set up on a permanent basis.

When planning the production quantities, the children's wishes and preferences regarding dishes and portion sizes should be taken into account and the relevant information communicated to the serving staff and *educational staff*. This requires regular monitoring of the calculated portion sizes and the actual quantities served. Another way to reduce food returns is to flexibly adjust portion and plate sizes at the table and proactively offer the children the option of "second helpings". Over time, they learn to estimate the portion size according to their hunger and satiety [11, 32, 50] .

Further information:
www.fitkid-aktion.de
Keyword: Lebensmittelabfälle vermeiden

Furthermore, through a targeted choice of food, menu planning influences the sustainability of the meals offered. The *greenhouse gas emissions* of food production may vary greatly. Meals with a high proportion of vegetable components (e.g. vegetables, grains) generally generate fewer greenhouse gases than those with a high proportion of animal-based products (e.g. meat, cheese) [26].

Further information:
www.fitkid-aktion.de
Keyword: Nachhaltigkeit in der Gemeinschaftsverpflegung

At the same time, enjoyment also plays an important role, because health-promoting and sustainable food should taste good and be enjoyable. Children in particular need a range of food that offers variety in taste as well as in smell, consistency, appearance and auditory experiences in order to shape their senses. Olfactory and taste experiences shape the sensory memory.

By the way:
Getting used to a standardised taste, e.g. through flavour enhancers, may result in a lost taste for the variety of natural food. In principle, products without flavour enhancers and other *sweetening ingredients* are to be preferred. For reasons of taste formation and shaping, not natural and processed meat products like formed meat should not be used. Food that contains alcohol or alcohol flavourings as an ingredient should generally be avoided in daycare meals.

4.1.1 Food qualities and frequencies as well as other aspects of menu planning

Table 2 supports the planning of breakfast and snacks, Table 3 the planning of lunch. In this context, both a health-promoting and sustainable meal offer for the mixed diet and for an *ovo-lacto-vegetarian* diet are presented over 5 catering days. This way, it becomes immediately clear, which offer is favourable for the individual meals.

Based on the 7 food groups (see chapter 3.2), the tables initially show the **food qualities – the optimal food choice**. Included is food that is highly recommended because of its nutritional composition.

By the way:
Although animal-based food has a high *protein quality*, the recommended protein intake should mainly be covered by vegetable food. In order to increase the *protein quality* of the catering offer, combining protein sources from different food groups (animal-based and vegetable or vegetable and vegetable) makes sense. This should be considered during menu planning, particularly in the case of *plant-based* catering (for further information see chapter 3.2.).

Additionally, the tables show criteria on **how often** certain food or food groups must be used in a period of 5 catering days. For the food groups that should be offered several times a day, like vegetables or grain products, the daily frequency is also shown in brackets.

Moreover, **minimum and maximum requirements** are formulated to show particularly recommendable or less recommendable food from a nutritional and sustainable perspective. The criteria on the foods' qualities and frequencies allow a balanced and varied menu. If the criteria are consistently observed in menu planning, all nutrients are assumed to likely meet the recommended values in the sense of the implementation of the *Reference values* in mass catering [39].

By the way:
Food not listed in the tables, like jam, honey or butter, is not included as optimal choices because of its composition. Nevertheless, it is possible to use it.

One important parameter in the context of menu planning, purchasing, and serving are the portion sizes of individual components. They provide orientation on how much of the food should be offered from a nutritional point of view. In both tables, **orientation values for food quantities** are shown as planning orientation. The quantities are already intake quantities, e.g., peeling and cooking losses are factored in. They provide orientation but are not a fixed parameter and must be calculated individually by each *meal provider*. The actual quantity should be based on the experience of the kitchen staff. The children's wishes, in particular, should be reflected. Ultimately, a needs-based calculation is the precondition for responsible economic and ecological action.

The 4th column of both Table 2 and 3 shows the criteria for the ***ovo-lacto-vegetarian*** diet. In addition, the following aspects should be considered if neither meat nor fish are offered:

Iron is a potentially critical nutrient in the *ovo-lacto-vegetarian* diet, as the human body tends to absorb this mineral more efficiently from animal-based sources than from vegetable ones. Enhancing iron absorption can be achieved by combining iron-rich plant food such as *legumes*, millet, or oatmeal with food high in vitamin C, citric acid (found in vegetables and fruits), or lactic acid (found in sauerkraut). Examples of such dishes include falafel sandwiches with coleslaw, lentil-stuffed peppers, millet casserole with fruit, and rye rolls, or sourdough bread served with soups or salads. These options should be incorporated into the *ovo-lacto-vegetarian* menu.

Fatty fish serves as the main source of **long-chain omega-3 fatty acids** and is, therefore a crucial component of a mixed diet. If no fish is consumed, for example because of an *ovo-lacto-vegetarian* diet, it is advisable to incorporate food rich in alpha-linolenic acid, such as rapeseed oil, linseed oil, walnut oil, nuts, or oilseeds. While the human body can convert alpha-linolenic acid into long-chain omega-3 fatty acids, this process has limitations, and the complete substitution of fatty fish with other food is not entirely feasible [51, 52]. Nevertheless, due to increasing demand, criteria for the *ovo-lacto-vegetarian* diet were included in the DGE-Quality Standard to ensure optimal nutritional provision.

Breakfast and snacks

Both breakfast and snacks contribute significantly to the daily nutrient intake. Breakfast, whether eaten at home or at *daycare centre*, and the mid-morning and mid-afternoon snacks should be coordinated to a large extent. Partly these meals are organised by the *daycare centre*, partly delivered by the *meal provider*. Also, meals are often taken from home in a "lunch box". Regardless of the way breakfast and snacks are organised, the goal is to ensure an optimal offer for these meals too. To guarantee maximum flexibility due to the heterogeneous (meal) structures of different *daycare centres*, these 3 meals (breakfast, 1st and 2nd snack) were combined. Consequently, the orientation values for the weekly food quantities may be divided among all 3 meals. The weekly food frequencies are presented as a total for the 3 meals. To improve orientation and practicability, the daily frequencies are listed accordingly. If, for example, 10 × fruits is recommended in 5 days, it should be offered minimum 2 × per day and be flexibly shared among breakfast and/or snacks.

Lunch

While breakfast and snacks are often offered on a voluntary basis at *daycare centres*, lunch is usually organised centrally by the facility. It also contributes significantly to the daily nutrient intake. For a balanced daycare meal, the food qualities and frequencies listed in Table 3 apply.

Breakfast and snacks

Table 2: Food qualities and frequencies for health-promoting and sustainable breakfast and snacks on 5 catering days

food group	food qualities – optimal choice
grain, grain products, potatoes 	› wholemeal products › *muesli* without added sugar and other *sweetening ingredients*
vegetables and *salad* 	› vegetables, fresh or frozen › *legumes* › *salad*
fruits 	› fruits, fresh or frozen › nuts and oilseeds, unsalted → each without added sugar and other *sweetening ingredients*
milk and dairy products 	› milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % › quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* › cheese: max. *absolute fat content* 30 %
meat, sausage, fish[2] and eggs[3] 	› meat and cold cuts: max. 20 % fat
oils and fats 	› rapeseed oil › linseed, walnut, soybean, olive oil › margarine made from the oils mentioned
beverages 	› water › fruit and herbal tea → each without added sugar and other *sweetening ingredients*

1 The orientation values given for food quantities are consumption quantities, i.e. peeling and cooking losses are already factored in. The actual quantities should be based on experience (see also chapters 3.3 and 4.1.1).

2 Given the eating habits of German children, fish was not included in the nutrient-optimised breakfast and snack menus.

	food frequencies on 5 catering days orientation values[1] for food quantities on 5 catering days, per child	
	mixed diet	***ovo-lacto-vegetarian* diet**
	min. 10 × (min. 2 × daily) (1 to under 4 years ca. 300 g) (4 to under 7 years ca. 350 g) › thereof: half of the daily offer from wholemeal products	**min. 10 × (min. 2 × daily)** (1 to under 4 years ca. 300 g) (4 to under 7 years ca. 350 g) › thereof: half of the daily offer from wholemeal products
	min. 5 × (min. 1 × daily) (1 to under 4 years ca. 450 g) (4 to under 7 years ca. 500 g) › thereof: min. 3 × as *raw vegetables*	**min. 5 × (min. 1 × daily)** (1 to under 4 years ca. 450 g) (4 to under 7 years ca. 500 g) › thereof: min. 3 × as *raw vegetables*
	10 × (2 × daily) (1 to under 4 years ca. 900 g) (4 to under 7 years ca. 1100 g)	**10 × (2 × daily)** (1 to under 4 years ca. 900 g) (4 to under 7 years ca. 1100 g)
	min. 10 × (min. 2 × daily) (1 to under 4 years ca. 1000 g) (4 to under 7 years ca. 1100 g)	**min. 10 × (min. 2 × daily)** (1 to under 4 years ca. 1000 g) (4 to under 7 years ca. 1100 g)
	0 ×	**omitted in an *ovo-lacto-vegetarian* diet**
	rapeseed oil is standard fat (1 to under 4 years ca. 20 g) (4 to under 7 years ca. 25 g)	**rapeseed oil is standard fat** (1 to under 4 years ca. 20 g) (4 to under 7 years ca. 25 g)
	beverages are available anytime	**beverages are available anytime**

3 There is no recommendation on the number of eggs to be consumed. In the nutrient-optimised meal plans, no eggs were calculated for breakfasts and snacks.

Lunch

Table 3: Food qualities and frequencies for a health-promoting and sustainable lunch on 5 catering days

food group	food qualities – optimal choice
grain, grain products, potatoes 	› wholemeal products › potatoes, raw or precooked › *parboiled rice* or brown rice
vegetables and *salad* 	› vegetables, fresh or frozen › *legumes* › *salad*
fruits 	› fruits, fresh or frozen, › nuts and oilseeds, unsalted → each without added sugar and other *sweetening ingredients*
milk and dairy products 	› milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % › quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* › cheese: max. *absolute fat content* 30 %
meat, sausage, fish and eggs[5] 	› lean muscle meat
oils and fats 	› rapeseed oil › linseed, walnut, soybean, olive oil › margarine made from the oils mentioned
beverages 	› water › fruit and herbal tea → each without added sugar and other *sweetening ingredients*

4 The orientation values given for food quantities are consumption quantities, i.e. peeling and cooking losses are already factored in. The actual quantities should be based on experience (see also chapters 3.3 and 4.1.1).

food frequencies on 5 catering days orientation values[4] for food quantities on 5 catering days, per child	
mixed diet	***ovo-lacto-vegetarian* diet**
5 × (1 × daily) (1 to under 4 years ca. 400 g) (4 to under 7 years ca. 450 g) › thereof: min. 1 × wholemeal products max. 1 × *potato products*	**5 × (1 × daily)** (1 to under 4 years ca. 400 g) (4 to under 7 years ca. 450 g) › thereof: min. 1 × wholemeal products max. 1 × *potato products*
5 × (1 × daily) (1 to under 4 years ca. 500 g) (4 to under 7 years ca. 600 g) › thereof: min. 2 × as *raw vegetables* min. 1 × *legumes* (1 to under 4 years ca. 70 g) (4 to under 7 years ca. 90 g)	**5 × (1 × daily)** (1 to under 4 years ca. 550 g) (4 to under 7 years ca. 650 g) › thereof: min. 2 × as *raw vegetables* min. 1 × *legumes* (1 to under 4 years ca. 80 g) (4 to under 7 years ca. 100 g)
min. 2 x (1 to under 4 years ca. 150 g) (4 to under 7 years ca. 170 g) › thereof: min. 1 × as *whole fruit*	**min. 2 x** (1 to under 4 years ca. 150 g) (4 to under 7 years ca. 170 g) › thereof: min. 1 × as *whole fruit*
min. 2 x (1 to under 4 years ca. 120 g) (4 to under 7 years ca. 140 g)	**min. 2 x** (1 to under 4 years ca. 120 g) (4 to under 7 years ca. 140 g)
max. 1 × meat/sausage (1 to under 4 years ca. 30 g) (4 to under 7 years ca. 35 g) › thereof: min. 2 × lean muscle meat within 20 catering days **1 × fish** (1 to under 4 years ca. 35 g) (4 to under 7 years ca. 45 g) › thereof: min. 2 × fatty fish within 20 catering days	**omitted in an *ovo-lacto-vegetarian* diet[5]**
rapeseed oil is standard fat (1 to under 4 years ca. 20 g) (4 to under 7 years ca. 25 g)	**rapeseed oil is standard fat** (1 to under 4 years ca. 20 g) (4 to under 7 years ca. 25 g)
beverages are available anytime	**beverages are available anytime**

5 There is no recommendation on the number of eggs to be consumed. In the nutrient-optimised meal plans, approx. 40 to 50 g (mixed diet) or 60 to 70 g (*ovo-lacto-vegetarian* diet) of eggs per week were calculated for lunch.

