Berner Fachhochschule
Gesundheit

**State-of-the art report**

on behalf of the Federal Office of Public Health and Bern University of Applied Sciences

# Nutritional quality in communal catering: a public health issue


Sigrid Beer-Borst[1,4], Karin Haas[1], Özlem Schader[1], Stefan Siegenthaler[1], Raphaël Reinert[2], Pascale Mühlemann[3]

[1] Bern University of Applied Sciences, Section of Health, Division of Nutrition and Dietetics

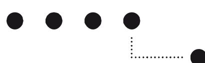
[2] University of Applied Sciences Western Switzerland, School of Health Professions – Geneva, Dietetics Department

[3] Swiss Society for Nutrition

[4]Address of correspondence:
Sigrid Beer-Borst, Head aR&D in Nutrition and Dietetics
Bern University of Applied Sciences, Section of Health
Murtenstrasse 10
CH-3008 Bern, Switzerland


SGE Schweizerische Gesellschaft für Ernährung
SSN Société Suisse de Nutrition
SSN Società Svizzera di Nutrizione

Hes·SO GENÈVE
Haute Ecole Spécialisée de Suisse occidentale
Haute école de santé



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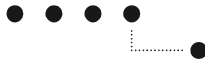

## Contributors

The authors contributed as follows to the present report:

| | |
|---|---|
| S. Beer-Borst | outlined the report, wrote chapters 1, 2, 3, 4.1, 4.3, 4.4, 5 and 6, and contributed to chapter 4.5 |
| K. Haas | consulted in outlining the report, wrote chapter 4.5, and contributed to chapters 3.3/4.4 (Austria) and 4.1, 5 and 6 |
| Ö. Schader | ran the extensive literature search, established the resulting reference database and contributed to chapters 3.2, 4.3 and 4.4<br>Ö. Schader was affiliated as a member of the research group with Bern University of Applied Sciences, Section of Health from February to October 08. |
| S. Siegenthaler | assisted in the literature search, contributed to chapter 4.1, and wrote chapter 4.2 |
| R. Reinert | provided literature concerning communal catering activities in Western Switzerland and France and contributed to chapters 3.3/4.4 (France) and 4.1 |
| P. Mühlemann | consulted in outlining the report, reviewed all draft versions, and contributed to chapters 3.3/4.4 (Germany) and 4.1<br>P. Mühlemann was affiliated as a member of the research group with Swiss Society for Nutrition till June 2009 |

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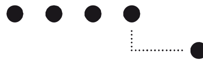


# Executive summary

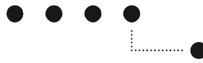
## English


Diet-related non-communicable diseases, particularly obesity across most age groups, currently represent one of the major public health concerns. Thus the Second WHO European Action Plan for food and nutrition 2007-2012 (World Health Organization 2008) suggest a series of action areas to reduce the prevalence of such health disorders. In this context, communal catering offers an appropriate setting for health promotional community action, being represented in the educational, business and care sector. In Switzerland, communal catering has received little attention in the national food and nutrition policy (Federal Office of Public Health 2001) so far. However, with the implementation of the "National Program Nutrition and Physical Activity 2008-2012" (Federal Office of Public Health 2008) specific projects are to be developed for helping the population to follow a balanced diet and being physically active. In this respect the present research project focuses on the establishment of evidence-based and practical quality standards for health-promoting communal catering. Based on a working definition of communal catering and an extensive multilevel literature research the present report discusses in detail:

- basic concepts of quality in communal catering and health promotion
- the principles of quality standard development;
- the concept of "Good Practice", a practical instrument of quality improvement in health promotion, compared to the concept of "Best Practice";
- the status quo of health promotional activities in communal catering in Switzerland and internationally;
- the international research activities regarding different communal catering categories and across the quality dimensions of input, process and output/outcome.

The present report underpins the need for action and potential for development in communal catering in Switzerland. There are already some activities ongoing in Switzerland; however, they are not coordinated and only partly comparable due to different backgrounds and objectives. Therefore, combining issues of communal catering and health promotion in one single quality standard system may allow harmonizing health-promoting activities in business, education and caring catering. Thereby we can capitalize on international experiences in quality standard development and particularly in research across communal catering categories and target groups.

A compulsory or (partial) optional implementation of suggested quality standards has finally to be discussed with key players and stakeholders in order to assure the feasibility in practice.

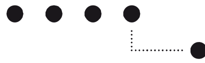


## Deutsch

Ernährungsbedingte nicht übertragbare Krankheiten, insbesondere Adipositas -von der die meisten Altersgruppen betroffen sind-, stellen eine der grössten Herausforderungen für das öffentliche Gesundheitswesen dar. Deshalb empfiehlt der Zweite Europäische Aktionsplan Nahrung und Ernährung der WHO 2007–2012 (World Health Organization 2008) eine Reihe von Handlungsfeldern, um die Prävalenz derartiger gesundheitlicher Probleme zu senken. In diesem Zusammenhang bietet die Gemeinschaftsgastronomie ein geeignetes Setting für bevölkerungsbezogene, gesundheitsfördernde Aktivitäten, da sie im schulischen, betrieblichen und Spital- und Heimbereich angesiedelt ist. Die Schweizer Ernährungspolicy (Bundesamt für Gesundheit 2001) schenkte bisher der Gemeinschaftsgastronomie wenig Beachtung. Mit der Implementierung des „Nationalen Programms Ernährung und Bewegung (NPEB) 2008-2012" (Bundesamt für Gesundheit 2008) sollen jedoch spezifische Projekte entwickelt werden, welche die Bevölkerung dabei unterstützen sich ausgewogen zu ernähren und regelmässig zu bewegen. Das vorliegende Forschungsprojekt konzentriert sich deshalb auf die Entwicklung von Evidenz-basierten und praktischen Qualitätsstandards für eine gesundheitsfördernde Gemeinschaftsgastronomie. Auf Grundlage einer Arbeitsdefinition von Gemeinschaftsgastronomie und einer umfangreichen Literaturrecherche setzt sich der vorliegende Bericht mit folgenden Themen auseinander:

- den grundlegenden Qualitätskonzepten in der Gemeinschaftsgastronomie und der Gesundheitsförderung;
- den Prinzipien der Qualitätsstandardentwicklung;
- dem Konzept der „Good Practice", einem praxisorientierten Instrument zur Qualitätsverbesserung in der Gesundheitsförderung, in Abgrenzung zum Konzept der „Best Practice";
- dem aktuellen Stand von gesundheitsfördernden Aktivitäten in der Schweizer Gemeinschaftsgastronomie, sowie auf internationaler Ebene;
- den internationalen Forschungsaktivitäten in den verschiedenen Bereichen der Gemeinschaftsgastronomie und unter Berücksichtigung der Qualitätsdimensionen betreffend „Struktur, Prozess und Ergebnis/Wirkung".

Der vorliegende Bericht unterstreicht den dringenden Handlungsbedarf und das Entwicklungspotential in der Schweizer Gemeinschaftsgastronomie. Zwar gibt es bereits einige Aktivitäten in der Schweiz, diese sind jedoch nicht koordiniert und aufgrund verschiedener Ausgangslagen und Zielsetzungen nur bedingt vergleichbar. Die Berücksichtigung der unterschiedlichen Belange der Gemeinschaftsgastronomie und der Gesundheitsförderung in einem gemeinsamen Qualitätsstandardsystem könnte zur Harmonisierung von gesundheitsfördernden Aktivitäten in der Schul- und Betriebsgastronomie sowie Spital- und Heimgastronomie führen. Hierbei können wir uns die Erfahrungen anderer Länder bei der Entwicklung von Qualitätsstandards und speziell die Forschungsergebnisse in den verschiedenen Bereichen der Gemeinschaftsgastronomie zu Nutze machen.
Der bindende oder (teilweise) freiwillige Charakter vorgeschlagener Qualitätsstandards muss schlussendlich mit den wichtigsten Akteuren und Anspruchs- oder Interessengruppen diskutiert werden, um die Umsetzbarkeit in der Praxis zu gewährleisten.

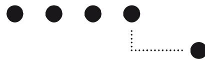


## Français

Les maladies non-transmissibles liées au régime alimentaire, en particulier l'obésité dans la plupart des tranches d'âge, représentent actuellement une des préoccupations majeures de la santé publique. C'est pour cette raison que le Deuxième Plan d'Action Européen de l'OMS pour une Politique Alimentaire et Nutritionnelle 2007-2012 (Organisation Mondiale de la Santé 2008) suggère une série de domaines d'action pour réduire la prévalence de telles maladies. Dans ce contexte, la restauration collective, étant représentée dans les secteurs de l'éducation, du travail et des soins, offre un cadre (setting) approprié pour des actions communautaires promouvant la santé. Jusqu'à présent, la restauration collective n'a pratiquement pas été tenue en compte dans la politique nutritionnelle Suisse (Office Fédéral de la Santé Publique 2001). Néanmoins, grâce à la mise en application du « Programme National Alimentation et Activité Physique (PNAAP) 2008-2012 » (Office Fédéral de la Santé Publique 2008), des projets spécifiques vont être développés dans le but d'aider la population à adopter un régime alimentaire équilibré et la pratique d'une activité physique régulière. Dans cette optique, le présent projet de recherche se concentre sur l'établissement de standards de qualité pour une restauration collective promouvant la santé fondés sur des données probantes et une perspective pratique. Basé sur une définition de travail de la restauration collective ainsi qu'une recherche exhaustive de la littérature à plusieurs niveaux, le présent rapport traite en détail :

- Des concepts de base de la qualité dans la restauration collective ainsi que la promotion de la santé
- Les principes de développement des standards de qualité ;
- Le concept de « Good Practice » (Bonne Pratique), un instrument axé sur la pratique pour une amélioration de la qualité dans le domaine de la promotion de la santé, contrairement au concept de « Best Practice » (Meilleure Pratique);
- Le statu quo des activités promouvant la santé dans la restauration collective en Suisse et sur le plan international ;
- Les activités de recherche internationales concernant différentes catégories de restauration collective et tout au long des dimensions de qualité de « structure, processus et résultat/impact ».

Le présent rapport met en évidence la nécessité d'agir ainsi que le potentiel de développement de la restauration collective en Suisse. Il y a déjà quelques activités en cours en Suisse; cependant, elles ne sont pas coordonnées et que partiellement comparables du fait de leurs différents contextes et objectifs. Par conséquent, la considération des différents intérêts dans la restauration collective et la promotion de la santé dans un système de standards de qualité commun pourrait permettre l'harmonisation des activités promouvant la santé dans les restaurations d'entreprise, scolaire et des soins. Ainsi nous pouvons tirer parti des expériences internationales dans le développement de standards de qualité et particulièrement dans la recherche à travers les catégories de restauration collective et les groupes-cible.
Une mis en œuvre obligatoire ou (partiellement) facultative de standards de qualités suggérés doit être finalement discutée avec les acteurs principaux et les parties prenantes ou groupes d'intérêt de sorte à assurer la faisabilité en pratique.



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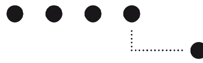

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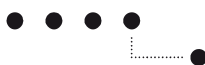


# 1 General background

## 1.1 Research project „Quality standards in health-promoting communal catering“

The present literature report constitutes a baseline result of the national research project entitled “Quality standards in health-promoting communal catering”, conducted on behalf of

- the Federal Office of Public Health, Section of Public Health within the research program of “Nutrition and Physical Activity” (see http://www.aramis.admin.ch) and
- the Bern University of Applied Sciences (BUAS) research commission (see http://pdb.bfh.ch).

Research partners are

- the unit for applied Research & Development (aR&D) in Nutrition and Dietetics at Bern University of Applied Sciences, Section of Health (project direction and management),
- the Dietetics Department at the University of Applied Sciences Western Switzerland, Geneva School of Health Professions, and
- the Swiss Society for Nutrition.

The project runs within the BUAS health section’s strategic research field of health promotion and prevention and the thematic research field of health behavior.

### Main project objective and project content

The project’s main objective is to establish the framework requirements and necessary baseline data for the definition, implementation and control/evaluation of nutritional quality standards in Swiss communal catering. The objective shall be achieved through a multidisciplinary collaboration of science and practice, as exemplified by the project slogan “research *with* practice *for* practice” (< Forschung *mit* der Praxis *für* die Praxis >).

Overall, the project is divided into three subprojects, which

(1) serve to establish key baseline information and instruments;

(2) are process based and aim at defining criteria for assessing and encouraging actual good health-promoting nutritional practice in Swiss communal catering;

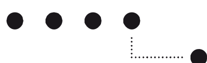
(3) investigate the need, expectations and feasibility of implementing standards and eventually a certification for health promoting nutritional quality in Swiss communal catering, by conducting individual stakeholder interviews and consumer focus groups.

Follow-up projects are envisaged in order to guarantee the project’s sustainability. One major focus in particular will be on necessary knowledge transfer (services; professional training courses) to allow for implementation of the developed standards.

## 1.2 Report achievements

The present state-of-the-art report is a significant result of the first subproject and provides

- an up-to-date overview of current international knowledge and experience – with focus on the countries neighboring Switzerland- concerning nutritional quality and health promotion in communal catering. Major challenges and potential solutions with respect to the current research project are discussed;
- important baseline information for the ensuing subprojects, in particular the assessment of the Swiss communal catering sector and their health-promoting activities, thus supporting the strategy of good practice (see chapter 4.3.6);
- information to be communicated on the project-specific internet platform, addressing all interested and concerned stakeholders and operators.



# 2 Introduction - Specific background

## 2.1 Health challenges and action areas: The role of communal catering

### 2.1.1 Food and Nutrition Policy

In view of marked changes in dietary, nutrient intakes (and in particular saturated fat) and a distinct increase in premature death from cardiovascular diseases in Europe, the WHO Regional Office for Europe has been working since 1984 on the development of comprehensive food and nutrition policies (1). Based on a governmental mandate, food and nutrition policies define a set of coordinated actions which should ensure the nutritional quality and safety of the food supply to the population. In the later 1980's WHO Europe established a general, holistic concept of nutrition policy, which distinguished three main categories of implementation activities or policy measures: 1) those dealing with the food availability, 2) those concerning the foods knowledge, and 3) those considering foods quality. Communal or mass catering was explicitly mentioned as an area for action since increasing numbers of people eat out due to changing social environments. It was recognized that private and public communal catering establishments can contribute to improved nutrition and that there is ample potential for small but important changes especially in ordering, preparing and serving foods in such establishments. The First Action Plan for Food and Nutrition Policy for the WHO European Region 2000-2005 was finally approved in 2002 (2), and a number of member states, including Switzerland (3), have developed their country-specific policies on food and nutrition. Nevertheless, nutrition-related and food borne diseases are still major public health concerns. The Second WHO European Action Plan for Food and Nutrition Policy 2007-2012 (4) thus addresses the following health challenges and goals and suggests areas where integrated action can be taken (Table 1).

Table 1 Health challenges, Goals and Action Areas defined in the 2nd WHO European Action Plan 2007-2012 (adapted from (4))

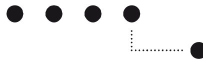
| Health Challenges | Goals |
|---|---|
| Diet-related non-communicable diseases, particularly obesity | Reduced prevalence |
| Obesity in children and adolescents | Reverse the obesity trend |
| Micronutrient deficiencies | Reduced prevalence |
| Food borne diseases | Reduced incidence |

| Action areas | |
|---|---|
| 1 | Supporting a healthy start |
| 2 | Ensuring a safe, healthy and sustainable food supply |
| 3 | Providing comprehensive information and education to consumers |
| 4 | Carrying out integrated actions to address related determinants |
| 5 | Strengthening nutrition and food safety in the health sector |
| 6 | Monitoring and evaluation |

With respect to the present research project about Swiss communal catering the following specific actions within the six action areas are of interest (4):

Action area 1: Supporting a healthy start

- *Promote the development of preschool and school nutrition and food safety policies and programs with a whole-school approach in kindergartens and schools*, including education in nutrition, the sensory properties of food, food safety and physical activity as part of the curriculum; training teachers and other school staff; developing guidelines for healthy school meals providing healthy options in canteens and other food distribution points at school; establishing fruit and vegetable distribution schemes.



Action area 2: Ensuring a safe, healthy and sustainable food supply

- *Improve the nutritional quality of the food supply and food safety in public institutions* (e.g. health and social services, child care services, schools, workplaces, elderly nutrition services, military institutions, leisure facilities) by adopting guidelines and regulations on food procurement; applying of food-based dietary guidelines and good hygiene practices to catering and food services; and offering and promoting foods at retail outlets located in public institutions.
- *Ensure that the commercial provision of food products is aligned with food-based dietary guidelines* by involving urban planners and local commercial associations in deciding on the location of catering establishments, food retail shops and vending machines; and developing guidelines, voluntary regulations and award schemes for the products offered and the promotions put in place at the point of sale (e.g. portion size, price, product location, advertising).
- *Establish targeted programs for the protection of vulnerable and low socioeconomic groups* by providing food subsidies, distributing food commodities, providing free or subsidized access to catering establishments, and administering meals at home and other forms of social support.