The selection of food and its frequency of use listed in tables 2 and 3 provides a framework based on scientific principles. Within this framework, it is possible to design the catering offer in a varied and creative way or to optimise popular dishes. The use of wholemeal products, *legumes* or the offer of a popular vegetarian dish like (wholemeal) spaghetti with tomato sauce instead of a meat dish helps to improve the catering.

Optimising means:
Changing a dish by substituting food in such way that the original character still persists while the *nutrient density* increases. Optimisation can also be achieved by supplementing individual components (e.g. *salad*).

In addition to the criteria for using food qualities and frequencies in Tables 2 and 3, the following additional criteria should be considered when planning a varied, health-promoting and sustainable meal offer:

☐ **An *ovo-lacto-vegetarian* meal is available when requested.**
Regardless of whether some of the children follow an *ovo-lacto-vegetarian diet*, popular dishes without meat and fish are always enriching the menu. In case of an *ovo-lacto-vegetarian diet*, it must be ensured that the same variety of choices is available at all meals as with the mixed diet when requested. Simply reducing the meat or fish components of the latter is not sufficient enough for a health-promoting and sustainable offer. Main components on the plate should be vegetables, *salad* and/or *legumes*.

By the way: Mixed and *ovo-lacto-vegetarian* menues may include vegan lunches for up to 3 days, all while adhering to the criteria for food quality and frequency.

☐ ***Seasonal* and *regional* vegetables and fruits are included.**
Apart from having a positive effect on the environment, this also avoids or shortens storage times and longer transport distances. Local *seasonal* products also give guests a feeling of *seasonal* orientation. Out-of-season products are transported long distances to Germany and/or produced in heated greenhouses. This costs energy and releases greenhouse gases.

Further information:
www.fitkid-aktion.de
Keywords: Saisonale Lebensmittel and Regionale Lebensmittel

☐ **Local food is preferred in the menu.**
Vegetables and fruits from Germany and other EU countries generally have fewer pesticide residues than products from non-EU countries [53]. By using local *seasonal* food, long transport routes might be avoided, energy consumption and costs reduced, and at the same time the local economy may be supported.

... furthermore:

- ☐ **Grains, grain products and potatoes are offered in varied ways.**
  When planning the menu, this food group allows for variety. In addition to potatoes, pasta and rice, spelt, green spelt, bulgur and millet may also be prepared and offered in a variety of ways.

- ☐ **Deep-fried and/or breaded products are used at most 4 times in 20 catering days.**
  Deep-fried and/or breaded components like croquettes, battered vegetables, breaded schnitzels, chicken nuggets or fish fingers absorb larger amounts of fat during preparation. This category also includes dishes that are fried while floating in fat, like potato waffles or pancakes.

- ☐ **Meat and fish alternatives are offered for lunch no more than 4 times in 20 catering days.**
  This includes ultra-processed, ready-to-cook food like “sausages”, “schnitzel” or fried patties e.g., based on soy, tofu, lupine, mushrooms, or milk as well as seitan. Tofu, seitan, and tempeh (whether natural or marinated) that undergo no further processing are not considered in this context.

- ☐ **Beverages are available at any time.**
  Every meal comes with a beverage. The children have the opportunity to drink at any time, even outside of mealtimes. Water and unsweetened fruit and herbal teas are the best choices. Tap water offers an inexpensive and ecologically recommendable alternative.

- ☐ **The lunch *menu cycle* is repeated after 4 weeks at the earliest.**
  The *menu cycle* should be as long as possible to ensure variety in the menu. Within a week the same components, like potatoes or carrots, are possible, but should be prepared differently and combined with other components in a varied way.

- ☐ **The dishes are colourful, and the composition varies.**
  As early as the planning stage, a colourful composition of the dishes or components should be kept in mind.

- ☐ **Participation in meals is possible in case of food intolerances like allergies.**
  For this purpose, a special meal offer, a selection of individual components or (if otherwise not possible) a meal brought from home would work. Further information can be found in chapter 4.6 and chapter 6.3.

- ☐ **Certain animal-based and vegetable food is not used for especially vulnerable groups due to possible contamination with pathogens.**
  This applies, for example, to raw milk products, soft cheeses with a surface smear, fresh ground pork, steak tartare, spreadable rapidly matured uncooked sausages (e.g. fresh Mettwurst) and raw eggs. Sprouts and frozen berries must be heated before consumption [54].

... furthermore:

- ☐ **The children's wishes and suggestions are considered in the menu planning as far as possible.**
  The children (and also parents) should have the opportunity to express their wishes and criticism about the meals. This can be accomplished in personal conversations or the meals can be rated, e.g. with smileys. If wishes and suggestions cannot be realised, it is recommendable to explain the reasons in a feedback (see chapter 2.4).

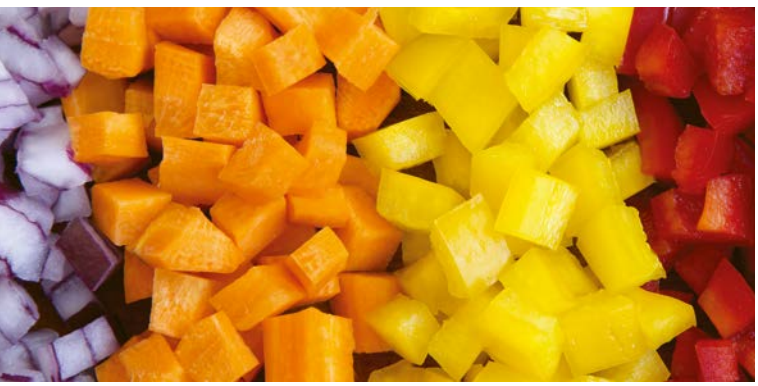
- ☐ **Culture-specific, *regional* and religious eating habits are taken into account in the planning.**
  If these aspects are respected, the children may identify themselves to a certain extent through the food. Themed weeks addressing traditional food from different countries or regions, major events (European and World Championships) or project weeks at the *daycare centre* on specific topics (grains, milk, herbs, sustainability) are particularly suitable for this purpose.

4.1.2 The use of *processed food (convenience food)* in mass catering

The use of *processed food* is a common practice in mass catering. This food is classified according to the degree of processing. The product range extends from low to ultra-processed:

low-*processed food* is, e.g., pasta as dry products or pre-cut *salads*, frozen vegetables, and fruits, as well as dried fruits.

Further information:
www.fitkid-aktion.de
Keywords: Verarbeitete Lebensmittel



Food that has undergone several processing steps are referred to as ultra-*processed food*. It includes ready-made menu components like breaded schnitzels, spring rolls, meat substitutes, classic sauces and dressings (dry or wet products) or ready-made entrées like frozen lasagna or pizzas as well as ready-made soups. Depending on the product group, they may have a high content of sugar, fat, especially unfavourable saturated fatty acids, and salt.

By the way:
The German Federal Ministry of Food and Agriculture (BMEL) initiated the "The National Reduction and Innovation Strategy: Less sugar, fats and salt in processed food" in 2018 with the goal of reducing the content of sugar, unfavourable fats and salt as well as the energy content in *processed food*. As part of the strategy, the food industry committed to reduce the sugar, fat, salt and/or energy content in their products by 2025 with the help of concrete targets [55].

When using *processed food* following criteria apply:

☐ **Products without palm (kernel) fat, palm (kernel) oil or coconut fat are preferred.**
The mentioned fats contain large amounts of unfavourable fatty acids and are therefore not recommended from a nutritional perspective. If products with palm oil are used, be sure to use only those made from sustainably certified palm oil. Products with rapeseed, walnut, linseed, soybean or olive oil should be preferred.

Further information:
www.fitkid-aktion.de
Keyword: Palmöl

☐ **Unprocessed or low-*processed food* like fresh or frozen vegetables and fruits, meat or fish, are preferred to be processed further on site.**
Due to the higher nutrient content, vegetables and fruits, fresh or frozen food are preferred to canned products. From an environmental perspective, unprocessed or low-*processed food* is also favourable, as the level of resource utilization tends to increase with food processing.

☐ **Ultra-*processed food* is always combined or supplemented with low *processed food*/ components.**
Ready-to-cook vegetable patties for example may be combined with boiled potatoes and *salad* made from *raw vegetables* with home-made dressing.

☐ **Food with a low content of sugar, fat, saturated fatty acids and/or salt and a low *energy density* is selected.**
There are significant differences in the sugar, fat, saturated fatty acid, salt and energy content of *processed food* within the product groups. Therefore, food should be carefully chosen and those of them that are considered to be more favourable from a nutritional perspective should be preferred. The document "Evaluation of selected convenience foods in mass catering and recommendations for optimisation" provides assistance for evaluation of selected *processed food* [56] as well as the results of the "Start Low" project (see further information). Data from this project is available for estimating the sugar, salt and saturated fat content.

Further information:
www.fitkid-aktion.de
Keyword: Zucker, Salz, Fett

4.1.3 Menu

Similar to the way a business card contains all important information about a person, the menu should do the same: It is source of information for parents and children and represents the kitchen's flagship. Legal aspects must be considered when designing the menu. Chapter 6 provides background information.

When designing the menu, the following criteria apply:

- ☐ **The menu is designed in a child-friendly way.**
  When designing the menu, make sure that children can "read" it. In practice, a presentation in the form of pictures has proven to be effective.

- ☐ **The current menu is in advance accessible on a regular and barrier-free basis.**
  The menu is available in advance (e.g., on display or online) so that children and parents are regularly informed about the meals and can compare them with their meals at home.

- ☐ **Information is provided on allergens and food additives requiring labelling.**
  For further information see chapter 6.3.

Further information:
www.fitkid-aktion.de
Keyword: Kennzeichnung

- ☐ **Food is named clearly.**
  When using non-standard or ambiguous names, e.g., fantasy names like "Viking pan", non-German language indications like "Ratatouille" as well as general names like "vegetable stew", children and parents can only assume which dishes or components are meant. Therefore, it is important that the main ingredients of the dish are indicated on the menu. This also applies to classic garnishes like "Gardener's style" or "Hunter's style".

- ☐ **For meat, sausages and fish, the animal species is named.**
  It is easier to choose when the animal species is known. This may also be important for religious reasons.

- ☐ **The basis of alternatives to meat, fish, egg, milk and dairy products is clearly defined.**
  The alternatives to meat, fish, egg, milk and dairy products have grown considerably in recent years, offering a diverse range. Soybean, pea, lupin or wheat protein, as well as beans, sunflower seeds, milk, eggs and jackfruit, for example, serve as the basis for meat and fish substitutes. Vegetable beverages made from soy, oats, rice or almonds are available as milk alternatives. To enable children, parents as well as *educational staff* to choose consciously, the menu should indicate the source of the alternatives, for example by stating "with pea protein" or "soy-based". Descriptions like "plant-based yogurt alternative" or "vegan schnitzel" are in-sufficient.

- ☐ **If nutritional values are declared, the legal requirements are observed.**
  For further information see chapter 6.3.

... furthermore:

☐ **Several menu lines are clearly presented, and the health-promoting and sustainable meal is particularly highlighted.**
There is usually only 1 daily menu in the *daycare centre*. Should there be more than 1 (e.g. when planning the menu in advance), it is easier to choose if the health-promoting and sustainable meal is at the top of the menu and highlighted in colour or with a symbol.

4.2 Purchase

Planning | Purchase | Preparation | Service | Disposal & cleaning

In addition to the planning of food and beverages, purchasing also has a significant influence on the quality of the offer, especially on sustainable aspects.

For purchases the following criteria apply:

☐ **Organic food is used.**
Organic food contains minimal pollutants and residues. In addition, organic farming makes significant contributions to environmental, climate, water, soil, and *resource protection*. E.g., soil and water conservation by avoiding the use of synthetic chemical pesticides and mineral fertilizers, by using antibiotics in animal husbandry only in emergencies and by reducing environmental pollution with pesticides. These examples have a positive effect on biodiversity [53, 57]. The full potential of organically produced food is realized when sourced locally and seasonally [59]. Incorporating a high proportion of organic food in mass catering serves as a crucial tool in fostering an increased demand for *seasonal* organic produce from the respective region. The new Organic Out-of-Home Catering Ordinance (Bio-AHVV) simplifies organic certification for professional catering facilities. Among other things, this regulation allows gastronomic facilities to showcase the organic share of 20 % or more of the total food input's monetary value with a three-stage logo after obtaining appropriate certification [59].

... furthermore:

The guideline "On the way to more sustainability in company catering" a publication of the project "NACHHALTIG BUND GESUND" shows ways to increase the organic share in mass catering even with a fixed and limited budget [59].

Further information:
www.fitkid-aktion.de
Keyword: Ökologisch erzeugte Lebensmittel

☐ **Fair trade products are used.**
Purchasing fair trade food like nuts, tea or bananas contributes to securing a fair income for people in producing countries as well as providing better working and living conditions. This applies as well to direct purchasing agreements with producers.

Further information:
www.fitkid-aktion.de
Keyword: Fair gehandelte Lebensmittel

☐ **Fish is purchased from sustainable fisheries.**
The Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC) labels, as well as the EU-label for organic produced fish and organic labels like Bioland or Naturland, provide orientation when purchasing fish.