Action area 3: Providing comprehensive information and education to consumers

- Develop *food-based dietary guidelines and food safety guidelines, aimed at the general population and at vulnerable groups* (especially infants and young children, pregnant women, and the elderly), that take into account cultural and religious sensitivities and the price and availability of foods; these guidelines *should be used as the basis for communication campaigns and should set the direction for supply-side actions*. Locally produced foods and traditional cooking and eating practices should be considered in the context of a healthy diet. These guidelines should be complemented by respective ones on physical activity.
- *Conduct public campaigns aimed at informing consumers about food, nutrition, food safety and consumer rights, and about the opportunities to be physically active in different settings of daily life*; creating public awareness of actions to be taken on catering and trade; providing targeted and timely risk communication on nutrition and food safety to the general public and specific sub-populations; and reducing the social pressure of promoting extreme thinness as one criterion of beauty, particularly among children and adolescents.

Action area 4: Taking integrated action to address related determinants

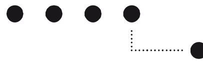
- *Reduce the consumption of alcohol*, by creating public awareness; providing greater protection from peer and other pressure and educating schoolchildren to develop responsible attitudes towards alcohol consumption; including alcohol limits in food-based dietary guidelines and nutrition counseling, particularly for pregnant women; restricting advertising and sponsorship.
- *Ensure the provision of safe drinking-water in schools and workplaces*; *promote water over soft drinks.*

Action area 5: Strengthening nutrition and food safety in the health sector

- *Improve the quality of nutrition services and food safety in hospitals*, by providing safe, palatable and nutritionally adequate food according to individual patients' needs and in line with food-based dietary guidelines; establishing nutritional risk screening in all inpatient facilities, in order to prevent the development of malnutrition; and improving the supply of food in kiosks, vending machines and cafeterias for visitors and staff.

Action area 6: Monitoring, evaluation and research

- *Evaluate the impact of programs and policies aimed at reducing the burden of food and nutrition-related diseases*, by establishing input, process and output indicators in different socioeconomic population groups and by calculating the cost-effectiveness of interventions. Characteristics of the food environment, including nutritional quality, prices of foods and marketing practices, should be independently monitored. The impact of sectoral policies on health and nutrition should also be assessed using health impact assessment methods, so that better cross-government collaboration can be achieved to integrate health in all policies targeted at diet, food supply or food safety.



### Diet-related diseases, particularly obesity, in Switzerland

In all European countries, diet-related diseases, in particular obesity, are a great and growing concern. Obesity prevalence has reached epidemic proportions and thus poses a growing challenge to health, economies and development. In the WHO European Region, half of all adults and one in five children are overweight (5) In Switzerland 2.2 million people are reported to have excess body weight (6) and about 30% of the constantly increasing public health costs in Switzerland, estimated at 59.3 billion Swiss Francs in 2008 (7), are directly attributable to overweight and obesity and related chronic conditions thereof such as cardiovascular diseases and type 2 diabetes (8-10). As reported by Morabia and Costanza (11), the prevalences of hypercholesterolemia and of treatment for diabetes increased steadily and in parallel with the overweight and obesity prevalences in 35-74 year old Geneva (Switzerland) adults from 1993 to 2003. Among men, the combined prevalence of overweight and obesity (BMI $\geq$ 25 kg/m$^2$) increased significantly from 44% to 59%, among women from 24% to 37% during the 11 years (measured data). Reported trends among 6 to 12 year old children in Switzerland are equally alarming, with an increased combined prevalence of overweight and obesity from 4% in 1960 to 18% in 2003 (12). Based on the relative risks and calculated population attributable factors of various diseases associated with overweight and obesity for Switzerland, Neilson and Schneider (8) concluded that obesity is becoming our worst pathogen. Today, excess body weight is largely recognized as a direct effect of our present lifestyle, which is characterized by a simultaneous presence of increasing physical inactivity and unbalanced energy rich diet in a changed social, economic, cultural and structural context or environment (12). This lifestyle will evolve rapidly into a part of the culture of our children and adolescents and will be firmly established within our economies.

## 2.1.2 Communal catering and the concept of nutrition environments

According to the Swiss Health Survey (6) a third of the Swiss population aged 15 years and older currently does not pay attention to their diet. People living in the French speaking region pay overall less attention than those living in the other language regions. Reported obstacles to maintaining a healthy diet were: cost, habits and necessities and, for 12% of respondents, poor choice in restaurants and canteens or cafeterias. Moreover, an American study suggested that the cost of food is the second most important factor affecting food decision behind taste (13). Also data from a Swiss food consumption survey of people 10 years of age and older (14) showed that factors such as price and timely availability may be stronger influential features of a food environment than healthy choices and taste. When eating out in a canteen or cafeteria with colleagues, 27% of respondents considered healthy eating the most important criteria, compared to 32% of respondents who primarily required eating inexpensively, 31% who wanted to eat fast and only 10% pleasurably. Eleven percent of the food consumption survey participants indicated taking their lunch at least once a week in a canteen or cafeteria. Market research data for eating and drinking out-of-home further showed that in 2007 the frequency of eating out in business and other communal catering was 22.9% for a representative sample of 15-74 years old Swiss residents, thus accounting for 10.8% of all eating out expenses (15). Overall, the Swiss Association of Communal Catering (Schweizer Verband für Spital-, Heim- und Gemeinschaftsgastronomie 2008) (16) estimates that more than one million individuals, i.e. about 15% of the Swiss population, daily consume meals in institutional food facilities such as kindergarten, school, university or worksite canteens; in senior homes or other health care institutional restaurants.

In the context of today's obesity epidemic the understanding of nutrition (food and eating) environments is crucial to public health. The above mentioned numbers and issues underpin the importance of communal catering as an organizational nutrition environment with the potential to reach all socio-demographic and socio-economic population levels. The model of community nutrition environments shown below (Figure 1) includes policy, environmental, social and individual factors that may relate to consumer food choice and healthy eating outcomes. These factors should be considered when wanting to improve dietary behavior in the population (17). In this context, Story et al. (18) describe an ecological framework for conceptualizing the many food environments and conditions that influence food choices and, address key issues in settings and places for healthy eating such as homes, schools, work sites, etc.

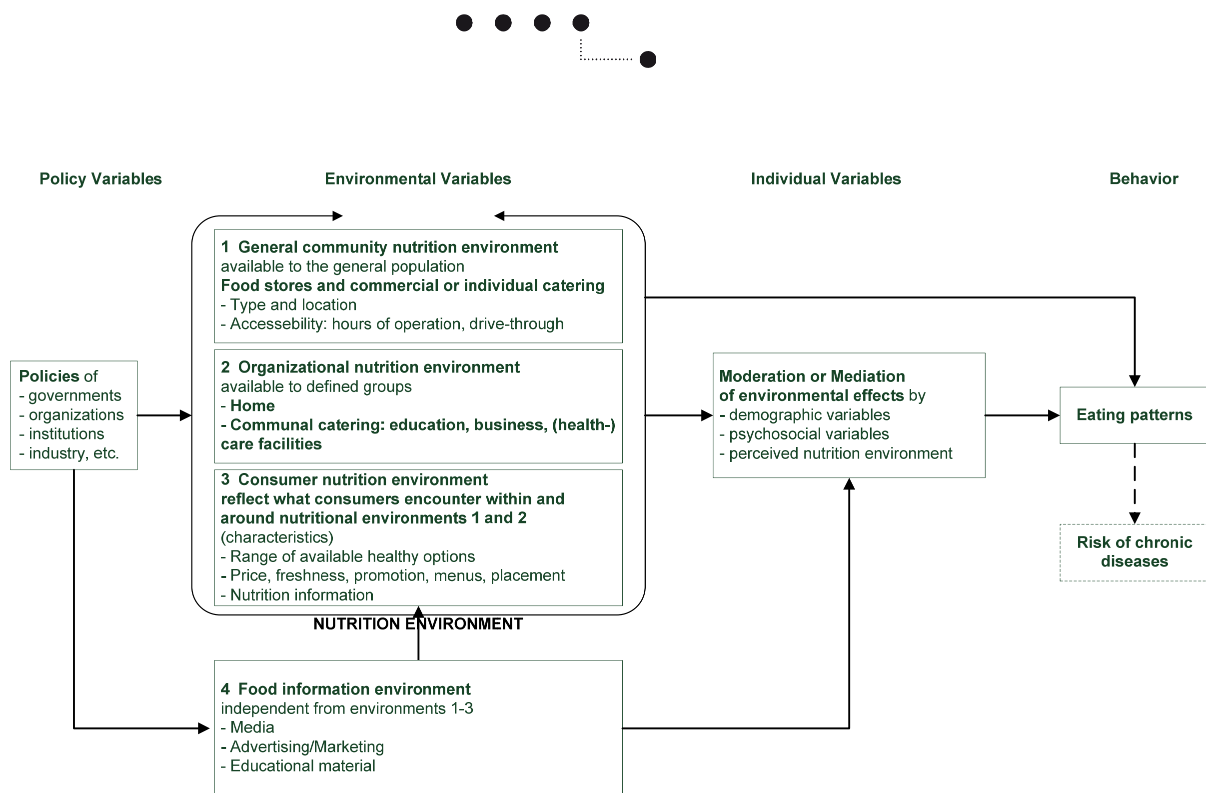


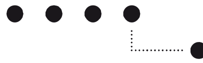

Figure 1 Model of Community Nutrition Environments (adapted from (17))

## Policy options related to nutrition and food information environments

Policy options or strategies for responding to the growing challenge from obesity were assessed in the EU cross-national comparative ProGrow Research project (19). In each of nine member states, key stakeholders such as farmers and food manufacturers, retailers, caterers and advertisers, teachers, sports and physical activity organizations, public health experts, advocacy groups, consumer representatives, were interviewed. The policy options appraised covered different fields: namely modifying levels of physical activity, the supply of and the demand for food, the supply of information, the use of technological solutions and institutional reforms. Specific options, with respect to the nutrition and food information environments, were:

- Control sales or access to fatty snacks, confectionery and sweet drinks in public institutions such as schools and hospitals.
- Provide subsidies on healthy foods to improve patterns of food intake.
- Impose taxes on obesity-promoting food and drink products to reduce their consumption.
- Control/restrict the nutritional composition of processed food products.
- Provide financial incentives to re-formulate food products, i.e. to improve food composition.
- Offer incentives to caterers to improve menu quality thus providing healthier catering menus.
- Control/restrict the advertising and promotion of foods and drinks.
- Require enhanced mandatory nutritional labeling, for example a (front-of-the-pack) traffic light system.
- Strengthen controls on the use of terms such as 'diet', 'light', 'lite'.
- Improve training for health professionals in obesity prevention, diagnostics and counseling.
- Improve health education for the general public to enable citizens to make healthier choices.
- Include and improve teaching food, nutrition and health in the school curriculum.
- Increase research into obesity prevention and treatment; study the causes and effects of obesity, and identify/investigate mechanisms that impede weight loss.

The results of the stakeholder analysis revealed a consensus of opinion that a set of measures will be needed to tackle the obesity epidemic. Furthermore, stakeholders were more concerned about the social and health benefits, efficacy, acceptability and practical feasibility of suggested policy options than the costs. Across countries there was widespread antipathy to fiscal interventions, such as taxes on 'unhealthy' foods or subsidies



on 'healthy' ones. Nevertheless, controls on food composition were considered effective in tackling obesity, and were widely considered to be both feasible and acceptable (19). High ranking were educational options focusing both on school children and the general adult population. Their effectiveness was seen as dependent on improved access to information including labeling and improved availability of healthier foods and opportunities for physical activity. It was emphasized that well-informed people still need to be provided with more skills or a supportive environment so they can put theory into practice, i.e. act on their knowledge to make healthier choices (20). Improved provision of and easier access to healthy foods were considered especially acceptable if focused on settings where groups of people eat on a regular basis, such as schools and workplaces (20, 21). In Finland such a policy affecting communal catering is already well developed (22, 23). Communal catering was identified as an excellent means of influencing food intake in Finland, based on a close interrelation between health authorities and other agencies. The average Finn eats about 125 meals per year out-of-home, of which the majority is served in public noncommercial establishments. All meals provided by local authorities are mandated to include vegetables and thus the intake of vegetables has more than doubled in the last decade. Moreover, dietary guidelines were developed for different kinds of communal catering institutions, such as schools and universities, work places, hospitals, prisons, seniors' homes or the armed forces, thus serving about 70% of the population (23). Scandinavian countries traditionally have had a pioneering role with a long history of national nutrition recommendations and can share their experiences when discussing nutrition related health strategies (24). Such an exchange of knowledge took place at the conference "Prevention for Health: Nutrition and Physical Activity – A Key to Healthy Living" held in Badenweiler (Germany) on 25-27 February 2007.

### 2.1.3 Declaration of Badenweiler

Within the framework of the German EU Council Presidency, delegations from the Member States, the EFTA states and civil society representatives discussed in depth, with the European Commission, strategies to further develop health promotion and disease prevention – especially through a balanced diet and sufficient physical activity – so that they can become European guiding principles and be implemented as such. Generally supporting the European Commission's initiatives to elaborate a White Paper on the Prevention of Overweight and welcoming the WHO European Charter on Counteracting Obesity, the conference's participants declared the pursuit of three aims in order to halt the rise of overweight in children and reduce the number of overweight persons in Europe by 2020 (25):

- By 2010, an added 10% of the population is to act on the recommendation to have half an hour of physical activity a day.
- By 2010, an added 20% of the people are to eat five servings of fruit and vegetables each day, thereby increasing the proportion of fruit and vegetables in their daily diet.
- By 2010, an added 30% of facilities which involve mass catering (such as kindergartens, schools, cafeterias and seniors' homes) are to serve healthy meals.

Four general principles were recommended to undertake activities towards achieving these aims. Table 2 presents selected issues, mainly focusing on those concerning nutrition and thus related to this research project.

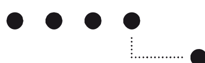
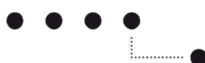


Table 2 Badenweiler Declaration: Selected recommended principles (adapted from (25))

| Principles | Selected issues |
|---|---|
| 1. Health promotion and disease prevention are tasks incumbent on all of society. There must be equilibrium between the responsibility of the individual and that of the State. | ▪ Offer support to people who wish to improve their lifestyles by means of a balanced diet:<br>- Education and coaching schemes;<br>- Healthy school or institutional meals;<br>- Self-commitment by industry.<br>▪ Policy-makers provide framework conditions for societal action to take place:<br>- From legal provisions via pilot projects to local projects on diet and exercise<br>- Ensure involvement of the public in action plans and campaigns<br>- Build on cross-sectional public-private partnerships. |
| 2. Disease prevention must contribute to the Lisbon Strategy as a prerequisite for the creation of value and prosperity. | ▪ Recognize health as a decisive economic factor and locational advantage.<br>▪ Recognize health promotion as a competitive advantage of great potential:<br>- Institutions should utilize it in product development, marketing, and for their social commitment;<br>- Institutions or companies directly benefit from a more efficient workforce with lower absenteeism rates.<br>▪ Consumers and industry alike can benefit from goods and services that serve health, boost the quality of life and open up new markets. |
| 3. Nutrition and physical activity are essential elements of a healthy lifestyle. | ▪ Eating habits must be improved in a sustained manner. The public and private sector must work harder towards structural changes by:<br>- promoting healthy meals<br>- adjusting the curricula of teaching institutions<br>▪ Messages and recommendations for action must be concrete, population-specific and easy to understand. |
| 4. For sustained prevention, measures must be coordinated and networked. Quality assurance and evaluation must be a matter of course. | ▪ Successes in promoting healthy lifestyles must be shared to learn from one another:<br>- Base and coordinate activities on common benchmarks;<br>- Assure a close exchange between science, research and practice by application-oriented studies. |

Out of some specifically highlighted steps to implement these recommendations, the following laid the cornerstone of the present Swiss research project “Quality standards in health promoting communal catering” (25):

“*Improving the quality of mass catering*. There is much room for improvement not only in child day-care centers, schools, companies and in hospitals, but also in in-flight catering, train restaurants and service areas as well as regarding fast food and convenience products*. The development and supply of evidence-based and practical quality standards for mass catering can help to optimize this sector*.”



## 2.2 Health promotion in communal catering

### Health promotion

The project's strategic research focus is on health promotion. The area of health promotion arose in the 1980's with the growing recognition that the determinants of ill health were often related to social, economic and environmental conditions such as poverty, unemployment, poor housing and disadvantage in general (26). Health promotion is a process which aims at improving the population's health by developing and strengthening individual *and* environmental resources. It is generally based on the concept of salutogenesis (27).

As outlined above, tackling the obesity epidemic requires comprehensive interventions or actions that consider measures related to the individuals' health behavior and their "obesogenic" environments. The latter include in broad terms physical, socio-cultural, political, ecologic and economic factors (28). The Ottawa Charter for health promotion (29) identified the following three basic strategies for health promotion which are supported by five priority action areas (Table 3).

Table 3 The Ottawa Charter for Health Promotion: Basic Strategies and Priority Action Areas (adapted from (29))

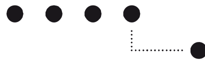
| | Basic strategies | | Priority action areas |
|---|---|---|---|
| 1 | Advocacy for health | 1 | Build healthy public policy |
| 2 | Enabling all people to achieve their full health potential | 2 | Create supportive environments for health |
| 3 | Mediating between different interests in society in the pursuit of health | 3 | Strengthen community action for health |
| | | 4 | Develop personal skills |
| | | 5 | Reorient health services |

Comprehensive approaches which take into account all strategies and action areas are considered the most effective (30). They should ideally be implemented in "settings for health", thus being directed at structural conditions of the setting and at the involved groups of individuals. A health promotional setting is a place identified by physical boundaries or the social context in which people with defined roles engage in daily activities in which environmental, organizational and personal factors interact to affect individuals' health and wellbeing (31). Such participation-based approaches will increase community capacity and empower the individual to be at the center of health promotion action and decision-making processes. For this purpose people and communities need access to education and information (health literacy). Health promotion thus presents a complex intersectoral task, involving not only the health sector but also the educational, labor and other sectors.

### Health promotional settings in communal catering

Communal catering, being part of the food service industry, offers the perfect setting for health promotional community action, being represented in the educational, business and care sector (see Definition page 20). The individual consumers and the institutions or establishments should apply their skills and resources in collective efforts to address nutritional health priorities and meet their respective (health) needs. Together they can gain increased influence and control over the personal, social, economic and environmental factors which determine the health status of the individuals or the community. In this collective effort, the communal catering institution is supported in providing health-promoting ways of eating and drinking, i.e. making healthy offers, and the communal catering consumer is helped to make more healthful food choices.

As shown in Tables 2 and 3, the individual or consumer is increasingly rendered responsible for his/her health and nutritional behavior *provided* a supportive environment for an optimal lifestyle is created (32). However, the approach of societal or collective responsibility and regulation in respect to the obesity epidemic is confronted by the liberal aim of sustaining individual freedom of action and free business enterprise (33). The food service industry, where there is a direct interrelationship between the consumer and the food service operator, faces the dichotomy of using sales-improving business practices but thus being guilty of contributing to the population's obesity (34). Nonetheless, these two players do not live and interact in isolation. This will certainly influence the extent of public involvement and application of different measures, such as information, fiscal measures or legal



enforcement. Communal catering in particular must bear some moral responsibility to help to ensure that people consume an appropriate diet, since in this sector individuals often depend on the food provided as their sole source of sustenance. In this context adoption of a “societal health eating marketing concept” is warranted (34, 35).

## Quality standards for a model of health-promoting Swiss communal catering

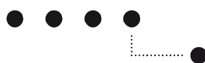
In Switzerland, communal catering has received little attention in the national food and nutrition policy (3) so far. However, public concern about inadequate meals provided and consumed in schools, health institutions and the workplace is increasing. The educational sector is deemed to be the most promising area for the promotion of healthy eating because a significant number of young individuals can be reached over years and their health behaviors (i.e. diet and activity) be sustainably consolidated (36). However, implementation of school nutrition and food service policies poses challenges and does not always have the expected impact (37, 38). Until now there have been no centralized decisions or actions on this issue which emphasizes the necessity to establish dialogue and multidisciplinary partnerships for implementing effective actions in all educational, business and (health) care sectors in Switzerland.

Regarding the development and supply of evidence-based and practical quality standards for health-promoting communal catering, this research project applies a process-based approach, taking into account good health-promoting practices in Swiss communal catering. The specific actions suggested in the 2nd WHO European Action Plan for Food and Nutrition Policy (4) (see above, page 10) will be considered when defining quality standards and good practice criteria. Actors and stakeholders from different levels will be considered in close cooperation:

- *Government sector*: national, regional and/or local authorities representing public health; consumer protection and food safety; education; labor market; social policy and research.
- *Public and professional networks:* consumers, consumer organizations and advocacy groups; health professionals’ organizations, such as dietitians, public health nutritionists, food scientists; professional organizations and unions in the food service industry and communal catering sector.
- *Economic operators*: such as food business operators (primary producers, food/meal manufacturers); food retailers to the food service industry; caterers; and the media.

Based on a project-specific working definition of communal catering, the report will further outline and discuss in greater detail:

- Basics about quality concepts related to communal catering and health promotion, their combined application to health-promoting communal catering, including the strategy of good practice.
- An international overview of current health promotional activities in communal catering and their related challenges, with focus on Switzerland and the neighboring countries Germany, Austria and France.
- A review on main issues studied in applied research focusing on the educational, business and care catering sectors for identification of questions to be investigated and problems to be considered in defining and implementing quality standards.



# 3 Methods

## 3.1 Establishment of a working definition of “communal catering”

The communal catering sector is the main subject of research of the project “Quality standards in health promoting communal catering”. There is no distinct and generally acceptable definition of the term communal catering, not least because of the different perspectives possible within a catering establishment, i.e. the institutional management, kitchen and consumer perspectives. Also, the nomenclature varies in the international context. In German two terms are in use: „Gemeinschaftsverpflegung“ (communal feeding) and “Gemeinschaftsgastronomie” (communal catering). In French the sole term “restauration collective” is used. A variety of terms are in use in English, such as communal or institutional feeding, mass catering, public catering, catering for community or communal catering. For the purpose of this report we use the following terms and translations:

Table 4 Applied terminology in German, French and English

| German | French | English |
|---|---|---|
| Gastgewerbe (Hotellerie und Restauration) | Industrie hôtelière et restauration | Hotel and food service industry |
| Restauration (Gastronomie) | Restauration | Food service industry (catering) |
| Individualgastronomie | Restauration individuelle | Commercial catering |
| Gemeinschaftsgastronomie | Restauration collective | Communal catering |
| Gemeinschaftsverpflegung | Restauration collective | Communal feeding |

Communal catering is part of a heterogeneous out-of-home market (15, 39). Therefore, a restrictive working definition of communal catering was established which allows for a targeted project realization. The project results thus are primarily valid for to the communal catering sector as defined. However, an application of the results to other forms of the food service industry is not excluded.

The working definition was determined empirically, based on written questioning and face-to-face interviews of 72 individuals. Survey participants were the members of the research group, their collaborators and colleagues, first-year students of the BSc program in nutrition and dietetics at Bern University of Applied Sciences as well as external project partners and personal contacts in the food service sector and from science.

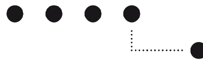
Interviewees were asked:

- to provide the definition(s) of „communal catering“ they know and/or use, citing the corresponding references.
- to specify unambiguous inclusion and exclusion criteria which allow to narrow down the term of „communal catering“.
- if, in their opinion the terms of “communal feeding“ and “communal catering“ differ in form and content and, if so, to describe the differences.

Responses were grouped and references considered (40-56). The resulting definition was further specified in discussion with representatives of the Swiss Association of Communal Catering and finally commented on and adopted by the project’s advisory board.

## 3.2 Literature research

The literature about communal catering is as heterogeneous as the out-of-home market to which it belongs. The communal catering sector is characterized by a strong practical orientation reflected in a large number of professional magazines. Scientific references are spread across a series of specialized journals where diverse issues are discussed, such as food hygiene, microbiology, food production, quality management, health policy, nutritional interventions in educational, care or business settings, etc. The respective manuscripts are published in various international journals of food science, nutrition and dietetics, public health and economic sciences.



Thus an extensive multilevel literature search was conducted, considering textbooks, scientific journals, and gray literature as well as identified sectoral websites and magazines. Specific search strategies were developed in order to systematically research communal catering with regard to the search terms health/health promotion, good practice and quality, taking into account consideration both communal catering in general as well as the specific settings and respective target groups of the communal catering categories business (workplace), care (health care institutions) and education (school). The general set-up of the search strategy was:

*Selected aspect* of “quality”, “health*”, or “good practice” AND *(target group* OR *setting)* AND *respective terms concerning communal catering.*

The search strategies were primarily applied for the scientific literature search, using

- the comprehensive science-specific internet search engine “scirus” (www.scirus.com), searching the information sources and journal databases ScienceDirect, Medline, PubmedCentral und BioMedCentral;
- the journal databases Food Science and Technology Abstracts (FSTA) and PubMed;
- the German publisher websites of „aid infodienst“ (Ernährung im Fokus) and „Umschau Zeitschriftenverlag (Ernährungs-Umschau)“.

## 3.3 Guided interviews with international experts

In addition to literature research, information about actors, stakeholders, major activities and experiences in the international communal catering sector was systematically acquired in guided interviews. Interview partners were individual experts and groups of experts from Germany, Austria and France. The interviews were audio-taped for subsequent completion and verification of the notes. The audio-tapes were deleted after transcript approval by the following interview partners:

From Germany

- Prof. Dr. Gertrud Winkler, Hochschule Albstadt-Sigmaringen, Fakultät Life Sciences, Ernährungs- und Lebensmittelwissenschaften. Prof. Winkler has a research focus on school catering and teaches catering management among other subjects. She is member of the project’s advisory board.

From Austria

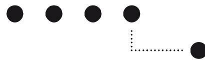
- Mag. Georg Frisch, teaching officer at the Heeresversorgungsschule, Vega-Payer-Wayprecht Kaserne and associate lecturer in communal catering at the Departement für Ernährungswissenschaften der Universität Wien. He is member of the project’s advisory board.

From France

- Mme Marie-Line Huc, a private practice dietitian, whose main focus is on communal catering. Mme Huc is member of the Groupe d’étude des marchés (GEM) Restauration Collective et Nutrition (RCN). GEMRCN translates technical documents into guidelines, recommendations, regulations and technical specifications in order to facilitate the implementation of nutrition related public mandates.
- Mme Virginie Grandjean-Ceccon, a private practice dietitian with a main focus on school catering.
- Mme Géraldine Geffroy, Dietitian, Head nutrition at Compass Group France.
- Mme Katia Tardieu, a private practice dietitian and member of the board of administration and of the communal catering commission of the Association des Diététiciens de la Langue Française (ADLF).
- M Richard Agnetti, Cadre Supérieur de santé Diététicien and vice-president of the Comités de Liaison Alimentation - Nutrition (CLAN), Central de l’Assistance Publique des Hôpitaux de Paris.

The major topics discussed in detail for the respective countries were

- the definition of communal catering;
- the organization of the communal catering sector;
- the specific media and exchange platforms available for the country’s communal catering sector;
- the extent to which health-promoting communal catering represents an important issue;
- the existence of any officially defined criteria of good practice for health-promoting communal catering;
- and interest in international cooperation.



# 4 Results

## 4.1 Specification of the subject of research “communal catering

The Swiss communal catering sector is part of a heterogeneous out-of-home market. A 2005 Swiss Federal Office of Statistics census counted 28’004 economically important hotel and food service establishments with an annual turnover of 24’000 million Swiss Francs (15). Three-and-a-half percent (n=977) of the assessed establishments were canteens and 2.2% (n=613) were caterers. The latter category is assumed, due to lack of specification, to consider catering on trains and airplanes, party catering, meals on wheels, etc.

In the framework of the present research project, communal catering was defined in three steps:

1) Considering communal catering in the context of out-of-home consumption (Figure 2),
2) Classifying communal catering in three categories (Table 5)
3) Specifying criteria for communal catering from supplier and consumer perspectives (Figure 3).

In the context of the out-of-home consumption, Figure 2 covers the levels of the individual, the hotel and food service industry and of catering. Differentiation of the terms of communal feeding and communal catering becomes thus possible. The hotel and food service industry includes all food- and accommodation-related services offered to guests (44), though the core business of the food service industry (catering) is the feeding. Two basic forms of catering are distinguished, commercial and communal catering. Commercial catering is characterized by feeding a *changing* clientele of *individuals* whereas communal catering is characterized by the *regular* feeding of a *clearly defined collective*. Communal feeding thus literally means to provide all individual members of a collective with meals and drinks as a contribution to their physiological requirements. Communal catering, however, covers in addition to this basic feeding aspect also psychological and psychosocial aspects of need satisfaction (e.g. pleasure, well-being, socialization, vibes, etc.).

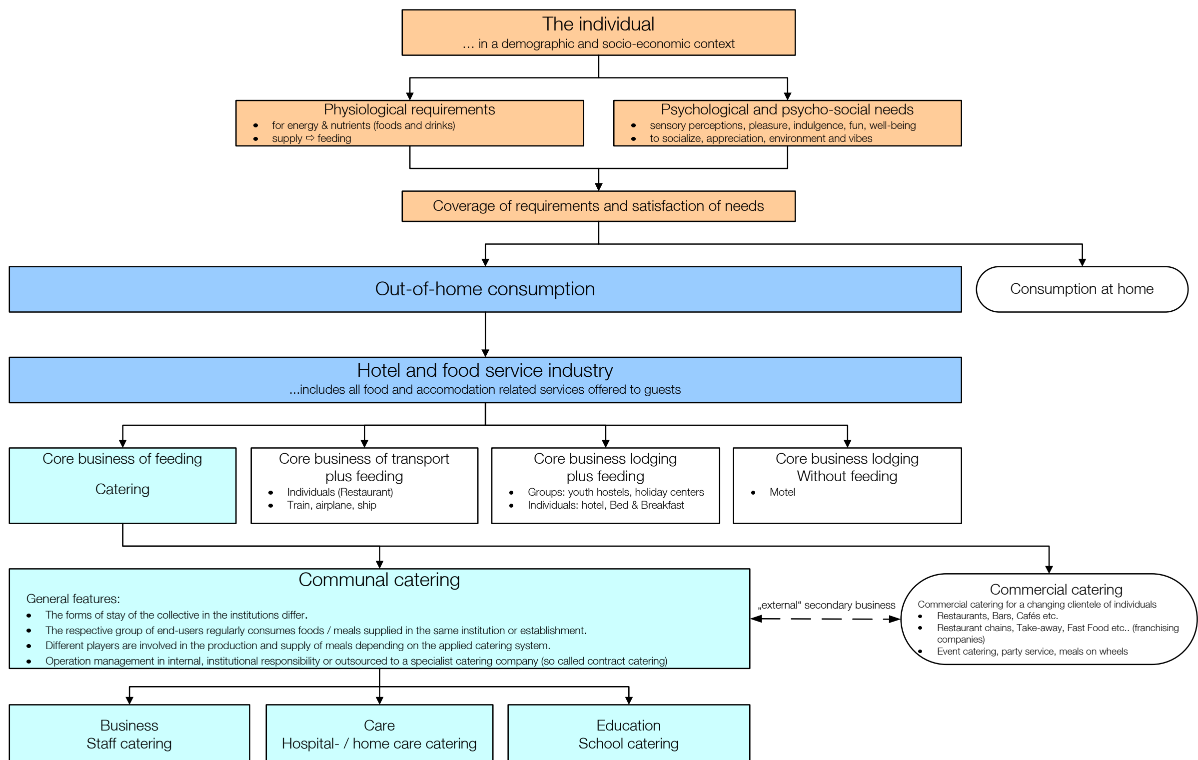
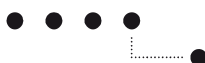



Figure 2 Communal Catering in the Overall Context of Out-of-home Consumption.



The following general features of communal catering were identified (Figure 2):

- The forms of stay of the collective in the institutions vary from temporary to permanent or from semi-captive to captive (staff, students, residents, etc.)
- Respective groups of end-users regularly consume foods/meals in the same institution or establishment.
- Different players are involved in the production and supply of meals depending on the applied catering system (cook & serve, cook & chill and cook & (deep) freeze or mixed forms of these, or cook & hold).
- Catering operation management is either an internal, institutional responsibility or is outsourced to a specialist catering company (contract catering).

The three categories of communal catering are business, (health) care and education (Figure 2; Table 5). In one and the same establishment, several catering categories may be in vigor, such as in hospitals where staff (business) and patients (care) are catered to. The three main categories can further be stratified according to the catered collective, the establishments' ownership and kind of food consumption premises.

Table 5 Classification of communal catering by categories

| | Categories of communal catering | | |
|---|---|---|---|
| | Business<br>Staff catering | Care<br>Hospital- / home care catering | Education<br>School catering |
| Collective | ▪ Employees, staff<br>▪ Guests (business clients) | ▪ Patients<br>▪ Residents (including prisoners) | ▪ Preschool-age toddlers and children<br>▪ School-age children / youth<br>▪ Trainees and apprentices (including army recruits)<br>▪ Students |
| Ownership (considering main sectors) | ▪ Private enterprises<br>▪ Semi-private enterprises<br>▪ Public enterprises / establishments | | |
| | ▪ Manufacturing industry<br>▪ Service industry<br>▪ Administration, (federal) offices<br>▪ Army<br>▪ Church (convents/monasteries) | ▪ Hospitals, clinics<br>▪ Rehabilitation centers<br>▪ Seniors homes<br>▪ Nursing homes<br>▪ Penal institutions | ▪ Day-care centers/nurseries<br>▪ Kindergartens<br>▪ (Full-time) Schools<br>▪ Army training camps/barracks<br>▪ Boarding schools<br>▪ Children homes/ youth centers<br>▪ Universities |
| Premises of food consumption | ▪ Staff or company restaurant, canteen<br>▪ Cafeteria<br>▪ Vending machine | ▪ At the bedside / room service<br>▪ Dining hall or facility | ▪ Lunch room / tables<br>▪ Dining hall or facility<br>▪ School canteen<br>▪ Refectory<br>▪ Cafeteria<br>▪ Vending machine |

Communal catering can be well characterized by means of the following five criteria (Figure 3): collective, consumption, meal supply, location and premises, financial aspects. The presented criteria consider both, the consumers' and the suppliers' perspectives and allow to systematically assess and identify the Swiss communal sector in the framework of the present research project.