Further information:
www.fitkid-aktion.de
Keyword: Fisch

☐ **Meat from species-appropriate animal husbandry is preferred.**
Species-appropriate animal husbandry is promoted, for example, by organic farms or the Neuland-Verein as well as the animal welfare initiative "Eine Frage der Haltung" of the German Federal Ministry of Food and Agriculture (BMEL). If it is not possible to purchase only meat from species-appropriate animal husbandry for economic reasons, e.g. the offer may be limited to individual dishes.

Further information:
www.fitkid-aktion.de
Keyword: Tierwohl/Fleisch

☐ **Environmentally friendly packaging is preferred for all food.**
In order to contribute to the reduction of packaging waste, food in disposable packaging should be avoided and instead reusable packaging in bulk containers preferred. When purchasing it is recommended to look for recyclable, mono-material packaging.

☐ **The first-in-first-out principle is applied.**
Food that has a shorter shelf life or was stored first should be consumed first. This helps to use food before it spoils and contributes to wasting less food and saving costs.

4.3 Preparation

Planning | Purchase | **Preparation** | Service | Disposal & cleaning

Apart from the food choice, the way meals are prepared and the following time they are kept hot have an impact on the nutritional and sensory quality. Selecting and using kitchen equipment in a thoughtful way might also contribute to a higher level of sustainability.

The following criteria to the preparation of food apply:

☐ **Recipes, if required with preparation instructions, are used.**
With recipes, consistent food quality is ensured, even with staff turnover. They simplify the preparation process and provide a reliable basis for calculating products as well as for a functioning allergen management. Proven and optimised recipes additionally help avoiding food waste.

Recipes and menus are available at www.fitkid-aktion.de

☐ **Sugar is used sparingly.**
Sugar-sweetened food and beverages increase the risk of caries, overweight and *obesity* as well as secondary diseases like type 2 diabetes. The addition of sugar and other *sweetening ingredients* like honey or fruit syrups should therefore be kept to a minimum. To get children used to a less sweet taste, a gradual reduction in recipes is recommended. Instead of sugar and other *sweetening ingredients*, the sweetness from fresh or frozen fruits is often sufficient enough.

☐ **Fat is used consciously.**
Due to its high energy content and differences in composition, fat and high-fat food should be used consciously, e.g., in moderate amounts and preferably in the form of high-quality vegetable oils. Dairy with a high fat content, like high-fat cheeses, crème fraiche, sour cream or sweet cream, should only be used in low quantities when preparing dishes like casseroles, dressings, sauces or desserts.

☐ **Iodised salt is used, it is salted sparingly.**
Too much salt in food increases the risk of high blood pressure and thus cardiovascular diseases. The guidance level for table salt intake for children is 3 to 6 g per day, depending on age [59].

Food like bread, sausage and cheese already contains larger amounts of salt, so there is only a small amount left to add. When using salt, choose iodized salt, which is an important source of iodine alongside sea fish, milk and dairy products. In order to promote the acceptance of low salt food, the addition of salt may be reduced slowly and gradually, and more herbs and spices may be used instead.

Further information:
www.fitkid-aktion.de
Keyword: Zucker, Fett, Salz

... furthermore:

☐ **Herbs (fresh, frozen, dried) and spices are used in a variety of ways.**
Herbs and spices don't simply help to save salt, they may also create a greater variety of flavours.

☐ **Nutrient-preserving and low-fat cooking methods are used.**
In addition to appearance, taste and consistency, the cooking method also influences the nutritional quality of the food. To keep losses of vitamins and minerals to a minimum, vegetables and potatoes should be cooked without or with little fat and water by sautéing, steaming, or grilling. When preparing meat, sautéing, roasting, stewing, grilling and low-temperature cooking in little fat are recommended as low-fat cooking methods. For fish, these are steaming, sautéing, grilling and short frying in low fat.

☐ **Cooking periods are kept as long as necessary and as short as possible.**
Extended cooking results in unnecessary vitamin losses and additional energy consumption, while appearance, taste and texture of the food also suffer. If vegetables and fruits are pureed afterwards, a short cooking period is also sufficient.

☐ **Maximum holding time for cooked food is 3 hours.**
The longer the food is kept hot, the more heat-sensitive vitamins are lost, and the food appearance, taste and consistency suffer. Keeping food hot for a longer period of time also consumes additional energy. According to DIN 10508:2022-03 [61] and the "Hygiene rules in the catering sector" of the Federal Centre for Nutrition and the Federal Institute for Risk Assessment [62] the hot-keeping period, thus the time between the end of the cooking process and serving of the meal to the last guest, should be maximum 3 hours long. If a 3 hour hot-keeping period is not feasible, the food must be cooled down immediately after preparation and regenerated in batches before serving, according to DIN 10536:2023-03[63].

☐ **The holding temperature of cooked food is at least 60 °C throughout the food.**
To protect food from spoiling and minimise the risk of foodborne infection or poisoning, the minimum temperature for keeping food hot is 60 °C throughout the food according to DIN 10508:2022-03. For safety reasons in practice, the mentioned norm recommends a temperature of 65 °C throughout the food. This applies to storage as well as transportation and serving [61].

Further information:
www.fitkid-aktion.de
Keyword: Heißhalten und Regenerieren

☐ **Chilled food is stored at a maximum of 7 °C.**
Chilled food like *salads* or desserts can also spoil easily. According to DIN 10508:2022-03 [61], a storage, transport and dispensing temperature of 7 °C should not be exceeded as a precaution. Until serving, chilled food should be cooled accordingly and consumed immediately after serving.

... furthermore:

- **Resource-efficient kitchen appliances are used.**
  Kitchen appliances differ widely in their energy and water consumption. Gas and induction appliances are usually very efficient. The size of the appliances should be chosen according to the amount of food to be prepared. Too large appliances consume unnecessary energy and water. In addition, for energy-intensive processes like cooling, freezing or dishwashing, the use of energy-efficient appliances is advisable. Replacing old models with new ones can amortise in a relatively short time [32].

- **Appliances are only turned on during operating times.**
  Appliances should not be operated longer than necessary in order to save energy. For this purpose, the power-on times of all kitchen appliances can be compared with the actual needed times of use and adjusted accordingly [64]. In addition, in energy-intensive processes like cooling, freezing or dishwashing, it is important to ensure efficient utilisation of the appliances. Switching off cooling and freezing units during *daycare centre* break or the efficient loading of dishwashers are some ways to save energy [65].

4.4 Service

Catering does not end at the kitchen door – only when it is handed over to the children, it reaches the guest. In the *daycare centre*, meals are served for a group at the table and the food is often served by the *educational staff*. Thereby, the presentation of the food components, no matter whether it takes place in the kitchen or later by the serving staff (*educational staff*), as well as the sensory quality of the meal are of great importance for the meal to be accepted. The serving staff (*educational staff*) is an important interface between the kitchen and the children. They assist with the selection and during the meal, collect feedback to portion sizes and wishes from the children and make the mealtime situation pleasant.

This chapter provides criteria about how to design the serving situation, e.g. by presenting the food in an appealing way on the plate or at the buffet. The mentioned hot-keeping temperatures and periods as well as cold storage temperatures also play an important role. In addition, communication with the children in the sense of health-promoting and sustainable catering may contribute significantly to an appropriate choice.

The following criteria are to be considered for service at the food counter:

- ☐ **Proper timing between kitchen and serving is realised.**
  Good organisation or regeneration of food in batches, for example, allow for short hot-keeping periods. This also helps to avoid or minimize food waste.

- ☐ **Serving staff is informed in detail about the current menu.**
  This includes information about the meal components, portion size or number of pieces and which components may be exchanged. Practically a short consultation between kitchen and serving staff is beneficial. This way, the serving staff *(educational staff)* keeps track, respond to the children's wishes and order additional components if necessary.

- ☐ **Children are given opportunities to influence portion sizes.**
  Children should have the opportunity to determine the portion sizes themselves. Nevertheless, especially with younger children, guidance is needed on how to choose the right amount. With time, they learn to take portions accordingly to their hunger and appetite. Regularly comparing the served with the calculated quantities helps to plan them accurately and to avoid or minimize food returns.

4.5 Disposal and cleaning

Planning | Purchase | Preparation | Service | **Disposal & cleaning**

After serving food and beverages, it is beneficial to access the overproduction, the food returns from the food counter and tables and the food waste generated in the dishwashing room. As far as possible, the food returns per component should be measured over a period of time. The results help to reconsider and, if necessary, adjust the menu planning, the procedure and organisation of ordering, purchasing, production, the presentation of the meals as well as their calculated quantities. All these are starting points to avoid overproduction and food returns. While non-regenerated components can be re-integrated into the menu the following day as long as maintaining the cold chain, food returns have to be discarded. The resource-saving handling of food and the avoidance of food waste is an important aspect of calculation, menu planning and final disposal and should also be included in the *catering concept*. Reducing food waste is an ongoing process that must be constantly reviewed and, if necessary, adjusted [11].

In order to raise the children's awareness on the topic, joint projects and educational activities can be offered on the topic of food waste. In addition, good communication between the serving staff (*educational staff*) and the children or kitchen staff is of great importance for the interpretation of the food returns. In the kitchen, there is often a lack of information about the causes of food returns. Was the portion size not appropriate? Did individual components not taste good? Was the mealtime too short? By systematically collecting this information and passing it on to the kitchen or the caterer, they are able to react accordingly to the food returns.

Further information:
www.fitkid-aktion.de
Keyword: Lebensmittelabfälle vermeiden

Measuring food waste is a simple method to identify potential savings. It is worth making the (alleged) effort, as measuring offers the possibility of saving costs for purchase, disposal and unnecessary labour! Further suggestions are available through the Competence Center for Out-of-Home Catering (Kompetenzstelle Außer-Haus-Verpflegung, KAHV).

The following criteria apply to the disposal of waste:

- [ ] **Food returns are recorded separately by meal and component and the outcomes are used for future menu planning.**
  Are the portion sizes calculated correctly? Which dishes are less popular and cause larger quantities of returns? Controlling the food returns provides a basis for optimising menu planning, preparation and presentation.

- [ ] **Unavoidable waste is made available for energy utilization.**
  Organic waste and food returns may be used to produce heat and electricity in biogas facilities and used fat to produce biodiesel. Today, a number of companies have specialised in the collection and sustainable utilisation of such residues.

When cleaning the food counter and kitchen area as well as the storage rooms, there must be a defined cleaning plan and, if applicable, a corresponding disinfection plan. The plans contain information on the cleaning agents and disinfectants to be used, as well as their usage and dosage.

The following criteria for cleaning and disinfection apply:

- [ ] **Attention is paid to the use of environmentally friendly cleaning agents.**
  Large quantities of cleaning agents are used in kitchens every day to clean surfaces, dishes and laundry. After use, they are discarded as wastewater. Depending on the ingredients, they can be hazardous to the environment and health. Therefore, environmentally compatible cleaning agents are preferable, for example those labelled with the EU Ecolabel and/or ecolabel "Blauer Engel" (Blue Angel). If the cleaning agents contain palm (kernel) oil-based tensides, sustainably certified palm oil should be used.

- [ ] **Dosage aids are used.**
  Besides the cleaning agents' ingredients, it is also important to know how much detergent to use. Dosing aids help to ensure that not more cleaning agent than necessary is used. This protects the environment and reduces costs at the same time.

- [ ] **Hygiene requirements are observed.**
  The principles of good hygiene practice and the "*Hazard Analysis and Critical Control Points*" concept (*HACCP*) must be strictly observed. Excellent hygiene practices and compliance with relevant laws and standards ensure the health of staff and guests (see chapter 6).

Further information:
www.fitkid-aktion.de
Keyword: Hygiene

4.6 Together and yet individual

Christmas parties, summer celebrations or birthdays are just some of the exceptions to the regular "meal routine" in the *daycare centre*. Additionally, to a defined meal offer for breakfast, snacks and lunch, a wide range of food is often brought from home on these days.

In addition, special diets and food intolerances like allergies require a differentiated view of the children's individual needs. *Daycare centres* as well as *meal providers* are often faced with the challenge of how to deal with this aspect in their daily routine.

First of all, clearly defined rules regarding meals for special diets that are transparent and accessible to all need to be in place. How these rules are formulated depends on local circumstances and structures. The *daycare centre* may define these procedures together with the parents and incorporate them in the *catering concept*. However, the sponsor can also define central specifications for special catering situations. Likewise, the specification for tenders of the *meal provider* should clearly outline the service description for special catering situations: What can be offered? Is it possible to respond to special allergies within the production process? Is there a special offer for children under 3 years of age?

It must be clear to all persons involved that there has to be room for individual needs and situational circumstances within the framework of daycare catering. At the same time, however, there are limits and not every preference can be realised.

The following section describes a number of situations related to the daily catering routine in order to make it easier to put them into practice.