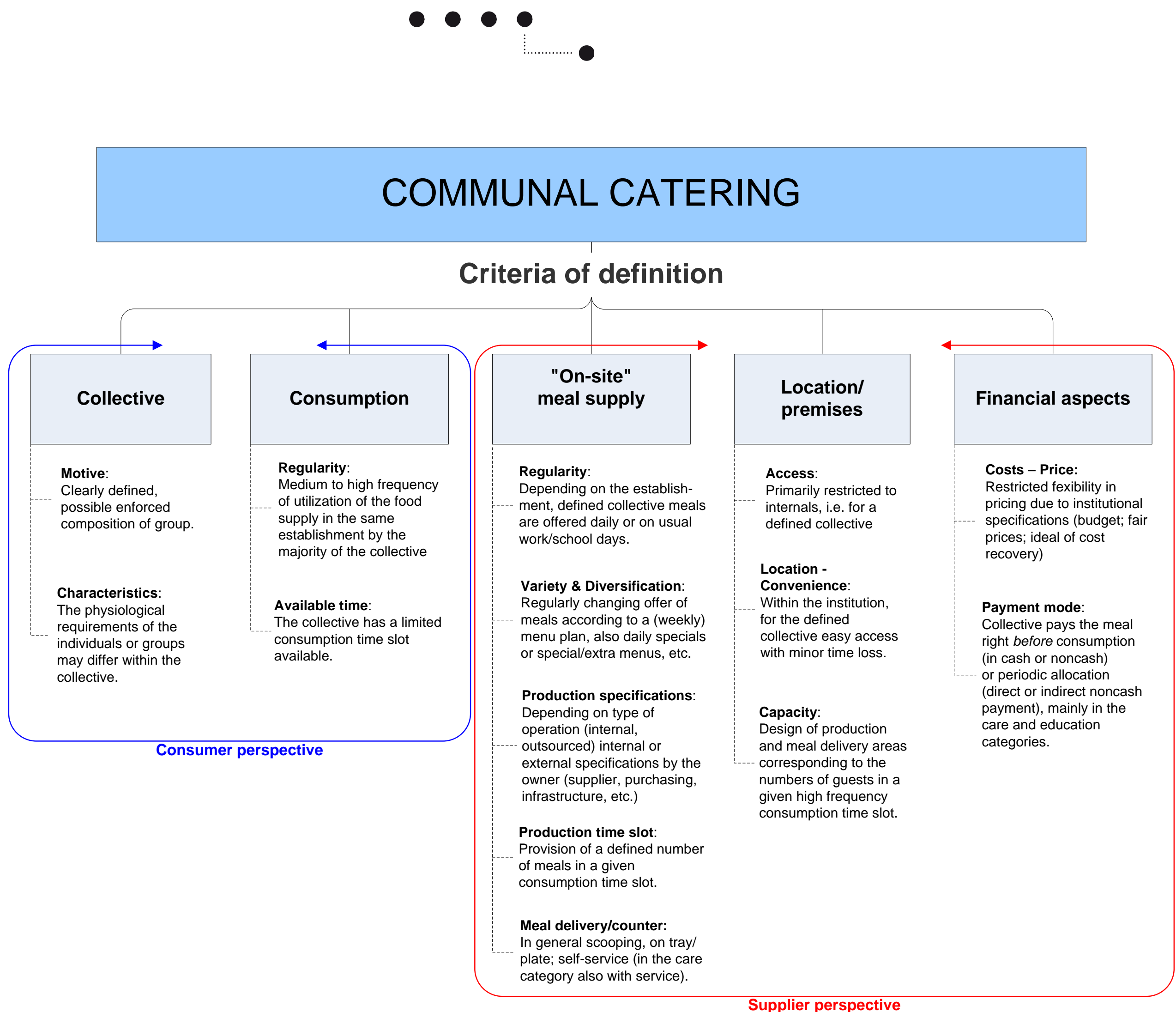



Figure 3 Definition criteria of communal catering

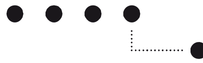
## 4.2 Evolution of communal catering in Switzerland

Swiss gastronomic culture has always been influenced by the circumstances of social and political life. Each era and every society is characterized by innovations and alterations. Hence, what and how we eat and drink today is affected by our culture.

### 4.2.1 Communal catering and large-scale food production in the 20th Century

The roots of communal catering in Europe and in Switzerland are to be found in the transition from the 19$^{th}$ to the 20$^{th}$ Century. At the turn of the century, industrialization and the First World War substantially changed nutritional conditions for the civilian population and the soldiers. As early as 1870, some factories established so-called "Menagen" (from French ménage) to nourish the workforce. Around 1900, staff canteens became increasingly important since many of the workers could no longer go home for lunch and increasing numbers of women started to work in the plants. To eat in community at a staff or army canteen replaced the individual meal at home. Thus, the employees were more committed to the company or institutions and nutrition attained a political dimension (57, 58).

The foundation of today's nutritional and food sciences was set around the end of the 19$^{th}$ century when analytical techniques were developed to study food (59). These techniques helped to develop improved food production and preservation technologies. New, industrially produced foodstuffs, such as margarine, the condiment "Maggi", baking powder and powdered milk, were increasingly used. As a result of the industrial food production developments, the quantity of available foods significantly increased until the turn of the 20th century, whereas the quality considerably decreased. Industrially produced foods were characterized by lower vitamin and dietary fiber contents and diets overall showed increased fat and salt contents (57).



For social and economic reasons, different foundations and organizations were established at the beginning of the 20th century in Switzerland, which primarily continued the operation of factory or army canteens. The organizations' most important objectives were to provide cheap and healthy meals for soldiers (60), to promote interpersonal relationships or to advocate a healthy diet and the well-being of the general population on a non-alcoholic basis (61). In Switzerland, large public companies like the Swiss Post Service or the Swiss Railway increasingly outsourced the catering of their employees to the different foundations and organizations. Over the years, institutions in the educational and care sectors, such as schools, universities and senior homes followed this trend. In parallel, the number of staff canteens in private and semi-private companies increased steadily (60-62).

### 4.2.2 The Swiss sectoral association

In 1960, committed kitchen heads and managing directors of canteens in the Swiss communal catering sector formed the syndicate "Interessengemeinschaft der Kantinenleiter und Géranten (IKG)" for the purpose of knowledge exchange. The further development of communal catering in Switzerland has been closely related to the evolution of the syndicate. Many of the potential members of this sectoral association, e.g. banks and insurance companies running modern cafeterias considered the term "canteen" as inappropriate. Therefore, in 1962 the IKG was renamed "Schweizer Verband für Gemeinschafts*verpflegung* (SVG; Swiss Association for communal *feeding*)".

Swiss communal catering also influenced the international development of the sector. The SVG was a cofounder of norm EN 631, the so called "Gastro-Norm" (GN) in 1964. Gastro-Norm is a worldwide code for food containers of standardized size used in food processing companies and canteen kitchens. In addition, the biannual international trade fair for the hotel and food service industry "Igeho" (Internationale Fachmesse für Hotellerie, Gastronomie und Ausser-Haus-Konsum) was launched in 1965 under the auspices of the Swiss association SVG. Since 1980, the association has supported the education of professionals in the communal catering sector and has launched a specific training course for communal catering managers. This "Vorbereitungslehrgang für eidg. dipl. Betriebsleiter/-innen der Gemeinschaftsgastronomie" is approved by the Federal Office for Professional Education and Technology.

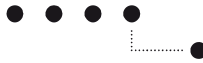
With a steadily increasing quality awareness in the sector, guests were not only "fed" in communal catering institutions but were also "gastronomically pampered". This development resulted in a further name change of the sectoral association to "Schweizer Verband für Gemeinschafts*gastronomie* (SVG; Swiss Association for communal *catering*)" in 1993. The latest adaptation of the association's name dates back to 2003. In Switzerland, catering in hospitals and homes has a long tradition and serve as a role model with regard to healthy nutrition/catering. In order to sufficiently highlight all relevant players in the sector, the association changed its name to "Schweizer Verband für Spital-, Heim- und Gemeinschaftsgastronomie" (SVG; Swiss Association for hospital-, home care and communal catering) (63).

### 4.2.3 The role of communal catering for healthy nutrition

In the past, a meal consumed at the workplace may have been supplemented with a wholesome meal at home. However, today the situation tends to be inversed. Community catering may contribute to offset the increasingly unbalanced diets consumed at home by offering nutritionally balanced and tailored meals (64). Communal catering and, in particular, business catering previously had a predominately functional nature, namely to satisfy hunger. Today culinary aspects and others such as price, timely availability, etc. are as important as to simply providing energy and nutrients. Further, cafeterias, staff canteens and restaurants should also provide a relaxing atmosphere to offer a short rest to the diverse consumers, such as employees, pupils, etc. Collective eating will be the future most important form of eating (65-67).

In 1942, the Swiss journal of nutrition and dietetics (Schweizerische Zeitschrift für Ernährung und Diätetik) had already proposed to investigate questions of communal catering (68). Many of the issues and requirements discussed at the time still present challenges of communal catering today (65, 68, 69):

- The appreciation of the guest as an individual.
- The different physiological needs of guests within the collective.
- The specific production requirements concerning meals for guests with allergies or other specific health conditions.



- The composition of a diversified and balanced menu plan accounting for regional eating habits and traditions.
- Taking into account the association of recuperation (relaxation) during a meal, mental state, food tolerance and individual productivity.
- The specific requirements of large-scale food production regarding hygiene, the premises, the infrastructure and the workforce in the kitchen.
- The professional storage of foods along with least severe, nutrient maintaining preparation of nutritious and tasty meals.
- The design of the location of food consumption.

Food and nutrition has developed into a fashionable research topic over the past decades. However, there is still a remarkable gap between the knowledge about nutrition of Swiss consumers and the implementation of this knowledge in daily life (57, 70). According to the results of the Swiss Health Survey of 2002, one third of the population does not pay any attention to their diet and many people eat an unbalanced diet (64).

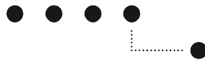
As outlined above (see introduction), the Swiss communal catering sector daily serves meals to at least a million consumers from different socio-economic backgrounds (16). Therefore the sector is an ideal setting to offer healthy and balanced meals. An improvement of the population's nutrition through a balanced diet and sufficient physical activity with the help of the communal catering sector corresponds to current strategies and trends in health promotion and prevention (25).

## 4.3 Quality in health-promoting communal catering: Basic concepts and expectations

In the food service industry -as in other service industries- quality is primarily defined by subjective customer satisfaction. In view of growing competition for business and education catering with commercial catering on the one hand and the restricted freedom of choice for partly or fully captive customers in mainly care catering on the other hand, advertising quality became increasingly common practice in communal catering in recent years. It is legitimate to use quality as a marketing instrument. However, in doing so, members of the communal catering sector must recognize that their mission will exceed the sole aspect of producing meals to be consumed (71, 72). As shown in the definition of communal catering (Figure 2) customers judge not only the tangible service aspects of food production and supply, but especially intangible service aspects such as the contribution to physical recovery (repletion; health maintenance and improvement) and psychological recovery (relaxation, pleasure, indulgence, socialization, etc.) along with aspects of information/education and interaction with the catering staff. Moreover, communal catering is dependent on the presence of the customers (no guest - no service) and their active participation in the service provision (self-service). Experiencing all partial processes of service provision as both, a subject and object, makes customers the most important production factor (73) and offers a significant opportunity to positively affect customers' active participation in the catering process and their nutrition related health behavior. Consequently, in communal catering, quality centers primarily on the guests but must also consider requirements by other interested parties (e.g. owners, the people in an organization, suppliers, bankers, unions, societies, experts such as health professionals). Overall, communal catering represents a system of requirements and needs which are met by a system of service provision. Accordingly, all sectors of a communal catering establishment have to arrange and perform customer/guest and stakeholder oriented services, which require (74):

- knowledge and appreciation of the customers and stakeholders requirements and the ambition to exceed their expectations;
- identification of triggers of dissatisfaction and potential problems, in order to respond appropriately;
- definition of quality standards to allow for assessment and evaluation of the "service quality" in terms of customer and stakeholder satisfaction.

The understanding of basic quality concepts and respective terms in communal catering, health promotion and their possible combination are essential for the development of quality standards for health-promoting communal catering. These quality standards will provide a basis for targeted and sustainable improvement of communal catering with respect to customer and stakeholder satisfaction and health.



### 4.3.1 Quality concept in communal catering

The fundamentals of quality management systems and definitions of related terms by the International Organization of Standardization (ISO 9000:2005 Quality management systems – Fundamentals and vocabulary) are generally applied to communal catering (75, 76). They are part of the ISO 9000 family of standards which assist organizations of all kinds and sizes to implement and operate effective quality management systems (see chapter 4.3.7). Figure 4 summarizes major elements of the general quality concept, considering relations between and within the interacting systems of customers/interested parties and the service provider.

The question is not about the presence or absence of quality but to what extent quality is achieved by a product or service. In respect to communal catering, products are complex services consisting of a series of smaller partial (sub-) services. The presented quality concept for communal catering (Figure 4) is based on the quality definition by ISO (77). However, it takes into account inherent *and* assigned characteristics, since both are considered equally important for customer satisfaction in communal catering (74).Thus quality is defined as *the degree to which a set of inherent and assigned characteristics fulfills common practice or obligatory requirements*, i.e. needs and expectations stated in a document conveying criteria to be fulfilled (quality standards, see chapter 4.3.4). Inherent characteristics comprise permanent features existing in a product, a process or a system (for example concerning nutritional composition, temperature or sensory attributes of a meal) as opposed to assigned characteristics (for example price, meal delivery area design, communication / interactions) (77). Overall, the concept allows a customer-oriented operationalization of the requirements.

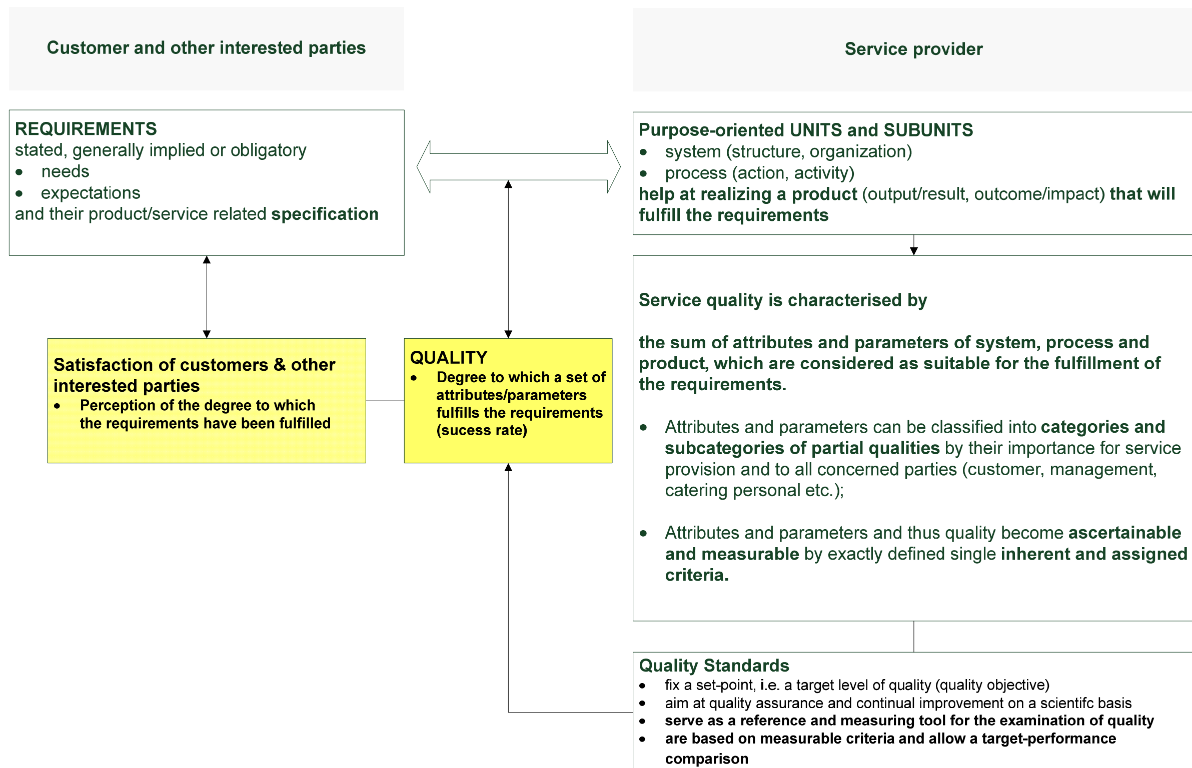
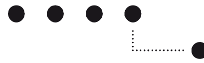



Figure 4 Quality Concept diagram

Quality is expressed in the customer's and stakeholder's satisfaction, that is, the subjective perception of the extent to which the service reflects the stated requirements (not at all, partly or fully). Quality is subsequently rated as poor, good or excellent. Moreover, quality is not an absolute term but changes over time depending on shifting interests and purposes. Therefore, all concerned parties should be continuously involved in the process of expressing their quality expectations and the service has to be tailored to the target groups' specific requirements.



### 4.3.2 Quality dimensions in communal catering

Customer requirements focus predominantly on the result and the process of service provision, whereas the service provider's quality expectations are mainly determined by institutional competence and/or disposition to assure a certain level of service quality (72). In practice, customers and stakeholders differentiate a variety of specific catering/service quality attributes and parameters, such as staff friendliness, service speed, healthy food composition, fair price, the consideration of ethnic and socio-economic factors, information/education about healthy eating, etc. To allow for a systematic purpose-oriented management of these attributes and parameters, specific service quality models have been suggested. They try to cover the complexity of service quality by grouping the many factors involved in so-called quality dimensions, taking into consideration that single attributes or parameters may interact and be cross-linked (72, 76). The quality management dimensions or pillars of *Input, Process, Output and Outcome Quality* shown in Figure 5a are regarded as basics in communal catering. They correspond to the original three-dimensional model of structure, process, and outcome quality by A. Donabedian (78). These dimensions are also represented as so-called units and subunits of service production and provision in the above shown quality concept (Figure 4). Within this framework, quality shall be put into practice in a communal catering establishment, considering always the customer's integration/participation and the effect on the establishment's image (73, 76).

Overall, customer-orientation means outcome-orientation and within this system, output is a means to an end in communal catering. Customers will judge service quality on the basis of directly consumed results of service production (73). Typical output factors concern the meal itself, the food presentation, the ambience of the meal delivery and dining areas, waiting times, the interaction with staff, and quick and easy handling procedures. This output allows for sustainable impacts or outcomes, i.e. to achieve the true objectives stated, such as coverage of physical and psychosocial needs, health maintenance and improvement, conformity with health and nutrition guidelines and directives, etc. Thus customers, staff and interested parties will be optimally satisfied and beneficial public or social effects will be attained. This output-outcome relationship finally decides cost-effectiveness in communal catering. Only changes and thus investments in input and process (e.g. introduction of a new food component or dish; introduction of nutritional information service; reorganization of the meal delivery area) which result in *increased outcome* will produce *value and benefit*.

### 4.3.3 Quality concept and quality dimensions in health promotion

Over the last 10 to 15 years, quality has become a key issue in health promotion as it has also become in communal catering. With the increasing demand for accountability towards policy makers, financiers and other stakeholders, i.e. an increasing economic pressure on health promotion, there has been a growing need for health promoters to assure optimal and sustainable effectiveness of their actions which are directed to large populations or population subgroups and which intervene in an individual's life (79, 80). Disseminated information must be scientifically correct, and actions must be carried out successfully, focusing both on their aims and the avoidance of any harmful effect. However, health promotion objectives are not only concrete and measurable health related results but they consist of a process through which individuals gain a larger self-determination about their health (empowerment) and thus the individuals' social systems (settings) continuously improve in terms of health (81). In view of the common overall goal of health improvement, Walter et al. (82) suggested applying the US Institute of Medicine quality of care consensus definition (83) as follows to health promotion: "Quality of *health promotion* is the degree to which *projects or measures/activities* for individuals and populations increase the likelihood of desired *outcomes, such as the continual improvement of organizations and settings,* and are consistent with current professional knowledge".

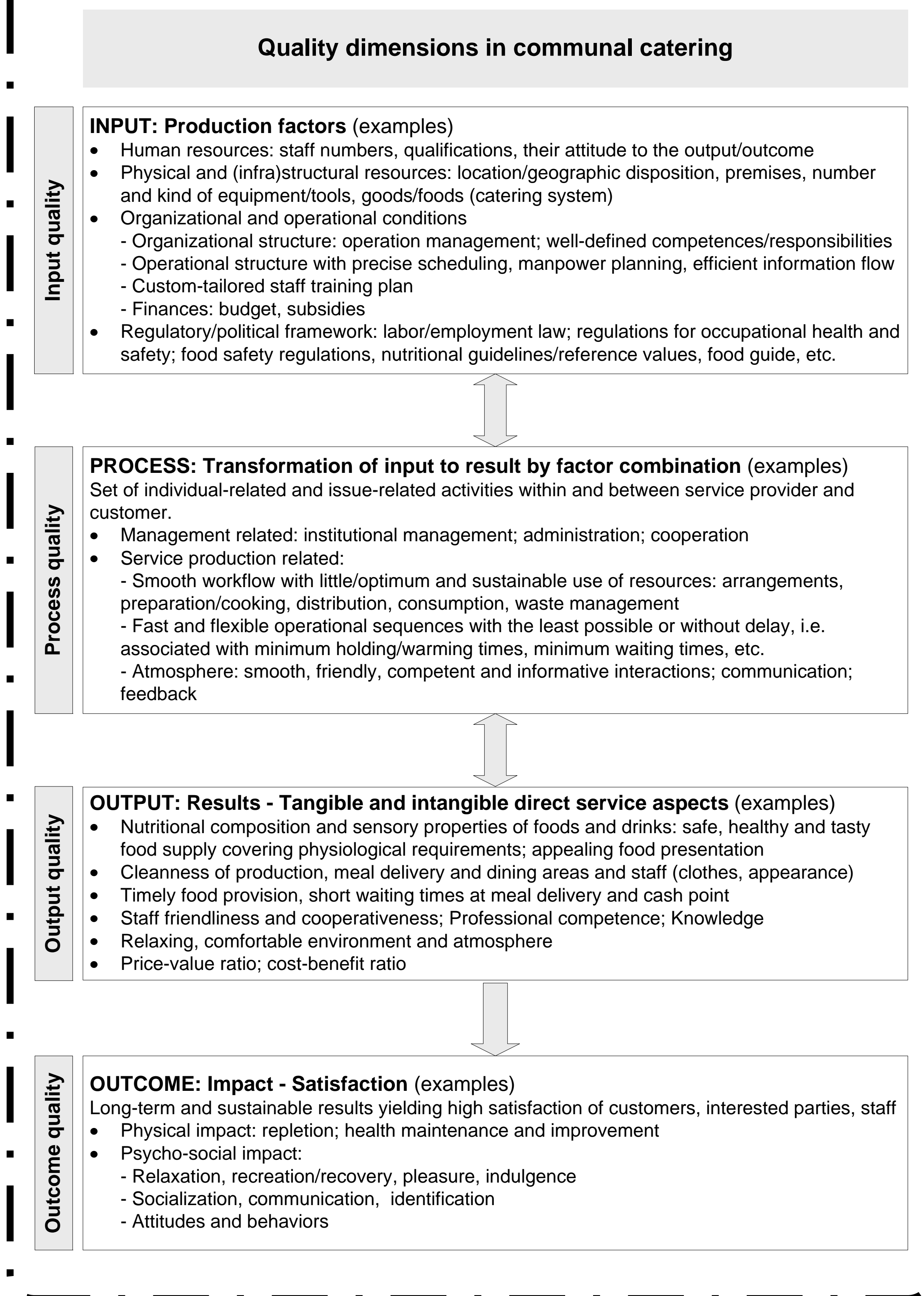



Figure 5a Quality Dimensions in Communal Catering: from Input to Outcome (71, 73, 75, 78, 84)

Accordingly, health promotion pursues a quality philosophy which aims at the fulfillment of criteria (effectiveness) as much as at the continual improvement of structures, processes and results. The characteristics of this optimization paradigm are (85):

- *continual improvement* of structures and processes in order to permanently enhance the effectiveness of actions;
- *user or customer orientation*, that is, to identify and consider the manifold requirements, normative and felt/subjective needs of the target group and interested parties. For the target groups also their living conditions/specific environments, lifestyles and cultural codes by gender, socio-economic level and origin should be known.
- *comprehensive quality concept*, i.e. considering in like fashion structure, process, result, overall context and the organization carrying out the action.

Quality in health promotion may refer to three systems for which the following issues arise (79, 81, 82, 86):

- *Settings (or target groups)*:
  For a setting such as communal catering, the question arises: What are the characteristics of health-promoting business, education and care catering? The development of such quality criteria is based on experience in practice, intervention research and evaluation results.
- *Programs, projects or measures/activities*:
  The quality of a program, a project or a measure/activity refers to execution and management, that is, the method of implementation (process) and the achieved short- and long-term effects (impact).
- *Institutions or organizations*:
  An institution or organization represents important physical and social environments to employees, pupils or clients/customers and thus influences their attitudes and values. In organizations without a (primary) health mandate, such as for example in business, administration and education, health promotion must first be established. The first step is to raise awareness and readiness for development of a health-promoting setting. A new organizational culture and, thus, structure and processes must be developed directly implicating employees and concerned persons. By participation they become experts in their own daily routine (empowerment).

As in communal catering (see Figure 5a), health promotion applies Donabedian's three-dimensional quality model of structure (input), process and outcome quality (Figure 5b). These dimensions concern the quality of the general conditions, the implementation quality of a project or an activity, the quality of the result and the cost-benefit ratio (economical justifiability) among others. Due to the importance of a clear concept of a program, project or measure/activity for its successful implementation, the quality model was complemented with a fourth dimension called "initial planning or concept quality" (82, 87). Moreover, structure, planning, process and outcome evaluation are elementary instruments for continual improvement of the respective quality dimensions in quality management of health-promoting projects since they help identify factors of success and failure (87, 88).

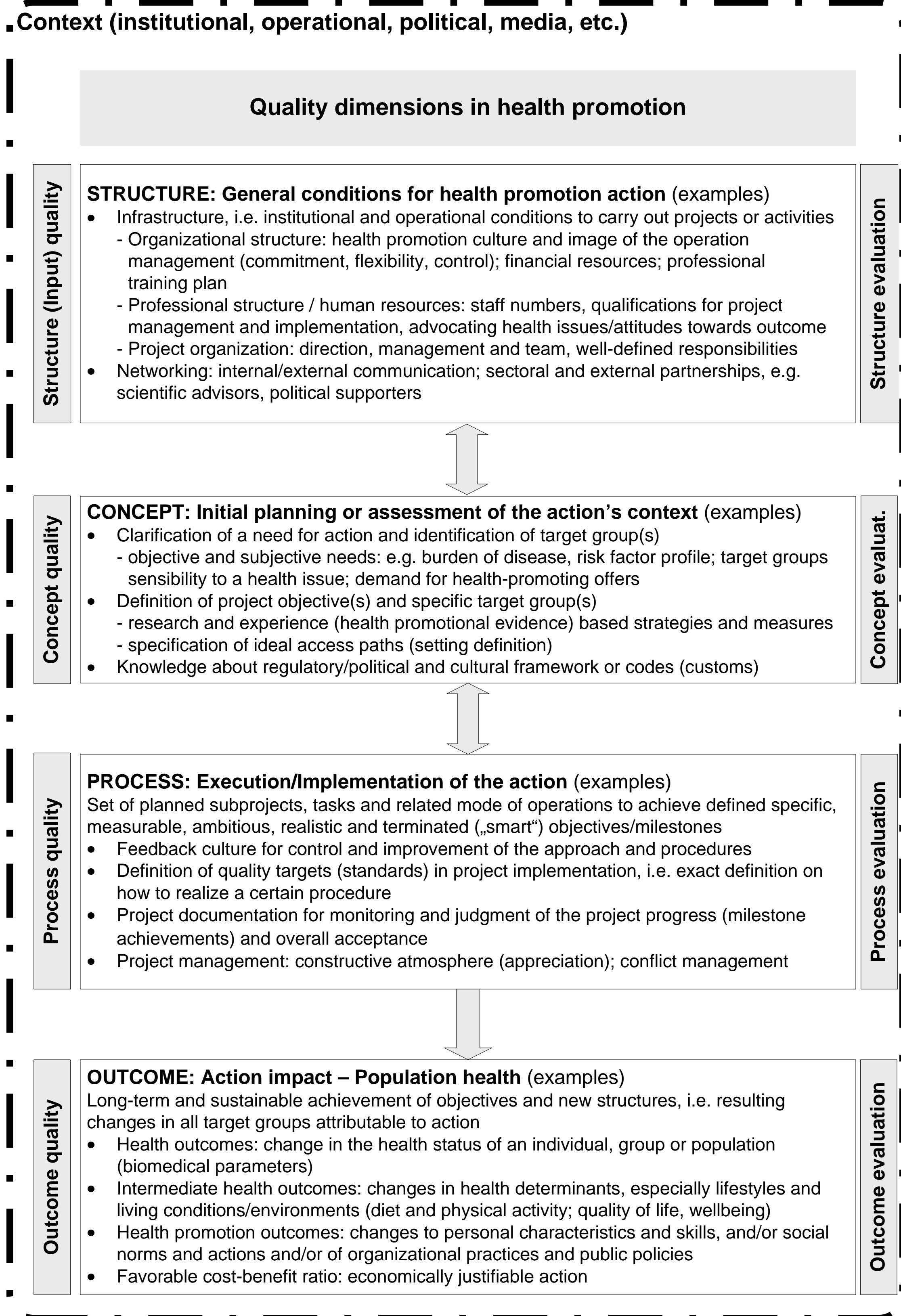



Figure 5b Quality Dimensions in Health Promotion from Structure to Outcome (87-89)

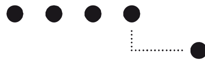
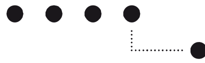


Figure 5b shows how traditional quality concepts and experiences from production and service operations (Figure 5a) have been adapted for health promotion.

The present research project "Quality standards in health-promoting communal catering" is interested in defining and evaluating quality criteria for health-promoting communal catering. Therefore, the framework of health promotion principles will be considered its own as a cross-sectional quality standard of communal catering (see chapters 4.3.4 and 6). These principles are not always visible, but they build the core of health promotion practice, namely the concepts of health equity, empowerment, setting approach and participation. For the purpose of quality development, and in particular continual improvement, a strategy of good practice will be applied (90): a practical participative process of quality improvement for community projects or measures/activities and regular services in communal catering, which shall be trigger and motivator for others to apply good approaches or respective aspects thereof (see chapter 4.3.6). Health-oriented nutritional projects in communal catering may primarily aim at enhancing health resources and health equity. The involved target groups will be the customers, employees and related or concerned persons, acting in their own specific environments. To this end, quality standards for health promotion projects and respective training and teaching materials for project planning have been developed and will be considered for use (e.g. (26, 80, 91)).



### 4.3.4 Quality standards: basics of development and application

The communal catering sector is part of a heterogeneous out-of-home market and is in itself quite diverse (see chapter 4.1). An important number of professional concepts of health-promoting communal catering are already implemented in Switzerland (see chapter 4.4). However, they may not always be realized under ideal conditions. In this regard, quality standards for health-promoting communal catering will provide a scientific basis to assure and continuously improve: to manage quality aspects in communal catering in target- and action-specific as well as sustainable manners.

#### Quality standards development

*Quality standards define what service quality is*. They are paraphrased and defined by a set of criteria which concern inherent and assigned service attributes and parameters. The criteria are measurable due to associated indicators (specific items) and their related target levels. Thus quality standards establish a reference for service quality and serve as a quality measuring tool (Figure 6). Nonetheless, quality standards should be flexible enough to allow for innovation and development and thus act as motivators for quality improvement.

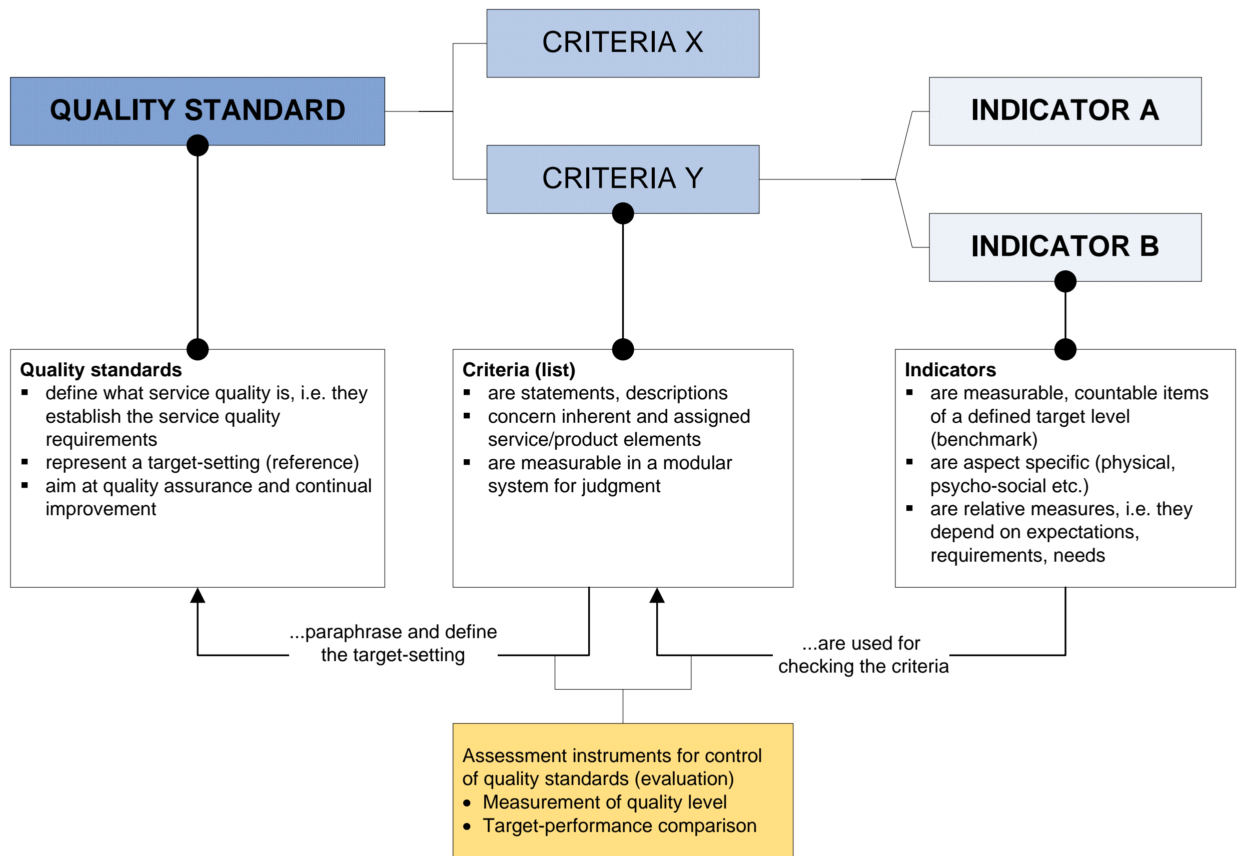



Figure 6 Modular quality standard system

Following the general principles of the so-called Deming “Plan-Do-Check-Act” (PDCA) Cycle (92), quality development –from planning to continual improvement- (see also chapter 4.3.7) should start with the definition of the appraisal factors, i.e. the measurable criteria. As shown above, they provide the basis for deciding whether or not a standard has been met, i.e. for determining in a target-performance comparison the degree of fulfillment of stated quality requirements for the product or service, as shown in Figures 4 and 7.