4.6.1 Celebrations and parties at the *daycare centre*

There are many ways to celebrate parties and festivities with a special catering offer. Usually, there is a special meal for every celebration. The beautifully decorated Christmas table, the lovely baked birthday cake or the colourful buffet at the summer party are just a few examples. Accordingly, celebrations and parties in the *daycare centre* should be accompanied by a special culinary offer. They are an important element of food culture. Sometimes the *meal provider* offers something special for such occasions. However, cakes are also baked together with children or fruit *salad* is prepared as part of the educational programme. What food is put on the table and who provides or prepares it might be very different. If parents bring food from home, there should be rules about the food on offer and hygiene requirements (see chapter 6). It is advisable to develop these rules within the scope of a participatory approach and to record them accordingly in the *catering concept*.

4.6.2 How to handle sweets

Most children love sweets – whether as desserts, sweet spreads, gummy bears or sweet beverages. Sweets are ubiquitous in everyday life and often easily available. They are not necessary for a balanced diet. Sweet food, sweets and sweet beverages usually contain a lot of sugar and possibly fat. In addition, they provide few micronutrients like vitamins and minerals. Therefore, it is very important to ask how the *daycare centre* deals with the subject of sweets. Should there be a "sugar-free" morning to promote the remineralisation of the teeth? Should the range of sweets be controlled centrally by the *daycare centre*? Are sweets allowed in the lunch box?

As part of the menu calculations of the "DGE-Quality Standard for Meals in *Daycare Centres*", 10 % of the total energy was taken into account for food with low *nutrient* and high *energy density*. In addition to the classic sweets, these include sweet beverages, sweet spreads, sugared breakfast cereals as well as chips and savoury snacks. For children aged 4 to 7, this is about 135 kcal per day. For example, 10 gummy bears and 15 g (approx. 1 teaspoon) of hazelnut

spread contain this amount. Some facilities strictly ban sweets in the *daycare centre* or agree on this jointly with the legal guardians. Regardless of how the daily routine in the *daycare centre* is organised, clearly defined rules are crucial for adequate handling of sweets.

Examples of such regulations:

- To teach children how to appropriately handle sweets, they are only given at defined times or on special occasions (e.g. birthday, summer party).
- Sweets are not part of breakfast or snacks. This also applies to the so-called child nutrition products.
- Sweets are not used as a reward or for comforting.
- Desserts, for example, are only available on selected days.

Remember – the parental compliance with these rules should be ensured and they should be placed accordingly in the *catering concept*.

Further information:
www.fitkid-aktion.de
Keywords: Süßigkeiten **and** Zahngesundheit

4.6.3 Food intolerances like allergies

Lactose intolerance, coeliac disease, peanut allergy – food intolerances like allergies are not uncommon in *daycare centres*. So how do *daycare centres* and *meal providers* deal with this? The primary goal should be that those affected are able to participate at mealtime without restriction as far as possible. This might be achieved by:

- a special dish,
- a choice of individual components,
- or (if no other option is possible) a meal brought from home.

It is indispensable to address this aspect in the admission interview with the parents. Only if the *daycare centre* and the *meal provider* know whether a food intolerance like an allergy exists, both can react accordingly. It is important for parents to know in advance how their child can be fed within the *daycare centre*'s daily routine. Is it possible to provide an appropriate offer? May, should and are parents allowed to bring meals to the *daycare centre*? How can a mix-up of the food be prevented? If these questions are clarified in advance, they make daily life at the *daycare centre* easier. At the same time, the agreements show both possibilities and limits.

In order to plan appropriate measures, a medical certificate or an allergy passport is recommended. Only if the *daycare centre* and the *meal provider* know whether food intolerances like allergies exist, both can react accordingly.

A copy of the medical certificate must be kept in the child's file. In case of doubt, the food intolerance is documented in this way.

In addition, appropriate instructions should be discussed with the parents and also documented. An information sheet on food intolerances like allergies should contain the following points:

- child's name,
- child's group,
- type of food intolerances like allergies,
- list of avoidable food/allergens,
- if applicable, list of "substitute food" that are tolerated and can be stored in the facility,
- information on initial emergency measures (after consultation with parents) and
- contact telephone numbers.

This information must be easily accessible to all supervising and responsible persons (e.g. *educational staff*, kitchen staff, trainees) at all times.

Allergen labelling has been mandatory for unpackaged food since the end of 2014 [66]. Chapter 6.3 explains how this labelling needs to be carried out.

Further information:
www.fitkid-aktion.de
Keywords: Kennzeichnung **and** Lebensmittelunverträglichkeiten

4.6.4 Special needs of catering for under 3-year-olds

Since 2013, children aged 1 and above have been legally entitled to a childcare spot (§ 24 paragraph 2 section 1SGB VIII). The number of children at the age of 3 in nurseries increases steadily [67]. Thus, the topic of catering for children in this age group becomes more important. However, it is evident that infants (0 to 1 years) are less frequently enrolled in nurseries (approx. 10.000 infants nationwide in 2022) [68]. Consequently, the catering of infants is not the subject of this DGE-Quality Standard. For essential information on feeding infants in *daycare centres* a comprehensive overview is available on the website **www.fitkid-aktion.de**. Recommended practices, more detailed information, materials, and training are provided by the "Healthy Start – Young Family Network" at www.gesund-ins-leben.de. This is an association of important professional societies and institutions that deal with the topic of nutrition and health in pregnancy, during breastfeeding, for infants and young children [69, 70].

Breast milk in the *daycare centre* – is that possible?
Certainly, it is possible. What *daycare centres* have to keep in mind is explained in the leaflet of the Federal Institute for Risk Assessment "Hinweise zum Umgang mit Muttermilch in der Kita" (Advice for handling breast milk in the *daycare centres*): www.bfr.bund.de.

Depending on the developmental status, there is a smooth transition from infant feeding to the general family diet. This means that children, depending on their age, abilities and skills, may eat together with the "older ones". They do not need a special diet like infants do. However, they need help and support when eating and drinking independently. Chewing and swallowing solid food must first be learned. This needs time and more intense supervision.

It is important to motivate children to eat independently with cutlery. Sometimes it is helpful to chop or mash food. However, this does not mean turning food into puree. To strengthen the chewing muscles, children should, for example, eat bread cut into pieces, but still with crust. For many children it is easier to eat from a bowl than from flat plates. With a few exceptions, no restrictions are necessary in the food selection.

- **Cabbage, *legumes* and others**
  Food that is flatulent or difficult to digest, such as *legumes*, cabbage and onions, are not forbidden. However, they should be gradually implemented.
- **Sharp-edged, hard, round food**
  Sharp-edged or very hard food, such as nuts, are difficult to chew and can be easily swallowed [71]. Round foods such as grapes, blueberries or olives also pose an increased risk of choking. Therefore, this food should be chopped into small pieces.
- **Meat rather tender than hard**
  Large fibres, hot fried or dry/hard meat is difficult to chew. Therefore, meat with a tender consistency should be offered.

5

Beyond the plate

A nutritionally balanced and sustainable meal offer in the *daycare centre* is essential. But the view must go "beyond the plate". Not only "what" is eaten matters, but also "how" and under which circumstances. This means that different general conditions like the dining atmosphere or food and nutrition education are important: The variety of tastes that children get to know in their early years and what they associate with a positive dining atmosphere usually persists and remains until adulthood. Thus, the setting of a *daycare centre* with the different meals offers ideal conditions to positively influence the eating habits of children from the very beginning.

5.1 Stakeholders in daycare catering

In order to provide health-promoting and sustainable meals and to create a supportive dining environment and corresponding educational activities "around the plate", the cooperation of different stakeholders with different competences is necessary. Figure 6 shows selected stakeholders involved in daycare meals and illustrates the complexity of catering and food and nutrition education. According to their respective fields, they are divided into 3 groups: ***Meal providers*** who plan, produce and/or offer meals in or for *daycare centres* (green), all stakeholders involved in the ***daycare centre* environment** (orange), as well as **parents and children** (yellow), who should be considered as guests or relatives. All of them influence the design and quality of daycare catering and its general conditions in both direct and indirect ways.

Good communication between all stakeholders is essential for the success of good daycare catering. For this purpose, a *catering committee* (so-called "round table") may be established, in which all stakeholders meet at regular intervals (see chapter 2).

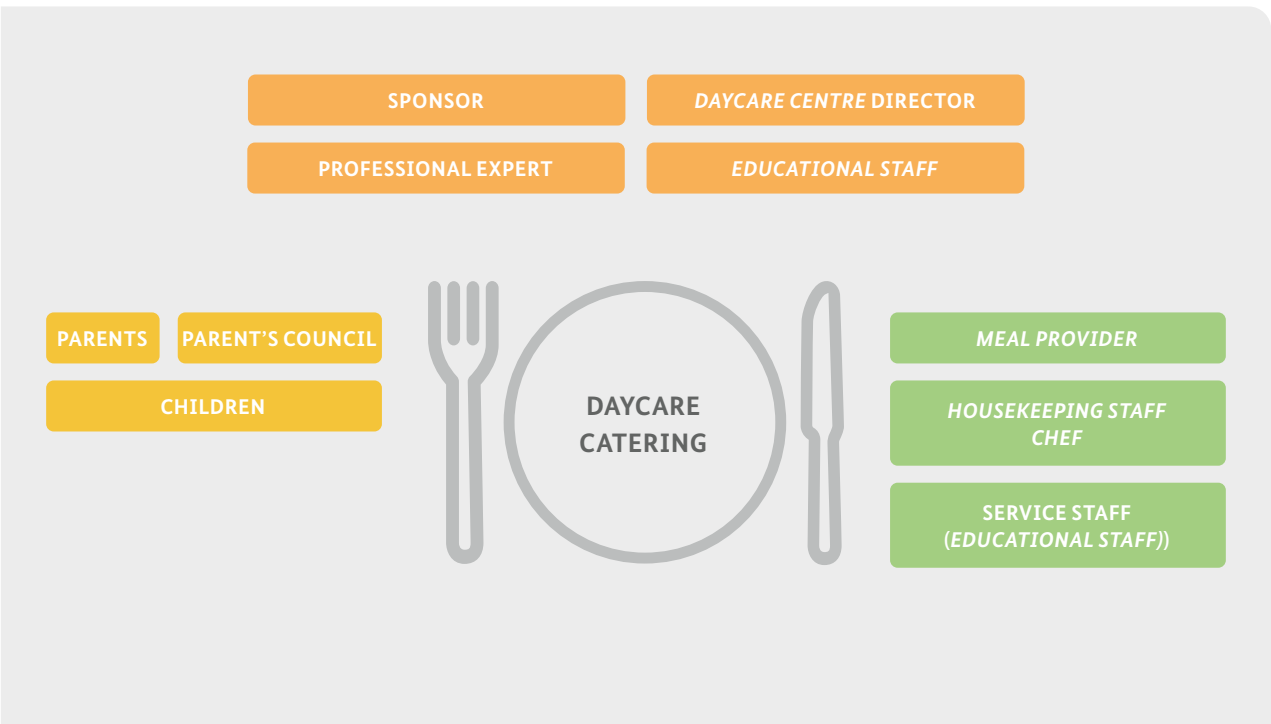


Figure 6: Selected stakeholders involved in daycare catering

In the following, the stakeholders are presented with their tasks and influence possibilities. This is followed by some general conditions that stakeholders may influence. This chapter intends to raise awareness of the various topics and provide suggestions for transferring them into practice. Due to the large number of stakeholders and the wide variety of general conditions in daycare catering, it is impossible to present a comprehensive overview; this is why only examples can be given.

Sponsor, professional expert, *daycare centre* director, *educational staff*

This group of people not only influences what is offered on the plate, but also has a direct influence on the general conditions. They act on different levels with indirect or direct contact to the child. While the sponsor decides on the material and personnel framework, the *educational staff* actively creates the eating situation in the *daycare centre*. Decisions about the direction of catering and its integration into the *educational concept* as well as the status of catering in the *daycare centre* are made by the sponsor, the professional expert, the *daycare centre* director and the *educational staff*, who all play a central role.

Parents, parents' council, children

The basis for eating and drinking habits is laid at home. Parents act as role models and shape the child's attitudes and eating habits. The child's dining environment expands when he or she enters the *daycare centre*. Since the child often eats several meals a day at the facility, the *daycare centre* increasingly gains influence [72].

The best chance to positively influence children's eating habits is when parents and *daycare centres* work together and complement each other. Parents and parents' representatives are therefore important partners for the topic of eating and drinking as well as for food and nutrition education [73]. A regular exchange between all participants promotes transparency, is elementary for quality development and creates mutual understanding (see chapter 2).

Meal provider, housekeeping staff,* chef, service staff *(educational staff)

The *meal provider* and the kitchen team are responsible for what is offered on the plate. Depending on the general conditions, they have a direct or indirect influence on the catering situation with their possible actions.

If the food is prepared or regenerated in the *daycare centre* itself, the children experience this process directly. They know the kitchen team, smell the aroma while preparing the food and have the opportunity to ask questions. If food is delivered by a *meal provider*, the influence is more indirect. A pictured menu as a service for the children or regular background information on dishes or food for the parents are just a few examples of how a *meal provider* may influence the catering situation, far beyond the preparation of the meals. In the *daycare centre*, the food is usually served by the *educational staff*. They are in direct contact with the children, have an influence on the food's acceptance, assist at mealtimes, encourage children to eat and drink independently and motivate them to try new food. Regardless of whether the food is prepared directly in the facility or delivered, the *educational staff* and the catering team are an important connection for the optimal design of the meals.

In this context, it makes sense to establish a *catering committee* with the participation of the above-mentioned stakeholders (see chapter 2.1).

5.2 General conditions around daycare catering

The numerous stakeholders described above illustrate the various responsibilities that need to be coordinated in order to ensure that the catering on and around the plate might be optimally designed (see chapter 2.2). In addition to the stakeholders, there are also general conditions and activities that may influence the food and beverages in the *daycare centre*. These framework and activities can vary, depending on the structure and conditions on site.

5.2.1 Development of a *catering concept*

Due to longer daycare hours, meals at the *daycare centre* are becoming more important – especially for parents. In some cases, the food offered can also be the decisive criterion for or against a *daycare centre*. Families have their own eating habits, which are shaped by different attitudes, preferences, wishes and views. Uniting all of these in a *daycare centre* is impossible. A *catering concept* shows how eating and drinking is "lived" in the *daycare centre*. It serves as external communication (e.g. for parents). It creates trust, security and transparency. At the same time, it defines a scope of action for staff and is an instrument for quality development (see chapter 2).

Ideally, the *catering concept* is firmly anchored in the *educational concept*. What a *catering concept* ultimately looks like, which points are addressed, defined and regulated depend on the respective general conditions and structures of the *daycare centre*. In order to develop a *catering concept* for the facility, it is helpful to involve all participants (see chapter 2). This participatory process creates transparency and understanding for the different concerns and thus promotes acceptance.

Further information:
www.fitkid-aktion.de
Keyword: Verpflegungskonzept

5.2.2 Design of the dining atmosphere

Whether children like and accept the offered meals also depends on how they eat. The dining atmosphere is of great importance. An appealing dining atmosphere creates space for joint conversations. It gives children enough time to enjoy the meal and the opportunity to learn social skills such as listening, showing respect and helping each other. The most important factors that positively influence the dining atmosphere include the

- room and table design,
- mealtimes as well as
- pedagogical assistance during mealtime.

The following criteria apply for designing the dining atmosphere:

☐ **The dining area is bright, offers sufficient space and is furnished age-appropriate.**
A separate dining room in the *daycare centre* is ideal. This makes the daily meal routine easier, as tableware, cutlery and glasses, for example, can be stored centrally. It should be bright and may be designed around eating and drinking. Sufficient space, age-appropriate furniture and mobility around the table make it easier for children to handle cutlery and fill their plates independently. Accordingly, the tableware should also be suitable for children. Spoons that are too big do not fit in the mouth. Large knives are often too heavy to hold. In addition to the interior design, the noise level during mealtimes affects the dining atmosphere. Clear communication rules help to reduce the noise level.

☐ **Meals are separated from other activities and mealtimes are defined.**
Set mealtimes structure the day, which is especially important for children and provides security. Therefore, the facility should define firm mealtimes or mealtime periods which apply to all meals. If there is no separate dining room, meals should be clearly separated from other activities. This signals clearly to the children that mealtime is starting now. They are not distracted by other activities.

... furthermore:

The duration of the meal corresponds to the children's needs. A continuous meal offer, such as a fruit plate that is always available, is not recommended. A permanent meal offer is unfavourable for dental health and can lead to children eating beyond their hunger and energy needs. Therefore, "meal-free" periods are absolutely reasonable and recommended. This can be 2 to 3 hours after a complete meal. There should always be an opportunity to drink. Water and unsweetened fruit and herbal teas are the first choice.

While lunch in *daycare centres* is usually eaten together, there are different concepts for breakfast and snacks. Depending on the structure and conditions in the facility, it may be either an open/free breakfast or snack (with defined mealtimes, e.g. from 8 a.m. to 10 a.m.) or a closed/common breakfast or snack (start and end together).

Both approaches have advantages. If the institution decides to have a joint breakfast, this usually results in a more peaceful atmosphere, table rituals can be cultivated, and the *educational staff's* role model function is more effective. At the same time, picky eaters may be motivated by the community. Unfamiliar food is often better tried in this way.

Where open breakfasts are favoured, children have more freedom in deciding what they want to do. There is no need for them to interrupt their play abruptly and so they can follow their own feeling of hunger and satiety more. This also influences the duration of the meal. When the child is full, he or she may get up again. Autonomy is promoted more, as he/she is responsible for putting the tableware on and off the table.

☐ **All meals are supervised by the *educational staff*.**
Children learn through role models. They observe and imitate behaviour [72, 75]. Learning also happens at mealtimes. Therefore, the *educational staff* acts as role models, especially at mealtimes. They teach the children skills and explain unfamiliar food. How the meal assistance looks like should therefore be defined and determined within the scope of the quality management. Sharing a meal is an educational task. In the case of young children, a high level of supervision is often required. Consequently, the shared meal is not a break period.

5.2.3 Food and nutrition education

"Every young person has the right to support his or her development and to be educated to become a responsible and socially competent person" (§ 1 Abs. 1 SGB VIII). In addition to the task of care and education, *daycare centres* have an educational mandate (§ 22 Abs. 3 SGB VIII) [76]. Although the federal states differ in their orientation and education curricula for early childhood development and education in *daycare centres*, they all have one common goal: to promote the social, emotional, physical and mental development of the child [77]. Many topics mentioned in the educational plans for early childhood education can be covered around mealtimes.

In the context of developing health-promoting behaviour, food and nutrition education plays an elementary role. This is not about teaching nutritional knowledge. The classification of food into "healthy" and "unhealthy" is not helpful. Instead, the focus is on raising children's awareness of adopting a healthy and sustainable diet. Therefore, it becomes crucial for children to actively experience eating and drinking. Special educational programmes for food and nutrition education are not necessarily required for this purpose. The everyday life of a *daycare centre* provides numerous starting points for food and nutrition education. For instance, a diverse menu provides children with the chance to explore a variety of food, fostering an understanding of **food diversity**. Additionally, they can gain insights into food culture and cultural practices by learning about table manners, mealtime rules, and being introduced to *regional* and **country-specific cuisines**. Allowing children to serve themselves during mealtimes can support their natural sense of hunger and satiety. Over time they learn not only to estimate the right portion size according to their hunger, but also to avoid leftovers and learn to **appreciate food** [78].

Through the experiential learning and early exposure to a range of tastes, it is highly likely that children will carry this knowledge into adulthood, making informed and varied food choices [75, 79].

In addition to food and nutrition education, cooperation with the parents is also important for creating a positive eating routine at the daycare. It is a good prerequisite, if *daycare centres* and parents complement each other, for enabling children to deal with eating and drinking in a self-determined and self-responsible manner. Thus, the *daycare centre* is an ideal place to support children in acquiring everyday skills and to introduce them to health-promoting and sustainable eating habits [75].

By the way:
Anyone who intends to cook together with children or prepare cold dishes in the *daycare centre* does not need a fully equipped kitchen. Small cooking activities may also take place in the group room. Important: Take care of hygiene! The leaflet "Good hygiene practice when cooking with children" explains the best way to achieve this in practice. It was approved by all federal states in accordance with the national protocol for reviewing guidelines for good practice, as outlined in Article 8 of Regulation (EC) No 852/2004.

Further information:
www.fitkid-aktion.de
Keyword: Hygiene

5.2.4 Communication and parental participation

Parents are the most important partners for the *daycare centre*. Good communication around catering is fundamentally important.

What proves to be good and practicable communication around meals can vary from *daycare centre* to *daycare centre*. It is essential that information is passed on and transparency is created. This gives security, creates trust and forms a good basis for an educational partnership. It is not only the *educational staff* who have to pass on the information. *Meal providers* as well as *housekeeping staff* are relevant stakeholders who can support the communication about the catering in a professional way. Parents' concerns and children's wishes should also be included in the communication (see chapter 2.4). A professional view on the subject of daycare meals is important. Questions such as "How much meat should be served?" or "Why are wholemeal products important?" should be answered equally and correctly by each person. The *educational staff*'s own eating biography, individual likes and dislikes have no place here. Reliable, scientifically based information and appropriate, comprehensible communication with all stakeholders are important. This is provided by the "DGE-Quality Standard for Meals in Daycare Centres".

Some communication examples are presented below to simplify the implementation in practice.

- **Menu:** When it comes to the meals, the menu is the most important communication tool. In addition to certain obligatory labelling (see chapter 6), the menu should be designed in such a way that it is clearly visible what food is being served. This includes not only lunch, with starters and desserts, but also breakfast and snacks. Pictures, pictograms, drawings or a sample plate (with dummy food) also give children the opportunity to "read" the menu.
- ***Catering concept*:** A *catering concept* describes in detail how catering is practised in the *daycare centre*. Ideally, it is written down and known to the parents from the beginning (see chapter 5.2.1).
- **Displays, flyers, brochures, parents' newspaper:** These communication tools provide scope for very different contents and depth of information. For example, it can be a recipe/food of the month to be cooked by the *meal provider* or the *housekeeping staff*. It can also be specific information about pedagogical offers around eating and drinking. Perhaps there is also room for the families' favourite recipe to be displayed. This encourages sharing and cooking. The possibilities are endless and the subject of catering remains a matter of conversation.
- **Parents' activities:** The focus lies on interaction and the exchange of information about eating and drinking. In addition to providing information, parental activities also help to make the work of the *educational staff*, the *meal provider* and the *housekeeping staff* transparent and create understanding. Being open to suggestions and help from parents promotes the educational partnership. In addition to the popular cooking and baking activities on certain themes, this might also include a visit to a producer or the *meal provider*. Especially when the daycare year begins and many new children visit the facility, a parents' night about eating and drinking is a good idea.

Further information:
www.fitkid-aktion.de
Keyword: Ernährungsbildung

6

Legal requirements for daycare meals

Mass catering in *daycare centres* must observe a wide range of legal requirements. Food and hygiene law is of central significance, with the primary goals of food safety, protection against misleading and fraud, as well as the provision of information to consumers and guests. More than 200 European and national legal norms regulate how these goals are to be achieved. Not all of them need to be known by those responsible for mass catering in detail. However, in terms of the duty of care under food law, they must know and comply with all responsibilities relevant to their food business activity. They are also obliged to keep up to date with any changes in the law.

6.1 Food law key regulations

Key regulation of the food law is the Regulation (EC) No 178/2002 laying down the general principles and requirements of food law (Lebensmittel-Basisverordnung, [LM-BasisVO]). Like all EU regulations, it applies directly in all EU member states and fundamentally regulates how the protection of health and the prevention of fraudulent or deceptive practices is to be guaranteed at all stages of the process ("from farm to fork"). In particular, it stipulates that only safe food may be distributed and prohibits practices of fraud and deception. It also regulates the companies' obligations in crisis situations, such as public notification or removal of unsafe food from the market. The principle of staged responsibility applies to the adherence to food law regulations: Each food business operator is responsible for what happens in his/her own, controllable field. His/her primary responsibility ends when other business operators influence the food, e.g., at the beginning of the next value chain level. If, for example, frozen vegetables are delivered to a mass catering facility for further processing, the kitchen management can generally assume that the goods are safe. However, they must always fulfil their own duties of care under food law by, for example, checking the temperature and packaging when receiving the goods, complying with the temperature specifications during storage and further processing, and defining and implementing criteria for selecting suppliers.

The German Food and Feed Code (Lebensmittel- und Futtermittelgesetzbuch, [LFBG]) is also important for food companies in Germany. It complements the European Regulation (European LM-BasisVO) by incorporating national provisions related to aspects such as the structure of official food monitoring, penalties, and fines, as well as, regulations for public information.

The basis for food information and labelling is the European Food Information Regulation (FIR) (EU) No 1169/2011, which regulates general labelling and further information for pre-packaged food in an EU-wide standardized way. It also outlines essential requirements for mass catering, including allergen declaration, which is also required for unpacked food (loose goods). In Germany, the national Food Information Implementation Regulation (Lebensmittelinformations-Durchführungsverordnung, [LMIDV]) supplementing the LMIV, is also required. The LMIDV stipulates, for example, that food marketed in Germany must always be labelled in German or the allergen declaration on non-prepacked food. Table 4 provides an overview of selected food law regulations and interpretation aids for mass catering.