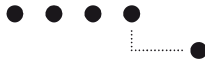


Figure 7 Quality target-performance comparisons

Ideally, concerned and interested parties define and evaluate quality standards in concerted action. In communal catering these parties typically represent the following categories, each of which has its specific requirements and needs (Table 6). Depending on the perspective, customers may be considered part of all categories.

Table 6 Concerned and interested parties for quality management in communal catering by category (adapted from (93))

| Catering establishment internal | Catering establishment external but institution internal | Catering establishment external and institution external |
|---|---|---|
| - Customers and their relatives (covering charges) | - Customers | - Customers |
| - Catering operational management | - Owners and the institutional management | - Contracting authority |
| - Catering staff | - Lobbies, such as institutional or catering advisory boards, employee representative committee | - Political and financial decision-makers, also regulatory authorities |
| | - Structures and professionals at the interface between catering and other institutional units, e.g. medical care (physicians, nurses etc.), education (educators, teachers, etc.) | - Refunding institutions/assurances<br>- Science<br>- Other societal groups and institutions |

In the present Swiss research project “Quality standards for health-promoting communal catering” quality standards will be developed based on the BAGE-Model© for quality improvement by (92) (Figure 8).This two-step process model is practice-oriented and takes into account scientific knowledge.

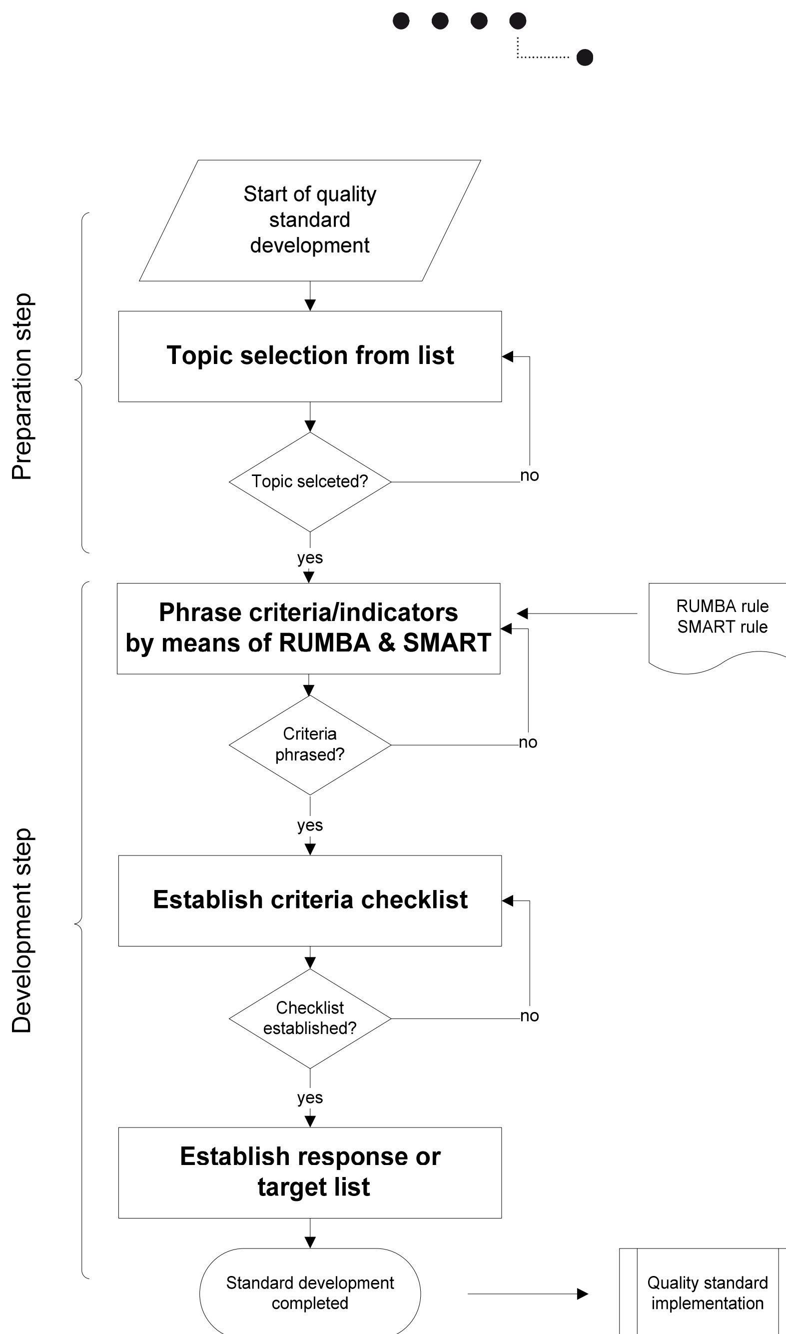
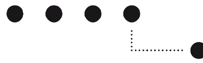



Figure 8 Quality standard development flowchart (adapted from (92))

Preparation step - Activity 1: Compilation of a list of everyday problems and requirements

Aiming at health-promoting communal catering, context, quality dimensions and partial qualities thereof (see Figures 5a and 5b) must be considered when brainstorming about issues recognized as needing improvement. In a participation-based approach, a supportive environment for health should be created and all involved individuals empowered to be at the center of health promotion action and decision-making processes. Thus typical areas of quality standards in communal catering are the production/service provision management (94), the nutrition management (95) and the health management (96). Examples are issues such as those raised by the WHO Europe Food and Nutrition Policy and the Badenweiler declaration (see chapters 2.1.1 and 2.1.3) and, individually experienced or in professional and scientific literature reported everyday problems. For instance:

- management, staff and customers lack knowledge about healthy nutrition as represented by the food guide (i.e. need for training programs, curricula, etc.);
- lack of interdisciplinary cooperation with dietitians;
- unfriendly or stressed staff;
- communication problems at typical institutional interfaces resulting in e.g. feeding problems of patients;



- lack of specific resources (human, infrastructure, time, money);
- unvaried food supply;
- disliked food supply since not matching general food habits or not covering physiological needs;
- drinking water is charged;
- requirement for socio-economic (cost structure) and socio-cultural equality (ethnic considerations ;access for disabled);
- disturbing environment (loud, dark, dirty, cramped meal delivery area or production area), and/or others.

An overview of manifold possible requirements and needs of the above mentioned concerned and interested parties (Table 6) has been reported elsewhere (e.g. (93)).

Preparation step - Activity 2: Systematic topic selection

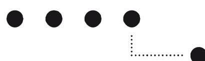
Out of the compiled list of issues (activity 1), major topics will be identified as eligible for quality development:

a) *Checking for existing issue-related mandatory or optional instructions, guidelines, recommendations, professional norms or standards, regulations/laws, policies, etc.*
   These typically science-based issues are always kept on the list and are flagged.

b) *Discussing and deciding on high or low relevance of the remaining issues.*
   The rating must consider the relevance of each issue for the service provision per se and the importance to concerned and interested parties (Table 6), i.e. they should match existing requirements and needs. The main focus should be on customer subgroups from the catering categories of business, care and education, the communal catering sector (producers and caterers), the health promotional and food safety sectors, the scientific and educational sectors.
   In respect to service quality three requirement categories are distinguished (72):
   - Generally implied and thus not specifically articulated but *compulsory requirements* (e.g. safe food, good taste, warm temperature of the main meal, fast service, an attractive price for quantity, etc.). They *must* be fulfilled to avoid a negative quality perception.
   - Articulated *to-be requirements* that *shall* be fulfilled and request a diversified service (e.g. good atmosphere, a sense of indulgence, wide range of foods, healthy and nutritionally adequate food supply, etc.). Quality perception increases proportionally with their fulfillment. Health-promotional issues have to be considered in this category.
   - *True optional requirements* that are not explicitly articulated and not expected to be fulfilled. However, they will contribute to a disproportionately high quality perception (e.g. specific interactions with the customer, such as nutritional consulting).

The high relevance rated topics are further considered.

c) *Selecting high priority issues suitable for quality standard development.* Every person involved in the preparation step rates individually their two most important topics. From the resulting list the three highest rated issues are selected for development of quality standards.



Development step - Activity 1: Phrase criteria and indicators

A quality standard is a complex system of elements which are best presented in a modular grid (Figure 9)

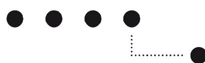
| QUALITY STANDARD (QS) | *"Final concise standard statement, defining level of performance"* | | | |
|---|---|---|---|---|
| ISSUE | *Topic/problem as identified in the preparation step* | | | |
| ▪ Problem description | *Detailed description of the problem and of single aspects thereof* | | | |
| ▪ QS Objective(s) | *Rationale: What shall be achieved?* | | | |
| ▪ Criteria and their indicators | Communal catering | | | |
| | *Input criteria*<br>- indicators | *Process criteria*<br>- indicators | *Output criteria*<br>- indicators | *Outcome criteria*<br>- indicators |
| | Health promotion | | | |
| | *Structure criteria*<br>- indicators | *Concept criteria*<br>- indicators | *Process criteria*<br>- indicators | *Outcome criteria*<br>- indicators |
| | *established following the "RUMBA" and the "SMART" rules* | | | |
| ▪ Documentation | *Accompanying documents on which the criteria are based* | | | |
| ▪ Assessment instrument | *Is necessary for checking the presence of defined input criteria and the implementation of process criteria.* The instrument(s) must be valid, reliable, practical/easy to use, sensitive, acceptable. | | | |

Figure 9 Modular grid for quality standard presentation (adapted from (92)

Firstly the topics or problems selected in the preparation step are described, for example using mind-mapping. It has to be shown what exactly is particularly important about the topic/problem and what the major components are. The description is concluded by recording the final objective(s) of the quality standard, i.e. what exactly shall be achieved. Then criteria and indicators can be phrased considering the following "RUMBA" and "SMART" rules.

The "RUMBA" rule" defines five specifications to be fulfilled in order to assure that the single criteria are checkable by means of the indicators (92):

| | | |
|---|---|---|
| R | relevant | *Is the criterion directly related to the issue or the described problem?* |
| U | understandable | *Is the criterion precise and does not allow for interpretation?* |
| M | measurable | *Has the criterion been clearly phrased with consideration as to how it can be measured (by means of indicators)?* |
| B | behaviorable | Concerns observable terms of behavior/comportment and is applied only to process and output/outcome criteria:<br>*Are the process and output/outcome criteria observable and do responsibilities become evident?* |
| A | attainable | *Does the criterion describe a target which can be achieved by professional action?* Possible collisions with economic targets oblige institutional stakeholders to take a clear position including resulting consequences. |



The following “SMART” rule should be applied when choosing an indicator (adapted from (75, 97))

| | | |
|---|---|---|
| S | specific | *Is the indicator specific and clear? Is it concrete?* |
| M | measurable, i.e. checkable | *Is it possible to collect the necessary information for this indicator?*<br>*Is there a source for the information needed?*<br>*Are resources available to collect the information or will it require too much time and skill to do so?* |
| A | actionable | *Would it be possible and acceptable to take action, if necessary, in response to the information that the indicator provides?*<br>*Will the indicator tell enough to make an informed decision?* |
| R | relevant | *Will the indicator provide information that is necessary for decision-making about the criteria/standard, or will it give information that is only “nice to know”?* |
| T | timely | *Will the indicator tell what is needed to know at the right time?*<br>*Are the methods used to collect data for the indicator done frequently enough to enable to make timely decisions?* |

When establishing quality standards in health-promoting communal catering, it has always to be checked whether the defined criteria are generally applied for all three communal catering categories or if separate criteria specifications are needed for business, care and education catering (see Figure 10).

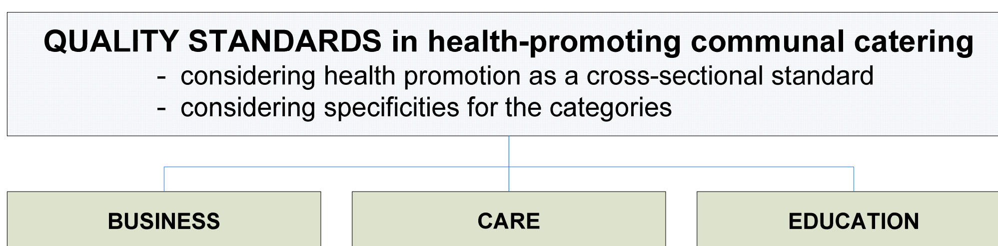



Figure 10 The general concept of quality standards in health-promoting communal catering.

Overall, the criteria must be complementary, i.e. for existing output criteria complementary input and process criteria must be determined and vice-versa.

*Input/structure criteria* concern production factors or the general conditions for health promotion action, from human resources to the regulatory framework (see Figures 5a and 5b). Thus the question is:

- What prerequisites are needed to provide high-quality work/health-promoting service with respect to the standard’s issue or the defined output/outcome criteria, respectively?

Input/structure criteria are often phrased as statements like “… do exist”, “… is present”, or “… is available”. Alternatively they may be phrased as questions.

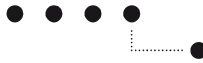
*Process criteria* concern the transformation of input to output (see Figure 5a) or the implementation of a health promotion action as it was initially planned (see Figure 5b). Thus the question is:

- What procedures are needed to transform the input to the defined output/outcome or to carry out the project or activity successfully?

Process criteria can be described step by step (e.g. using a flow sheet) and may refer to existing manuals or operating guidelines. They identify responsible individuals and it must be assured that the necessary input criteria are given. Process criteria are phrased using verbs, such as: “the executor does…, explains…, informs…, helps/supports…, hands over/delivers…, provides…, aims at…” etc.

*Output and outcome criteria* represent results with output being the direct result of a process, and outcome being the indirect long-term and sustainable result of the entire system (see Figures 5a and 5b). As such the outcome of all input and process for a health-promoting communal catering should reflect the overall objective of improved health status due to strengthened individual and environmental resources (inputs, processes, outputs).

Any literature that is used for the definition of a standard, the respective criteria and indicators shall be



documented. With respect to quality standards for health-promoting communal catering the present report will provide important references (see chapters 2; 4.4 and 4.5) combined with the expertise from the project's advisory board.

### Development step - Activity 2: Establish criteria checklist(s) and the respective response or target list(s)

Assessment instruments are a central part of quality standards (see Figures 6, 8 and 9). They allow checking for the presence of the input criteria and for implementation/execution of the process criteria. For this purpose, criteria checklists -based on the identified measurable indicators- and response/target lists must be established. They define how to measure the criteria, what the expected responses/target levels are and the point of assessment.
In the present research project, two web-based written questionnaires will be developed, tested and implemented to this end (see also chapter 4.3.6). In short, the first questionnaire will focus on characterizing the communal catering sector by assessing selected input/structure, process and output/outcome criteria. Three target groups will be considered: the producers/suppliers, the communal catering establishments i.e. the direct food service provider in the categories business, care and education, and the consumers. The second questionnaire will assess health-promoting activities or projects by producers/suppliers and communal catering establishments, thus focusing more but not exclusively on concept and process (good practice) criteria (see Figure 5b).

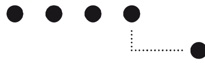
## Quality standard application: Measuring and analyzing the service quality performance

As anticipated in the PDCA (Plan-Do-Check-Act) cycle, after establishment of quality standards in health-promoting communal catering a baseline target-performance comparison (see Figure 7) is needed before introducing measures of quality improvement. For each criterion analyses will provide a measure of sufficiency in relation to the defined target level:

*Achieved criterion quality level (%) = (accomplished scores / possible scores) x 100*

For a quality standard, the achieved quality level is calculated by dividing the sum of accomplished scores by the sum of possible scores of all concerned criteria. Additional commentaries may provide explanations for the achieved criterion quality level and should be considered in change management. When comparing quality achievements across the communal catering sector, the general comparability must be assured. Only establishments with similar general prerequisites can be compared or weighting factors are to be applied.

Depending on the result (quality compliance, surplus or deficit) either continual quality assurance or quality improvement measures will be initiated. Effectively, the PDCA quality cycle initiates a so called "virtuous cycle", that is the totality of cause and effect which improves the entire system and leads to a convergence of the four cornerstones of expected, intended, provided and perceived quality (see Figure 11).