Table 4: Selected legal regulations and interpretation aids for mass catering

topic	law and regulations	
	EU-level	**national level**
basic regulations	› Regulation (EC) No 178/2002 laying down the general principles and requirements of food law	› German Food and Feed Code (Lebensmittel- und Futtermittelgesetzbuch [LFGB])
hygiene and infection control	› Regulation (EC) No 852/2004 on the hygiene of foodstuffs › Regulation (EC) No 853/2004 laying down specific hygiene rules for food of animal origin › Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs	› Food Hygiene Ordinance (Lebensmittelhygiene-Verordnung [LMHV]) › Animal Food Hygiene Ordinance (Tierische Lebensmittelhygiene-Verordnung [Tier-LMHV]) › Ordinance on foodstuff provisions to control zoonoses and zoonotic agents (Zoonose-Verordnung [ZoonoseV])
		› Infection Protection Act (Infektionsschutzgesetz [IfSG])
official monitoring	› Regulation (EU) No 2017/625 on official controls and other official activities	› Food Law Penalty and Fine Ordinance (Lebensmittelrechtliche Straf- und Bußgeldverordnung)
labelling and consumer information	› Regulation (EU) No 1169/2011 on the provision of food information to consumers (FIR) › Regulation (EC) No 1333/2008 on food additives › In the case of nutrient and health-related claims: Regulation (EU) No 1924/2006 on nutrition and health claims made on foods › In case of organic claims: Regulation (EU) 2018/848 on organic production and labelling of organic products	› Food Information Implementation Ordinance (Lebensmittelinformations-Durchführungsverordnung [LMIDV]) › Food-additive Implementing Regulation (Lebensmittelzusatzstoff-Durchführungsverordnung [LMZDV]) › In the case of organic claims: e.g. Ecological Production Act (Ökolandbaugesetz [ÖLG]), Organic Labeling Act (Öko-Kennzeichengesetz [ÖkoKennzG]), Organic Out-of-home Catering Ordinance (Bio-Außer-Haus-Verpflegung-Verordnung [Bio-AHVV])

	legally non-binding aids for practical implementation
	› Guidance on the Implementation of Articles 11, 12, 14, 17, 18, 19 and 20 of Regulation (EC) No 178/2002 on General Food Law (Dec. 2004)
	› "Guidelines of Good Hygiene Practice" » Guideline for good food hygiene practice in social facilities, (working version, 2022) » Guideline for good food hygiene practice in daycare facilities, (2nd edition, 2020) » Guideline for the gastronomy sector (3rd edition, 2022) › Selected DIN-Standards on Food Hygiene: » 10506: Food hygiene – Mass catering » 10508: Food hygiene – Temperature requirements for foodstuffs » 10514: Food hygiene – Hygiene training » 10516: Food hygiene – Cleaning and disinfection » 10524: Food hygiene – Work wear in food business » 10526: Food hygiene – Retained samples in mass catering » 10536: Food hygiene – Cook & Chill method – Hygiene requirements › Publications of the German Federal Institute for Risk Assessment » Safe food: Especially vulnerable groups in communal facilities, 2021 › Publication of the Federal Institute for Risk Assessment in cooperation with the Federal Centre for Nutrition » Hygiene rules in the catering sector, 2020 › European Commission Notice regarding » *HACCP* (Commission Notice 2022/C 355/01) » EU guidelines on food donation (Commission Notice. 2017/C 361/1)
	› Commission Notice on questions and answers on the application of the FIR (Commission Notice 2018/C 196/1) › Identifying the public perception: Designations of the German Food Code (Leitsätze des Deutschen Lebensmittelbuchs)

From legal obligation to practical implementation

Laws and regulations regulate a large number of legally binding matters for an undefined group of people. For example, food law applies to all food business operators – regardless their size or whether they only offer sandwiches or a comprehensive hot lunch. Therefore, it is sometimes difficult for food business operators to know how to implement the generally applicable legal obligations in relation to their individual field. Guidance is provided by various legally non-binding publications, like the technical standards of the German Institute for Standardisation (Deutsches Institut für Normung e. V., [DIN]), statements and recommendations by authorities like the Federal Institute for Risk Assessment (BfR) or the sector-specific "Guidelines of Good Hygiene Practice". In addition, the EU Commission sometimes publishes legally non-binding guidelines to contribute to the EU-wide harmonised application of EU law.

6.2 Hygiene and infection control

A comprehensive hygiene management is obligatory in every food business. The requirements that persons responsible for food law must fulfil are essentially determined from 2 European regulations:

- **Regulation (EC) No 852/2004 on the hygiene on foodstuffs:**
  As required by law, the hygiene in food businesses must meet a high standard in order to fulfil the principle of ensuring optimal product safety. It is therefore required, that the business hygiene management must put a so-called basic hygiene concept in place, which is supplemented by a mandatory "*Hazard Analysis and Critical Control Points*" concept (*HACCP* concept). Annex II of the regulation outlines fundamental requirements for operating facilities where food is handled. These must generally be clean, constantly maintained, and easy to clean. Various other specifications, such as lighting and ventilation, floor conditions, the number of washbasins, are also stipulated. The implementation of legally mandated hygiene measures in specific cases depends on the unique circumstances at each location.

  Interpretation aids for the practical implementation of Annex II are provided by sector-specific "Guides for good hygiene practice" and the relevant DIN standards, like DIN 10506:2018-07: Food hygiene – Mass catering as well as DIN 10508:2022-03: Food hygiene – Temperature requirements for foodstuffs.

- **Regulation (EC) No 853/2004 laying down specific hygiene rules for food of animal origin:**
  The regulation complements Regulation (EC) No 852/2004 if a company processes food of animal origin. Excluded from its scope is food that contains both ingredients of plant origin and processed products of animal origin, for example salami pizza or breaded schnitzel. Of practical importance for mass catering establishments are the storage temperatures for certain food regulated in the annexes to Regulation (EC) No 853/2004 (see DIN 10508:2022-03). It is also regulated whether a mass catering business requires approval in accordance with Article 4(2)(d) of Regulation (EC) No 853/2004 or is only subject to registration.

In addition to these 2 key regulations, there are other European and national hygiene regulations that contain obligations for food business operators (see Table 5). For example, § 20a of the national Animal Food Hygiene Ordinance (Tier-LMHV) defines specific requirements for the distribution of raw egg products in mass catering.

Good hygiene practice

According to EU law, food business operators must establish their hygiene management with regard to the basic principles of good hygiene practice. Compliance with these principles ensures basic hygiene in the company. Elements of good hygiene practice are in particular

- guarantee of adequate constructional facilities,
- equipment and transport hygiene,
- hygienic handling of foodstuffs,
- personal hygiene,
- cleaning and disinfection,
- storage and pest management and
- waste management.

Guidance on how these aspects should be implemented into practice is provided in particular by the sector-specific "Guidelines for good hygiene practice", e.g., in gastronomy or in kitchens of social facilities (see Table 4).

Obligatory self-monitoring according to *"Hazard Analysis and Critical Control Points"* principles

In addition to good hygiene practice, food business operators must introduce, apply and maintain a documented self-checking system in their business in accordance with the "*Hazard Analysis and Critical Control Points*" principles (see Regulation (EC) No 852/2004). This is based on the general hygiene policy of the business. The aim of such a self-checking system is to identify and evaluate possible health hazards already during food production and to minimise or eliminate them by taking appropriate precautions. If, for example, cooling temperatures are set for certain foods and checked as scheduled, health risks can already be prevented when deviations occur during the production process, thereby increasing the safety of the end product. The official food control checks the "*Hazard Analysis and Critical Control Points*" system, including associated documentation, as part of their control activities [80].

Further information:
www.fitkid-aktion.de
Keyword: Hygiene

Hygiene training obligation

Anyone who produces, handles or distributes food or dishes to guests must be regularly trained in food hygiene matters (see Regulation (EC) No 852/2004, annex II, chapter XII in combination with the Food Hygiene Ordinance (LMHV) § 4). This regulation also applies to persons who, regularly transport or serve food, regardless if this are parents or a person who is member of the *daycare centre*. Annex 1 of the Food Hygiene Ordinance (LMHV) and DIN 10514:2009-05: Food hygiene – Hygiene training provides good orientation on essential requirements for this training. DIN 10514 also describes the training content for persons who are responsible for developing and applying the "*Hazard Analysis and Critical Control Points*" concept within the company. In terms of good hygiene practice, employees should be trained at least once a year. The standard also recommends a success assessment and documentation.

Instruction obligation for infection protection

According to § 43 of the Infection Protection Act (IfSG), there is also an obligation to instruct all persons who produce, handle or place food on the market or hand it out to guests. The purpose of the training is to educate employees about specific rights and responsibilities related to infection protection thereby reinforcing their individual accountability. The focus is on prohibitions on activities and employment in the event of certain illnesses or symptoms of illness, such as vomiting and diarrhoea as outlined in § 42 of the IfSG. The local health authority is usually responsible for the initial instruction. It issues a corresponding certificate, which must be presented to the company. It must not be older than 3 months when the employee starts work. Subsequent training is required at this juncture and every 2 years thereafter. It can be conducted by the employer or an authorized person.

6.3 Labelling and public information

In mass catering, most meals are offered unpackaged. Certain information obligations also apply to them, but these are implemented somewhat differently than for packaged food, which are offered in supermarkets, for example.

However, a central principle of labelling law also extends to the menu: All information must be accurate and must not mislead guests. This means that names on the menu must be chosen carefully, ensuring they do not create false expectations in the target group and facilitate conscious consumer decisions. In the case of meat products, for example, specifying the animal species from which the meat originates is advisable. There are legally binding designations for some ingredients or dishes, such as “cheese”. This term is protected by law and is reserved for products made from milk. The description “gratinated with cheese” may only be used if it contains cheese. For instance, a “pudding” is typically prepared with milk. If a comparable vegan dessert is offered based on rice drink, this should be indicated.

Assistance in selecting suitable names for dishes: The guidelines of the “German Food Code” describe, as a kind of anticipated expert opinion, what is generally expected of a “cordon bleu”, a “rye bread” or a “milk ice cream”, for example.

Special information requirements on allergens and food additives

Some people have an allergic reaction or suffer from intolerances when they eat certain food. Others are sceptical about the use of additives and want to avoid them. For this reason, special information obligations apply to certain allergens and substances that trigger intolerances as well as additives. This enables everyone to make a conscious consumption decision, not only for packaged goods, but also for unpackaged food. These obligations apply wherever food is typically offered unpackaged – in bakeries, restaurants, ice cream parlours and also in mass catering. The information requirements are based on EU law. Details on implementation are regulated by 2 national regulations:

- the Food Information Implementation Ordinance (LMIDV) regarding allergens (see § 4(2) LMIDV in conjunction with Article 9(1)(c) FIR in conjunction with Annex II FIR) and
- the Food-additive Implementing Regulation (see § 5 LMZDV).

The information obligation under Annex II of the FIR covers 14 food or food groups that most frequently trigger allergies or intolerances in Europe - in common parlance, they are referred to as the “14 major allergens” (see box, p. 76). The obligation to provide information on additives does not apply to individual additives, but to certain groups of additives, including preservatives, sweetener and colorants. Information must always be provided on additives of certain classes if they are included in the food on offer. Detailed requirements are set out in § 5 (1) and (2) LMZDV (see Table 5).

Table 5: Overview of food additives subject to mandatory labelling

Class name or food additive	Labelling	Practical examples
colorants	› "with colorant"	› desserts, coatings
preservatives	› "with preservative" or "preserved"	› deli *salads*, mayonnaises
	› if only the food additives E 249 to E 252 are used: for food with curing salt "with curing salt", for food with sodium or potassium nitrate "with nitrate" and for food with curing salt and sodium or potassium nitrate "with curing salt and nitrate"	› meat products
antioxidants	› "with antioxidant"	› seasonings, instant soups, broths
flavour enhancers	› "with flavour enhancer"	› seasoning mixes, instant soups, sauces, flavoured products
iron salts E 579 or E 585 (no class name)	› "blackened"	› black olives
sweetener	› "with sweetener"*	› mustard, deli *salads*, sauces
	› for food with aspartame (E 951) or aspartame-acesulfame salt (E 962): "contains a source of phenylalanine"	› food with reduced energy value
	› for food with more than 10 % added polyhydric alcohols with the numbers E 420, E 421, E 953 and E 965 to E 968: "may have a laxative effect if consumed excessively"	
food additives with the numbers E 338 to E 341, E 343 and E 450 to E 452	› "with phosphate" only applies to meat products	› boiled sausages, cooked ham
food additives with the numbers E 445, E 471, E 473, E 474, E 901 to E 905 and E 914, which are used for surface treatment	› "waxed" only applies to fresh fruit and vegetables	› apples and pears, fresh citrus fruits, melons

* with the exception of tabletop sweetener: for these, the indication "based on ...", supplemented by the name of the sweetener used, is mandatory.

While the obligation to provide information on allergens and additives is governed by different regulations, it is implemented according to a single principle: in both cases, written information must be available in German before making a purchase. There are various ways to do this:

- on menus, beverage menus or in the price list, e.g. by stating “Wiener Schnitzel, contains egg and gluten” or “Bratwurst, with curing salt” (footnotes, symbols or abbreviations are possible if these are listed in close proximity and clearly itemized),
- on a sign on or near the food,
- in other directly and easily accessible written or electronic information (e.g. folder, leaflet, electronically on a terminal, etc.).

Verbal information is also possible, but only by an adequately informed person (about the relevant ingredients and processing additives) under the following conditions (see § 4 (4) LMIDV):

- There must be an additional written documentation on the allergenic ingredients and food additives used in the production of the specific food (as mentioned above).
- There must be a clear reference to this information option, e.g. a sign in the sales area or a note on the menu.
- This written documentation is easily accessible to the authorities and guests upon request.
- The required information must be promptly provided upon request before the purchase is made and before the food is handed over.

The 14 food or food groups (main allergens) are:

- **cereals containing gluten**
- **crustaceans**
- **eggs**
- **fish**
- **peanuts**
- **soy**
- **milk**
- **nuts**
- **celery**
- **mustard**
- **sesame seeds**
- **sulphur dioxide and sulphites**
- **lupin**
- **molluscs**

Organic claims on the menu

The term “organic” (in German “öko” or “bio”) is protected by law. The Organic Out-of-home Catering Ordinance (Bio-AHVV) specifies 2 options for organic food labelling for catering companies. Firstly, the labelling of exclusively organic ingredients used in the kitchen is permitted. Additionally, the AHV label can convey the monetary percentage of organic content in 3 categories (bronze: 20–49 %, silver: 50–89%, gold: 90–100%). Both the labelling of organic ingredients and the indication of organic content require a valid organic certificate, granted after a successful inspection by a state-recognized inspection body [58].

Nutrition declaration

Nutrition declaration is not obligatory for loose goods – in contrast to pre-packaged goods. However, anyone who voluntarily wish to provide information on nutritional values, must comply with the requirements of Article 30 (5) of FIR in conjunction with Article 32 in conjunction with Annex XV FIR. According to this, either

- only the energy value (in kcal and kJ) or
- the energy value and the amounts of fat, saturated fatty acids, sugar and salt,

each per 100 g or 100 mL are listed. It is also permitted to refer the information to a portion, as long as it is clearly quantified [81].

Nutrition claims like “low-fat” or “rich in Vitamin C” are only permitted if the requirements of Regulation (EC) No 1924/2006 on nutrition and health claims made on foods (HCVO) are met. For example, a food product advertised as “low-fat” in form of a dessert with a solid texture may contain a maximum of 3 g of fat per 100 g. Advertising the Vitamin C content is only permitted above a certain minimum content [81].

Further information:
www.fitkid-aktion.de
Keyword: Kennzeichnung

6.4 Product liability and retained samples

Anyone who manufactures food is liable under the German Act on Liability for Defective Products (ProdHaftG) for damage to property and health resulting from defective products. This applies, for example, if a guest or pupil complains of stomach pains caused by eating a microbially contaminated dessert. In such cases, producers must prove that the dessert they produced was free of any defects when it was served. Otherwise, they are liable for any damage found. Liability exists regardless of fault.

In practice, retained samples can be used to prove that a company has adequately fulfilled its own duty of care under food law or to prove that the cause of the damage is to be found elsewhere. A retained sample is a representative product sample that is taken and stored under defined conditions. Guidance on this is provided by DIN 10526 “Food hygiene – retained samples in mass catering“. The person responsible in the company usually decides whether retained samples are taken. There is no general legal obligation to do so. However, this can be useful for perishable food containing poultry, eggs, or fish.

6.5 Waste management and the obligation to offer reusable (food) packaging

Waste naturally occurs in mass catering, which cannot be completely avoided even with good resource management. Several regulations apply in this context, and those responsible for operations must be familiar with them. This includes the Animal by-products-Elimination Act (TierNebG) regarding the disposal of kitchen and food waste. EU hygiene legislation also outlines specific requirements for waste management. DIN 10506: Food hygiene in mass catering, for example, describes how these can be implemented in practice.

Efforts to minimize waste in mass catering are crucial, encompassing measures to reduce food waste. This may involve voluntarily redistributing surplus, still-edible food to interested third parties on-site.

Since January 2023, mass catering companies have been mandated to offer reusable packaging when offering food or beverages intended for immediate consumption takeaway: §§ 33 and 34 of the German Packaging Act (VerPackG) stipulate that, in addition to disposable plastic food packaging and disposable drinks cups, reusable alternatives must be offered, and customers must be informed of this choice. An exemption to this obligation is granted to companies with a sales area of up to 80 m2 and a maximum of 5 employees.

Further information:
www.fitkid-aktion.de
Keyword: Verpackungen

Checklist

The following checklist provides an overview of all criteria of this DGE-Quality Standard. It enables *meal providers* and *daycare centres* to independently review their current catering situation and, if necessary, identify potential for improvement. Thus, it might be the starting point for planning appropriate steps and supporting them on the way to more catering quality (see chapter 2). The criteria are listed along the individual chapters of the DGE-Quality Standard. For explanations of the criteria, see the respective chapter.

Development of quality daycare meals	not fulfilled	partially fulfilled	fulfilled
A *catering concept* is in place.	☐	☐	☐
Parents receive information regarding the *catering concept*.	☐	☐	☐
All stakeholders are involved.	☐	☐	☐
A catering commissioner exists.	☐	☐	☐
Catering staff receive continuous training.	☐	☐	☐
Ergonomic workplaces and workflows are in place.	☐	☐	☐
Employees are valued.	☐	☐	☐
Feedback on the menu is regularly obtained, evaluated and measures are derived.	☐	☐	☐

Design of health-promoting and sustainable meals	not fulfilled	partially fulfilled	fulfilled
Planning › Purchase › Preparation › Service › Disposal & cleaning			
Food qualities and frequencies for BREAKFAST and SNACKS, MIXED DIET, 5 catering days			
grain, grain products, potatoes **min. 10 × (min. 2 × daily)** wholemeal products *muesli* without added sugar and other *sweetening ingredients*	☐	☐	☐
thereof: min. half of the daily offer from wholemeal products	☐	☐	☐
vegetables and *salad* **min. 5 × (min. 1 × daily)** vegetables (fresh or frozen) *legumes* *salad*	☐	☐	☐
thereof: min. 3 × as *raw vegetables*	☐	☐	☐
fruits **10 × (2 × daily)** fruits (fresh or frozen) nuts and oil seeds, unsalted → each without added sugar and other *sweetening ingredients*	☐	☐	☐
milk and dairy products **min. 10 × (min. 2 × daily) based on the following specifications:** milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* cheese: max. *absolute fat content* 30 %	☐	☐	☐
meat, sausage, fish and eggs **0 × meat/cold cuts** meats and cold cuts max. 20 % fat content	☐	☐	☐
oils and fats **rapeseed oil is standard fat** rapeseed oil, walnut, linseed, soybean, olive oil, margarine made from the oils mentioned	☐	☐	☐
beverages **Beverages are available anytime** water, fruit and herbal tea → each without added sugar and other *sweetening ingredients*	☐	☐	☐

	not fulfilled	partially fulfilled	fulfilled
Food qualities and frequencies for BREAKFAST and SNACKS, *OVO-LACTO-VEGETARIAN* DIET, 5 catering days			
grain, grain products, potatoes **min. 10 × (min. 2 × daily)** wholemeal products *muesli* without added sugar and other *sweetening ingredients* thereof: min. half of the daily offer from wholemeal products	☐ ☐	☐ ☐	☐ ☐
vegetables and *salad* **min. 5 × (min. 1 × daily)** vegetables (fresh or frozen) *legumes* *salad* thereof: min. 3 × as *raw vegetables*	☐ ☐	☐ ☐	☐ ☐
fruits **10 × (2 × daily)** fruits (fresh or frozen) nuts and oil seeds, unsalted → each without added sugar and other *sweetening ingredients*	☐	☐	☐
milk and dairy products **min. 10 × (min. 2 × daily) based on the following specifications:** milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* cheese: max. *absolute fat content* 30 %	☐	☐	☐
oils and fats **rapeseed oil is standard fat** rapeseed oil, walnut, linseed, soybean, olive oil, margarine made from the oils mentioned	☐	☐	☐
beverages **Beverages are available anytime** water, fruit and herbal tea → each without added sugar and other *sweetening ingredients*	☐	☐	☐

	not fulfilled	partially fulfilled	fulfilled
Food qualities and frequencies for LUNCH, MIXED DIET, 5 catering days			
grain, grain products, potatoes **5 × (1 × daily)** wholemeal products, potatoes (raw or precooked) *parboiled* rice or brown rice	☐	☐	☐
thereof: min. 1 × per week wholemeal products	☐	☐	☐
max. 1 × *potato products*	☐	☐	☐
vegetables and *salad* **5 × (1 × daily)** vegetables (fresh or frozen), *legumes*, *salad*	☐	☐	☐
thereof: min. 2 × as *raw vegetables*	☐	☐	☐
min. 1 × *legumes*	☐	☐	☐
fruits **min. 2 ×** fruits (fresh or frozen) nuts and oil seeds, unsalted → each without added sugar and other *sweetening ingredients*	☐	☐	☐
thereof: min. 1 × as *whole fruit*	☐	☐	☐
milk and dairy products **min. 2 × based on the following specifications** milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* cheese: max. *absolute fat content* 30 %	☐	☐	☐
meat, sausage, fish and eggs **max. 1 × meat/sausage products** lean muscle meat meat and cold cuts max. 20 % fat content	☐	☐	☐
thereof: min. 2 × lean muscle meat within 20 catering days	☐	☐	☐
1 × fish	☐	☐	☐
thereof: min. 2 × fatty fish within 20 catering days	☐	☐	☐
oils and fats **rapeseed oil is standard fat** rapeseed oil, walnut, linseed, soybean, olive oil, margarine made from the oils mentioned	☐	☐	☐
beverages **Beverages are available anytime** water, fruit and herbal tea → each without added sugar and other *sweetening ingredients*	☐	☐	☐

	not fulfilled	partially fulfilled	fulfilled
Food qualities and frequencies for LUNCH, *OVO-LACTO-VEGETARIAN* DIET, 5 catering days			
grain, grain products, potatoes **5 × (1 × daily)** wholemeal products, *potatoes, raw or precooked* *parboiled* rice or brown rice	☐	☐	☐
thereof: min. 1 × per week wholemeal products	☐	☐	☐
max. 1 × *potato products*	☐	☐	☐
vegetables and *salad* **5 × (1 × daily)** vegetables (fresh or frozen) *legumes* *salad*	☐	☐	☐
thereof: min. 2 × as *raw vegetables*	☐	☐	☐
min. 1 × *legumes*	☐	☐	☐
fruits **min. 2 ×** fruits (fresh or frozen) nuts and oil seeds, unsalted → each without added sugar and other *sweetening ingredients*	☐	☐	☐
thereof: min. 1 × as *whole fruit*	☐	☐	☐
milk and dairy products **min. 2 × based on the following specifications** milk, plain yoghurt, buttermilk, sour milk, kefir: max. *absolute fat content* 3,8 % quark: max. *absolute fat content* 5 % → each without added sugar and other *sweetening ingredients* cheese: max. *absolute fat content* 30 %	☐	☐	☐
oils and fats **rapeseed oil is standard fat** rapeseed oil, walnut, linseed, soybean, olive oil, margarine made from the oils mentioned	☐	☐	☐
beverages **Beverages are available anytime** water, fruit and herbal tea → each without added sugar and other *sweetening ingredients*	☐	☐	☐

	not fulfilled	partially fulfilled	fulfilled
Additional criteria for menu planning			
An o*vo-lacto-vegetarian* meal is available when requested.			
S*easonal* and *regional* vegetables and fruits are included.			
Local food is preferred in the menu.			
Grains, grain products and potatoes are offered in varied ways.			
Deep-fried and/or breaded products are used at most 4 times in 20 catering days.			
Meat and fish alternatives are offered for lunch no more than 4 times in 20 catering days.			
Beverages are available at any time.			
The lunch *menu cycle* is repeated after 4 weeks at the earliest.			
The dishes are colourful, and the composition varies.			
Participation in meals is possible in case of food intolerances like allergies.			
Certain animal-based and vegetable food is not used for especially vulnerable groups due to possible contamination with pathogens.			
The children's wishes and suggestions are considered in the menu planning as far as possible.			
Culture-specific, regional and religious eating habits are taken into account in planning.			
Criteria for the use of *processed food (convenience food)* in mass catering			
Products without palm (kernel) fat, palm (kernel) oil or coconut fat are preferred.			
Unprocessed or low *processed food*, like fresh or frozen vegetables and fruits, meat or fish, are preferred for further processing on site.			
Ultra-*processed food* is always combined or complemented with low *processed food*/components.			
Food with a low content of sugar, fat, saturated fatty acids and/or salt and a low *energy density* is selected.			

	not fulfilled	partially fulfilled	fulfilled
Menu criteria			
The menu is designed in a child-friendly way.			
The current menu is in advance accessible on a regular and barrier-free basis.			
Information is provided on allergens and food additives requiring labelling.			
Food is named clearly.			
For meat, sausages and fish, the animal species is named.			
The basis of alternatives to meat, fish, egg, milk and dairy products is clearly defined.			
If the nutritional values are declared, the legal requirements are observed.			
Several menu lines are clearly presented, and the health-promoting and sustainable meal is particularly highlighted.			