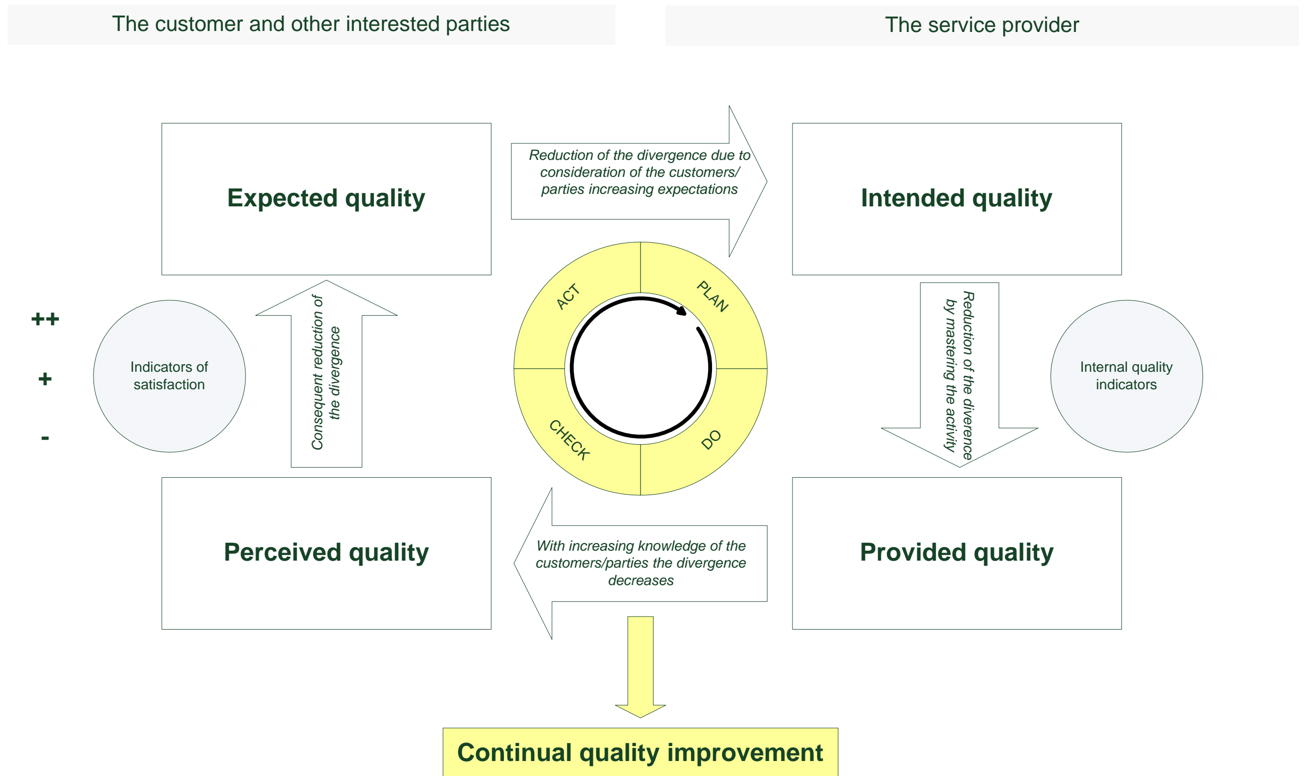
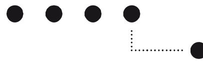



Figure 11 Quality cycle in communal catering: continual quality improvement through quality cornerstone convergence (adapted from (98))

For achieving an optimum that is excellent quality in health-promoting communal catering, a *continual improvement process* is required including repeated measures and analyses (evaluation step). However, successful implementation of such a process in the communal catering sector as a whole requires close cooperation with the practice and, as is depicted in Figure 12, some prospect of internal (service provider, staff) and external (customer) economic success.

Figure 12 Success chain of customer/interested parties and service provider orientation (adapted from (72))

Still, not every measure of quality management will be successful. The quality-success relationship is thought to be S-shaped and at a certain point quality related activities may lose effect on satisfaction just as the financial effect of customer and staff binding will decline (72). Overall, an additional investment in quality management may eventually have a declining economic effect which underpins the need to consider economics as well as competitiveness as criteria across all defined standards.



### 4.3.5 Change management in communal catering: Benchmarking and the concept of “Best Practice”

Benchmarking is a recognized controlling, i.e. analyzing and planning method in business management (99). By definition, it is the *continuous process of identifying the best practice(s) in relation to products* (product benchmarking), *services or processes* (process benchmarking), *within an industrial sector and outside it, with the object of using this as a guide and reference point* (top performance benchmark) *for improving the practice of one’s own organization* (99, 100). Hence the goal is *learning from the best.* Benchmarking can take place within an organization as part of a quality management system (see chapter 4.3.7) (internal benchmarking), in relation to indirect and direct competitors (external benchmarking) or in relation to organizations in entirely different fields (generic benchmarking). In communal catering process benchmarking is the most interesting form of benchmarking and could follow a procedure as shown in Figure 13.

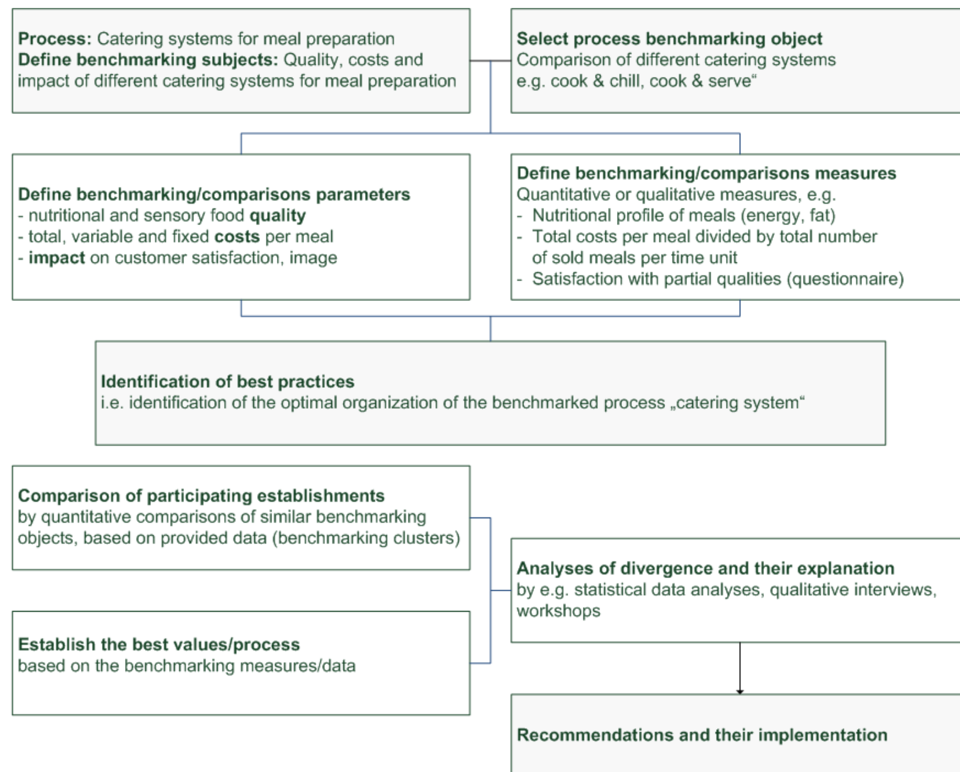
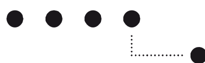



Figure 13 Overview of a possible benchmarking procedure in communal catering (adapted from (99))

Usually such comparisons are carried out considering no direct competitors but rather establishments in different categories, such as hospital catering and business catering. In addition, for a continual benchmarking process, best practice performance indicators need to be defined to make implementation of identified best practices measurable/checkable (99).

As an extrapolation of benchmarking, the *concept of “Best Practice”* means to utilize all available resources for attaining exemplary approaches or processes which will lead to *excellence* (101). Executing the *competitive* benchmarking/best practice concept is a mission usually assigned by an organization’s top management and can be expected to bring benefits to an organization in the areas of customer satisfaction, cost reduction or increased effectiveness and efficiency.



### 4.3.6 Change management in health-promoting communal catering: the concept of "Good Practice"

Best practices in health promotion/public health are defined by the interactive domain model (IDM) as "*those sets of processes and activities that are consistent with health promotion values/goals/ethics, theories/beliefs, evidence, and understanding of the environment and that are most likely to achieve health promotion goals in a given situation*" (102). However, this peak performance approach (see 4.3.5) is often avoided in favor of the more pragmatic concept of "Good Practice" which considers and examines successful approaches for their potential in terms of project or product improvement (101). "Good Practice" is defined as (103):

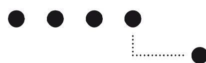
- *Approaches or processes which are successful in their application and which respect or exceed recognized standards*. They do not have to represent the single best practice and as such are easier to identify, manifold and of greater practical advantage.
- *The strategy to identify and apply such approaches or processes for improvement* which corresponds to a simplified benchmarking procedure. It is based on a systematic comparison of existing successful experiences of institutions, establishments etc. Those are compared and stated at defined goals in order to establish approaches or processes and their respective elements that are useful (good) and realistic (practical) for achieving set standards.

The "Good Practice" concept is recognized as an instrument of quality improvement in health promotion. The concept is characterized by the following five principles (Table 7):

Table 7 Principles of the concept of "Good Practice" (adapted from (101))

| | | |
|---|---|---|
| 1 | Practical orientation | ▪ Concrete good examples from the field are more helpful than theoretical concepts in development of products and processes.<br>▪ Provision of science based information to professionals and promoting the exchange of experiences with them help making scientific finding applicable.<br>▪ Learning from others' positive experiences helps avoiding mistakes and thus saving resources and work. |
| 2 | Utilization of transfer potential | ▪ The transferability of innovative and proven approaches to other projects and into other domains is analyzed.<br>▪ Practical instructions for implementation of existing ideas are provided.<br>▪ Professionals are encouraged and motivated for planning and development of new activities/projects. |
| 3 | Quality orientation | ▪ Good health-promoting examples are identified in a pragmatic way by systematically comparing experiences of successful projects.<br>▪ Examples of good practice more clearly depict possible pathways towards quality than following a system of rules and standards.<br>▪ Checklists allow for professional orientation by examples of good practice. |
| 4 | Applied (practical based) research | ▪ A chance to bridge the gap between science and practice: "evidence based practice meets practical based science".<br>▪ Avoidance of overstraining the actors at the grass-roots level.<br>▪ Ambitious examples show what additional steps are needed to reach level of excellence or where this goal cannot be attained due to given conditions. |
| 5 | Transparency of appraisal | ▪ Systematic development of the "Good Practice" approach<br>▪ Definition and communication of criteria and respective checklists<br>▪ Visibility of the selection and appraisal procedure of examples and their use for transfer into other projects. |

Overall the concept aims at identifying models of good practice that are good health-promoting projects/activities. Assessing a project's quality means deriving information in order to make decisions and/or improve the quality of a project (80). For such a decision, a project's quality criteria will be compared to a relative



benchmark of similar projects in its own implementation context. However, the comparison must always be done in the light of the contextual circumstances (e.g. infrastructure, time, budget, internal and/or external support) and in certain situations a less positive rating may be the best that can be achieved. Hence, a gradual quality improvement (see Figure 14) should be launched, identifying first those points for improvement that are important, amenable to change and feasible (80).

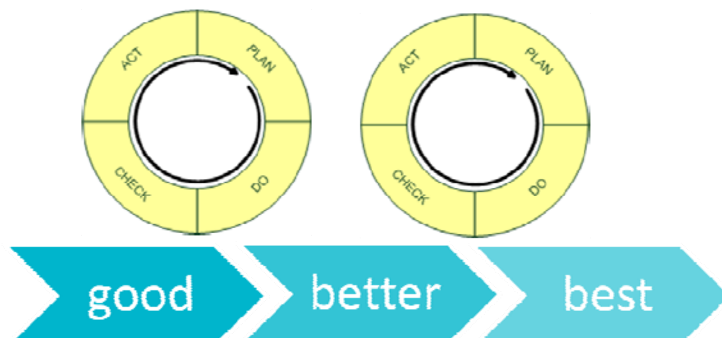



Figure 14 The concept of "Good Practice" an instrument for gradual but continual quality improvement

In general, effective health-promoting projects/activities need to be evidence based, dependant on requirements or needs, and must consider the organizational, social and political context. In view of these basic conditions which should be assessed and assured when optimizing structures (input), concepts and processes, Kliche et al. (90) present the concept of "Good Practice" as a quality management strategy in prevention and health promotion which aims at continual quality improvement. They suggest a three step quality assurance system comprising (1) data assessment, (2) appraisal/expert opinion and (3) feedback. A slightly adapted approach will be applied in the present research project on health-promoting quality standards in communal catering, as shown in the following Figure 15.

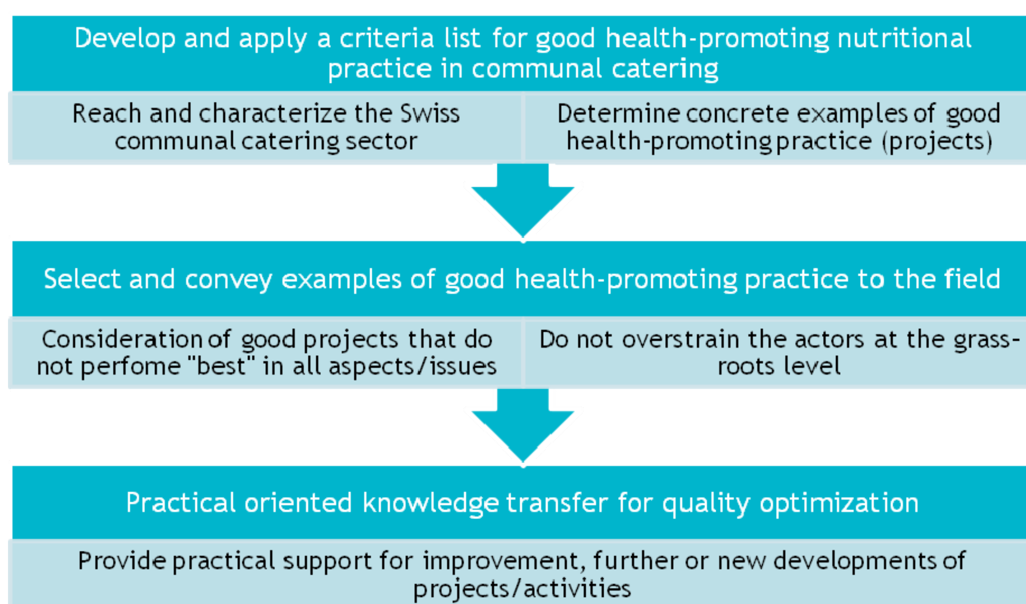
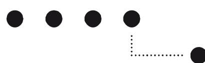



Figure 15 The concept of "Good Practice" in health-promoting communal catering (adapted from (90, 101))

Firstly, an informative set of baseline data must be established which systematically specifies the input/structure, concept and process quality of actors in communal catering, namely producers/suppliers and the direct food service providers (see also chapters 4.3.2 to 4.3.4). These data present the preconditions for effective and efficient health-promoting projects or measures/activities, i.e. the settings, objective/health related problem and



target group and allow a subsequent quality appraisal of projects or activities. For this purpose, two self-administered questionnaires will be developed and applied as suggested (90): 1) to document/characterize the structures and concepts of health-promoting establishments (see Figure 15) and 2) to assess health-promoting activities. They should ideally be complemented by materials documenting the reported work. As described earlier (see chapter 4.3.4), the questionnaires will be based on a developed grid of evidence-based but practical-oriented quality standards for health-promoting communal catering and will be evaluated in cooperation with experts (project advisory board) using criteria checklists. These checklists are built on measurable indicators and respective expected response/target levels. They must assure a systematic judgment of health-promoting activities and the identification of quality deficiencies in need of improvement. Table 8 shows a four-level scale for quality appraisal suggested for health promotion (90). It takes into account elements of the three-level European Foundation of Quality Management EFQM assessment model which is established in industry (see chapter 4.3.7).

Table 8 Quality appraisal levels in health promotion (adapted from (90))

| | Quality appraisal level | Description |
|---|---|---|
| 0 | Problem area | ▪ Lack of important preconditions for quality standard implementation.<br>▪ The project or activity has shortcomings which make the achievement of the stated objectives and the success unlikely or uncontrollable. |
| 1 | Need for improvement | ▪ Basic conditions and structures are given for good health-promoting action; however, they are insufficiently linked or used.<br>▪ The project or activity partly fulfills the quality standard (criteria) and should be further developed. |
| 2 | Conform with standard | ▪ The preconditions -structures, concept, and processes- for a professional and effective health-promoting activity are given and systematically linked in an overall concept.<br>▪ The project or activity fulfills requirements/criteria considered adequate for the given field of activity, circumstances and evidence. It works with good quality and prospect of success. |
| 3 | Good example / model | ▪ The quality of the work is systematically improved by continuously taking into account the project's results. Thus the standard is exceeded.<br>▪ The quality standards are extensively fulfilled.<br>▪ Similar projects may learn from these experiences. |

As described in chapter 4.3.4, the health-promoting service quality performance is measured and analyzed to allow a feedback culture (e.g. using the appraisal forms) which shall launch a continuous quality improvement, which is a partial concept of quality management.