Planning | Purchase | Preparation | Service | Disposal & cleaning

Organic food is used.			
Fair trade products are used.			
Fish is purchased from sustainable fisheries.			
Meat from species-appropriate animal husbandry is preferred.			
Environmentally friendly packaging is preferred for all food.			
The first-in-first-out principle applies.			

	not fulfilled	partially fulfilled	fulfilled
Planning · Purchase · **Preparation** · Service · Disposal & cleaning			
Recipes, if required with preparation instructions, are used.	☐	☐	☐
Fat is used consciously.	☐	☐	☐
Sugar is used sparingly.	☐	☐	☐
Iodised salt is used, it is salted sparingly.	☐	☐	☐
Herbs (fresh, frozen, dried) and spices are used in a variety of ways.	☐	☐	☐
Nutrient-preserving and low-fat cooking methods are used.	☐	☐	☐
Cooking periods are kept as long as necessary and as short as possible.	☐	☐	☐
Maximum holding time for cooked food is 3 hours.	☐	☐	☐
The holding temperature of cooked food is at least 60 °C throughout the food.	☐	☐	☐
Chilled food is stored at a maximum of 7 °C.	☐	☐	☐
Resource-efficient kitchen appliances are used.	☐	☐	☐
Appliances are only turned on during operating times.	☐	☐	☐
Planning · Purchase · Preparation · **Service** · Disposal & cleaning			
Proper timing between kitchen and serving is realised.	☐	☐	☐
Serving staff is informed in detail about the current menu.	☐	☐	☐
Children are given opportunities to influence portion sizes.	☐	☐	☐

	not fulfilled	partially fulfilled	fulfilled
Planning · Purchase · Preparation · Service · **Disposal & cleaning**			
Food returns are recorded separately by meal and component and the outcomes are used for future menu planning.	☐	☐	☐
Unavoidable waste is recycled for energy utilization.	☐	☐	☐
Attention is paid to the use of environmentally friendly cleaning agents.	☐	☐	☐
Dosing aids are used.	☐	☐	☐
Hygiene requirements are observed.	☐	☐	☐

Beyond the plate

The dining area is bright, offers sufficient space and is furnished age-appropriate.	☐	☐	☐
Meals are separated from other activities and mealtimes are defined.	☐	☐	☐
All meals are supervised by the *educational staff*.	☐	☐	☐

Please note:
“Guidelines for DGE certification” including “DGE certification checklists” are available for DGE certification. These documents explain the criteria examined during in the audit and provide guidance on verifying implementation.

Further information:
www.fitkid-aktion.de
Keyword: Externe Qualitätsüberprüfung

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Glossary

Absolute fat content (cheese): This declaration refers to the actual fat content of the ripened cheese, whereas the usual commercial information refers to the fat content in the dry matter. The absolute fat content is expressed in g/100 g of food. This information is part of the nutrition declaration.

Catering Committee: This is a working group in which all stakeholders in *daycare centre* catering meet at regular intervals. These stakeholders include the sponsors, *daycare centre* director, *educational staff*, parents, parents' representatives, *housekeeping staff* and *meal providers*. The term catering committee is used here as a synonym for "round table" or catering board.

Catering Concept: A catering concept is a written document with criteria for daycare meals. It describes who, when, where, how and what meals must be provided. A catering concept is usually individually designed for the facility and describes its self-conception regarding eating and drinking.

Convenience food: see *processed food*.

CO_2-equivalents: In addition to CO_2 other greenhouse gases (e.g. methane or nitrous oxide) have an impact on global warming. Their climate impact can be converted into the equivalent amount of CO_2 and thus offers the advantage of a standardised indicator of *greenhouse gas emissions*.

Daycare centre: The definition of a daycare centre varies from region to region and from country to country. In this DGE-Quality Standard, daycare centre means a facility that provides all-day care for children. Daycare centre is used here synonymously with nursery, preschool or childcare facility.

Educational concept: An educational concept is a description of the main features of a *daycare centre's* pedagogical work and its focal points.

Educational staff: Used here as a synonym for educator, educational staff, educational specialist or pedagogical specialist.

Energy density: The energy density of food is defined as the amount of energy (in kcal or kJ) per unit mass (g or 100 g). The energy density is affected, among other things, by water and fat content (9 kcal/g), and to a lesser extent by the carbohydrate (4 kcal/g) or protein content (4 kcal/g). Thus, foods with low energy density are often characterised by a high water and dietary fibre content compared to those with high energy density.

Erosion: The natural process whereby fertile soil on the earth's surface is eroded by wind and water. The process can also be triggered or intensified by agricultural use of soil [83].

Fair food environment: A food environment is described as fair when it is primarily aligned with human perception and decision-making capabilities and behaviours and, secondly, it is more health-promoting, socially, environmentally and animal welfare-friendly. Thus, it contributes to sustaining the livelihoods of both current and future generations [6].

Food environment: A food environment covers all environmental factors that influence nutrition behaviour throughout the entire behavioural process. Therefore, the influence of the food environment extends well beyond the actual decision in the moment of consumption and spans the entire behavioural process. This is divided into the 4 phases of exposition (perception, e.g. via advertising and social media), access (depending on price, availability of information, social food and behavioural norms), choice and consumption [6, 24].

Greenhouse gas emissions: The most relevant greenhouse gases are water vapour (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) und ozone (O_3). Greenhouse gas emissions are the emissions of these gases into the earth's atmosphere. Greenhouse gas emissions can be used, for example, as a measure of the climate impact of a product and are usually expressed in *CO_2-equivalents*.

Guiding value: Guiding values are stated in terms of aids for orientation and are given for nutrients that are not essential for the organism. In addition, guiding values are given if there is a need, but it varies widely depending on numerous influences (e.g. energy requirements depending on lifestyle, occupation, etc.). Preventive effects of these nutrients are factored in when deriving guiding values.

Hazard Analysis and Critical Control Points (HACCP): This concept aims to carry out a hazard analysis and control of critical control points in food handling.

Housekeeping staff: This term is used synonymously for housekeeper or domestic staff.

Legumes: Legumes are plant seeds that grow in a pod. They are harvested when fully mature and subsequently dried. Among vegetable food, dried legumes offer the highest protein content. Examples include peas, beans, lentils, soybeans, chickpeas and lupins. In addition to dried legumes, fresh varieties such as green peas, sugar snap peas and string beans also belong to this botanical group. They are not as rich in protein, are harvested unripe and prepared like vegetables [84].

Meal provider: Meal provider is used as a generic term for all food service providers who offer food and/or beverage services in *daycare centres*.

Menu Cycle: The menu cycle refers to the period of time after which the lunch meals sequence is repeated.

Monocultures: Monocultures are a form of agricultural land use where only 1 type of crop is grown on the same area for several years. In the long run, this can reduce the nutrient content of the soil and require the frequent use of pesticides or artificial fertilisers [86].

Muesli: Muesli consists of 1 or more cereals without added sugar and other *sweetening ingredients*. These cereals might be processed in different ways, like crushed, ground or extruded. Other ingredients may include milk, plain yoghurt, quark or their vegetable alternatives, fruits (fresh or frozen), nuts or oilseeds.

Nutrient density: Nutrient density describes the amount of a nutrient in a food per unit of energy (e.g. mg/kcal); "nutrient-dense" food is food that is both low in energy and high in nutrients.

Obesity: Obesity refers to the accumulation of body fat that exceeds the normal level. It is diagnosed using the body mass index (BMI). Since the body mass index depends on age and sex, in childhood BMI reference curves must be used. In children and adolescents, obesity is defined as a BMI above the BMI percentile of 97-99.5. Extreme obesity is classified as BMI above the 99.5 BMI percentile [82].

Ovo-lacto-vegetarian: The ovo-lacto-vegetarian diet combines plant food with only those products of animal origin that come from living animals, e.g. milk, eggs or honey. The ovo-lacto-vegetarian diet basically excludes food from slaughtered animals, e.g. meat and meat products, fish as well as slaughter fats.

Parboiled: Parboiling is a technical process for treatment of rice or other grains. During this process, vitamins and minerals are pressed out of the outer layers into the grain. Parboiled varieties are therefore nutritionally more valuable than polished varieties.

Physical Activity Level (PAL): The average daily energy need for the physical activity as a multiple of the basal metabolic rate. It is therefore a parameter that is included in the calculation of the *guiding value* for energy intake. PAL levels are derived for different occupational and leisure activities. Depending on the physical activity, the *guiding value* for energy intake can vary accordingly. A PAL of 1.4, which corresponds to a low level of physical activity, was used as a basis for the design of the nutritionally optimised menu plan.

Plant-based: A plant-based diet according to the recommendations of the DGE consists predominantly of plant-based food such as vegetables and fruit, whole grains and *legumes* as well as nuts and vegetable oils. This selection is supplemented by a small amount of food of animal origin. The term flexitarian diet refers to this type of diet. Other plant-based diets include the Mediterranean and Nordic diets, the Planetary Health Diet and vegetarian and vegan diets [87].

Potato Products: These are processed products made from potatoes. Included are french fries, instant potato, mashed potato, potato dumpling or pre-shaped potato dough, fried potato and potato snack products [85].

Processed food: According to current legislation, processed foods are all primary products that have been significantly altered, for example by "heating, smoking, curing, maturing, drying, marinating, extracting, extruding or a combination of these different processes" [92].

Protein quality: The protein quality or biological value captures how dietary protein can be incorporated into the proteins of the organism's body. The protein's amino acid pattern and its digestibility are crucial factors. The protein quality is often indicated relatively by comparison with a reference protein (egg's protein or cow's milk casein) [88].

Pseudocereals: These are grains that do not belong to the botanical group of sweet grasses like wheat and rye, but visually resemble them. They include quinoa, amaranth and buckwheat. Due to their nutrient composition, pseudocereals are good supplements to the food group grains and make an important contribution to the nutrient requirement.

Raw vegetables: Raw vegetables refer to raw, unheated vegetables or lettuce, with or without dressing.

Reference values for nutrient intake: The reference values specify quantities for the daily intake of energy and nutrients, including water and dietary fibre. The German Nutrition Society (DGE) publishes them together with the Austrian Nutrition Society (ÖGE).

Regional: A region is an area that forms a geographical, political, economic and/or administrative unit. The manufacturing food company is free to choose the region's label, but it must be clearly comprehensible for consumers. This can be done by political-administrative borders (counties, administrative districts, federal states), by a kilometre radius around a place to be defined, by indicating metropolitan regions (e.g. southern Germany) or defined regions (e.g. Altes Land, Rhineland, Hessische Bergstraße) [89].

Resource protection: Natural resources, like soil, air or water, should be considered as components of nature. In this context, resource protection is the totality of all actions to preserve or restore natural resources [90].

Salad: Salad includes all leafy salads or preparations containing vegetables and/or lettuce as the main ingredient.

Seasonal: If vegetables and fruits growing in open fields in classical agriculture are harvested and sold during the harvest period, e.g. the most profitable time, they are referred to as seasonal food.

Social aspects: Social aspects of a more sustainable diet relate on the one hand to the conditions under which food and meals are produced. These include, for example, appropriate wages, compliance with labour rights and training as well as further education opportunities. On the other hand, they refer to the conditions under which food and meals are offered and consumed, e.g. the creation of *fair food environment*s that allow everyone access to a healthy and sustainable diet or eating and drinking in community (commensality) [92].

Sweetening ingredients: In this DGE-Quality Standard, sweetening ingredients are those ingredients that are used as an alternative to sugar to sweeten food. In addition to sweetener such as aspartame or sugar substitutes, these can also be honey or fruit syrups.

Whole fruit: Whole fruit is raw, unprocessed fruit, whole or cut into pieces ready for consumption, without the addition of other food.

Addresses for Daycare Catering:

National Quality Centre for Nutrition in Daycare Centres and Schools (Nationales Qualitätszentrum für Ernährung in Kita und Schule [NQZ])
https://nqz.de/

Networking centres for daycare and school catering (Vernetzungsstellen Kitaverpflegung):
https://nqz.de/vernetzungsstellen/vernetzungsstellen-kitaverpflegung/

Further information:
www.fitkid-aktion.de
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- National Quality Centre for Nutrition in Daycare Centres and Schools (Nationales Qualitätszentrum für Ernährung in Kita und Schule [NQZ]),
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About IN FORM

IN FORM is German's national initiative to promote healthy diets and physical activity. It was initiated 2008 by the Federal Ministry of Food and Agriculture (Bundesministerium für Ernährung und Landwirtschaft [BMEL]) and the Federal Ministry of Health (Bundesministerium für Gesundheit [BMG]) and has since been active nationwide with project partners in every living environment. Aim is to permanently improve people's dietary and exercise habits.
Further information is available at **www.in-form.de**.