### 4.3.7 Quality Policy, a key to successful quality management in health-promoting communal catering

Quality management

As outlined at the beginning of chapter 4.3 (page 24), quality is increasingly becoming a competitive factor in communal catering and as such requires to be professionally managed. Systematically implemented quality management (QM) will effectively ensure the product and/or service quality and continuously enhance the improvement potential. QM is a central concept of business management since it *interacts with all organizational operations*. That is it *represents the organization, the direction and control of a business relating to quality* (77, 94) and different organizational levels such as top management, marketing, controlling, etc., assume diverse responsibilities (76). Direction and control with regard to quality include establishment of the quality policy and quality objectives, quality planning, quality control, quality assurance and quality improvement as shown in the following Figure 16.

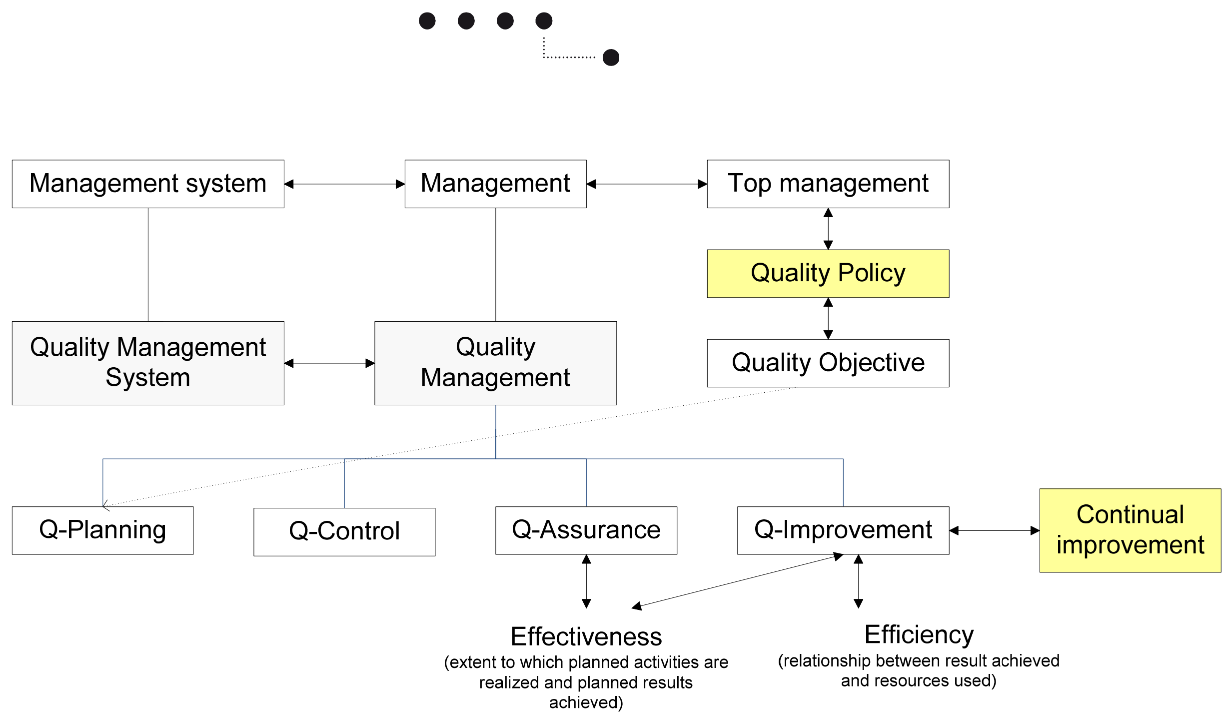



Figure 16 Management related concepts in an organization (adapted from (77))

## Quality policy

As shown in Figure 16, the top management (e.g. supporting organization, owner, or operational management) is in charge of establishing a quality policy or philosophy, in which they formally express *the overall intentions and directions of the organization related to quality* (77). It reflects what importance is attached to quality in the organization or institution as well as in its units, such as the communal catering establishment. A specific mission statement with regard to communal catering should always be integrated in the organizational quality policy (93). For example, a school authority or a business management could state “High quality of food and drinks contributes to students’/employees performance and health. The food offered in the school/business restaurant meets national dietary guidelines”. On the other hand, the quality policy of the communal catering establishment, independent of internal or external (contract caterer) management, and of their suppliers should be aligned with the institutional policy. In this respect, outsourcing and purchasing should be decided by catering professionals for ensuring consent on quality policies (93). With respect to health promotion, organizational measures could significantly contribute to the populations’ health enhancement and maintenance (32). Overall, organizations operate in continuously changing environments. They usually apply methods of change management which are based on typical health promotion principles, that is, integration of involved parties and persons concerned. Organizational development thus constitutes a resource for health promotion and it is suggested that organizations with similar interests work together on development of health-promoting settings, such as a health-promoting communal catering (see chapter 4.3.6). Whatever the organization’s rational is to invest into health promotion (purpose/problem or value oriented), it is of paramount importance to bring about the fundamental strategic decision by the organization pro health promotion, followed by the implementation of the necessary permanent infrastructures as well as the employment of a professional to support and ensure health-promoting quality (32).

## Quality planning

The quality policy’s mission statements provide the framework for establishing and reviewing quality objectives. Both quality policy and objectives determine the results striven for, which constitute obligatory requirements, and help the organization to apply its resources to achieving them. For this purpose quality planning, as part of QM (see Figure 16), *focuses on setting the specific quality objectives and specifying necessary operational processes and related resources for their fulfillment* (77). Regarding communal catering establishments, the main quality objective is to supply the customers with the required and nutritionally adequate food and drink, at the desired time and location (76). From this central objective, more specific ones are derived, focusing on customers, staff, suppliers, economic (e.g. profit-orientation or cost-recovery) and ecological aspects. They should be understood as flexible and allow for further development according to changing requirements from customers, staff and interested parties. Possible mission statements and related quality objectives of communal catering establishments are proposed in Table 9 (76):

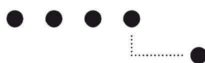


Table 9 Possible mission statements and quality objectives of communal catering establishments (adapted from (76))

| Possible issues of mission statements | Possible quality objectives |
|---|---|
| Customer orientation | ▪ Provide nutritionally adequate food supply, meeting physiological requirements.<br>▪ Provide gastronomic services. |
| Staff orientation | ▪ Promote nutritional competence and safe food handling.<br>▪ Create favored working conditions/environment. |
| Economic efficiency orientation | ▪ Optimize the range of foods.<br>▪ Optimize materials usage.<br>▪ Create a transparent cost structure. |
| Ecological orientation (sustainability) | ▪ Assure use of seasonal and regionally produced foods.<br>▪ Allow for a rational use of resources. |
| Cooperation partners | ▪ Selection of suppliers by specification.<br>▪ Establishment of transparent contracts.<br>▪ Offer services for third parties. |

Quality planning hence encompasses many decisions, ranging from the diversity and specificity of the food supply, the recipes corresponding to the requirements for health-promoting offer, their combination in menus (daily, weekly, monthly, yearly), the design and presentation of the weekly menu, purchasing time intervals, the concept of weekly specials, to the staff involvement at meal delivery, etc. Quality standards make such services measurable (see chapter 4.3.4) (75).

In general, overall organizational business planning should be strategically linked with quality planning, the latter serving as an instrument of fine adjustment, completion, check and/or correction (93).

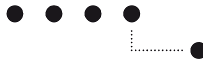
## The complementary QM concepts: quality control, assurance and improvement

The concept of *quality control* is *focused on fulfilling the quality requirements* (77). Techniques are to be determined and measures implemented which will avoid, correct and/or eliminate unsatisfactory products or services. In communal catering potential errors or sources thereof which need to be counteracted primarily concern food specific or process specific hazards that may endanger customers and/or staff. Corrective measures center on supplied foods and the food preparation, material defects and deficient staff qualification or skills (76).

*Quality assurance* is *focused on providing confidence that quality requirements will be fulfilled* and is thus associated with the aspect of *effectiveness* (77). That is, the extent to which stated objectives are achieved and planned activities realized in terms of results or impact/outcome measures. Quality assurance comprises predominantly documentation work. In communal catering it relies largely on a QM handbook which summarizes quality policies, objectives, processes and responsibilities for the fulfillment of stated quality requirements. It also includes information concerning audits, i.e. systematic and documented examinations by independent qualified persons (auditors) (76) (see below). In respect to health promotion quality assurance concerns the comprehensive evaluation of projects or activities (see chapter 4.3.3).

The concept of *quality improvement* focuses on *increasing the ability to fulfill quality requirements* (77). It is predominantly related to internal measures aiming for enhanced *effectiveness, efficacy, or traceability* of activities and processes (76, 77). An additional benefit for all internal and external parties (organization/ communal catering establishment, staff, customer and, interested parties) should be achieved.

Overall the process of establishing quality objectives and finding opportunities for improvement is a dynamic recurrent process, as shown in Figures 11 (page 38) and 14 (page 41). *Continual quality improvement* requires a specific organizational culture or philosophy in which employees from all levels commonly strive for a set quality target by continuously and sustainably increasing their performance (76).



## The concept of Total Quality Management

Total or comprehensive quality management (TQM) is an organizational philosophy which recognizes quality as the most important factor of success. It is a management method based on the active involvement of all collaborators and partners and aims, through customer satisfaction, at permanent economic success and benefit for organizational members as well as society. The cornerstones of the TQM concept for services are (72):

*Total* involvement of all groups of people who contribute to service provision (employees of the establishment, suppliers, all customer groups) in the QM process;

*Quality* consistent orientation of all activities towards the quality requirements of internal and external customer groups / interested parties;

*Management* top management takes responsibility and initiative for a systematic quality persuasion and for improvement in the framework of a participative-cooperative leadership.

The European Foundation of Quality Management (EFQM) model for excellence is a model for implementing the TQM philosophy. It aims at the improvement of an establishment which has implemented an ISO 9001 quality management system (see below), achieving peak performances and such going beyond TQM (71, 75). Recently the care catering of the Berne Insel University Hospital has received this European Quality Award (104), which considers appraisal criteria ranging from management (staff orientation, policy and strategy, partnerships and resources) over processes to the corresponding business results/outcomes (staff satisfaction, customer satisfaction, societal impact). The EFQM model implicitly assumes a direct association of customers' satisfaction and economic success (see also Figure 12 page 38). In contrast to certification, which confirms conformity with international standards (see below), the EFQM model also evaluates how well the QM is implemented (level of target achievement) (72, 75).

## Quality Management System

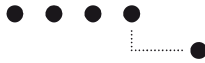
A management system of an organization can comprise different management subsystems, e.g. quality, financial, occupational safety or environmental management. The overall management system is assigned to establish the policy and objectives and to achieve those objectives. The *quality management system* (QMS), however, will *direct and control an organization*, such as a communal catering establishment *with regard to quality* (77).That is, a QMS systematically covers all organizational structures, responsibilities, procedures, processes and necessary infrastructural and human resources to realize the quality management (94). The QMS approach encourages the organization to analyze the requirements of their customers and other interested parties, to define the processes that contribute to the achievement of an acceptable service and to keep these processes controlled. Therefore a *QMS provides the framework for continual improvement and consequently for enhancing the satisfaction of customers and other interested parties*, as shown in Figure 11 (page 38) (77). From a number of different models for implementation of a well structured QMS in an establishment, the international and intersectoral applicable ISO 9001:2000 QMS model is suggested to be used in communal catering (75, 94). The ISO 9001 specifies requirements for a QMS and the ISO 9004 provides guidelines that consider the effectiveness and the efficiency of the QMS. Both are part of the ISO 9000 family of standards that have been developed to assist organizations of all types and sizes to implement and operate effective QMS (for details see (77)).

Important elements in this process-based QMS are:

- an *operational management* which exercises *responsibility* regarding the establishment, promotion and maintenance of the quality policy/philosophy and the respective objectives, the service planning, and availability of necessary resources;
- *resource management*, concerning quality and quantity of human resources, infrastructure and work environments;
- product or *food service realization*, which aims at achieving the best possible satisfaction of customers and interested parties within consideration of health promotional and economic efficiency;
- measurement, analysis and improvement, starting with a target-performance comparison as described in chapter 4.3.4.

There are certain similarities between the approaches of ISO QMS and of organizational excellence concepts, such as benchmarking (see chapter 4.3.5, best practice). Both approaches (77)

- enable the establishment to identify its strengths and weaknesses;
- contain provisions for evaluation against generic models;



- provide a basis for continual improvement;
- contain provision for external recognition.

However, the scope of application differs. The QMS model provides guidance for performance improvement by determination of requirement fulfillment, but (competitive) excellence concepts are based on assessment criteria that provide a basis for the establishment to compare its performance with the performance of other establishments or organizations.

### QMS evaluation - identifying opportunities for improvement

To evaluate QMS means evaluating processes. Key questions are if a process is identified and aptly defined, if responsibilities are assigned, the procedures implemented and maintained, and if the process is effective in achieving the required outputs. Different evaluation approaches are possible (77):

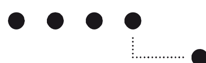
- *Audits* determine the extent to which the QMS requirements are fulfilled. QMS effectiveness and opportunities for improvement are the main focus. Three forms are distinguished, internal or first-party audits, external or second-party (parties having an interest in the organization, such as customers) and third-party (independent accredited auditing organization, who may provide *certification of conformity* to e.g. ISO 9001) audits.
- *QMS Review* by the top management for suitability, adequacy, effectiveness and efficiency with respect to quality policy and objectives. In view of changing needs and expectations of customers/interested parties an adaptation of quality policy and objectives may be considered and the need for action determined.
- *Self-assessment* concerns a systematic and comprehensive review of the organization's activities. The results are referenced against the QMS or a model of excellence. An overall view of the organization's performance and the QMS maturity is provided. Areas requiring improvement may be identified and thus priorities determined.

Certification of the QMS examines the conformity of an organization with standards, such as the ISO 9001 and thus confirms the organization's competence or qualification for quality. Certification checks the QMS integrity. It is often debated in communal catering whether certification is desirable. There are advantages (75) concerning the service provision (internal) and the relation to customers / interested parties (external).

Table 10 Potential advantages of a certification in communal catering (adapted from (75))

| Customers and interested parties | Service provider |
|---|---|
| ▪ Transparency for customers | ▪ Improvement/optimization of operational procedures |
| ▪ Proof for fulfillment of quality requirements | ▪ Documentation of all processes |
| ▪ Improvement of image / recognition | ▪ Increase in productivity |
| ▪ Gaining new customers | ▪ Staff motivation |
| ▪ Facilitation of terms and conditions of business | ▪ Reduction/avoidance of weak points |
| ▪ Improvement of the competitive situation | ▪ Fast and efficient orientation of new staff |

Other than certification, a hallmark or seal of quality can distinguish subunits of a communal catering establishment. Examples are the DGE-Logo "Geprüfte Speisequalität" which is accorded by the German Society for Nutrition to communal catering establishments in Germany (DGE e.V Serviceleistungen des Referats GV), and the ÖGE-Gütesiegel "Nährstoffoptimierte Speisenqualität" which was developed in cooperation with the DGE e.V. to be accorded by the Austrian Society for Nutrition to communal catering establishments in Austria. Both hallmarks are accorded as far as the offered menus correspond in their nutritional composition to the D-A-CH reference values and are prepared in a nutrient preserving manner, and an on-site audit has successfully be conducted (105, 106). In Switzerland (so far Western Switzerland and Ticino) the "Fourchette verte"-Logo is accorded by the Fédération Fourchette verte Suisse to commercial and communal catering establishments when nutritional and environmental criteria are met (107).



## 4.4 Status quo: health-promoting communal catering today

Organizational nutrition environments, such as communal catering, play an important role in tackling the diet-related health challenges outlined in the Second WHO European Action for Food and Nutrition Policy 2007-2012 (4) (see chapters 2.1 and 2.2). Communal catering is a setting for health/healthy eating and represented in the educational, business and care sector. Thus, health promotional community actions in communal catering reach large population groups across all age groups. Nevertheless, in Switzerland, communal catering has received little attention in the national food and nutrition policy so far (3). However, with the recent implementation of the "National Program on Nutrition and Physical Activity 2008-2012", specific projects are to be developed for helping the population to follow a balanced diet and being physically active (108). In this context the present research project aims at developing practical quality standards in health-promoting communal catering and implementing a "Good Practice" approach in Switzerland (see chapter 4.3). As a basis, the following non-exhaustive overview of the present situation in communal catering will provide a general insight into ongoing health-promoting activities in Switzerland and in other countries as well as, into what may or may not work well.

A detailed description and/or evaluation of single activities, projects or measures carried out in Switzerland were deliberately avoided, for not anticipating the standardized assessment in the framework of the present research project.

### 4.4.1 The situation in Switzerland

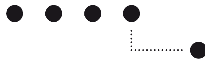
General overview

In November 2008, 28 health-promoting activities were identified in the Swiss communal catering sector (see Table 11). The sector was defined based on the project-specific definition of communal catering (see chapter 4.1) plus the suppliers thereof. The identification was difficult since there is no *sector-specific* national coordination of activities. However, the following national level organizations helped with indentifying nutrition-related projects in the school/youth setting: The Swiss Society for Nutrition (SSN), offers a direct link (www.sge-ssn.ch/fuer-schulen.html) to an overview on projects in Swiss German schools by "Nutrinet.ch – Netzwerk Ernährung und Gesundheit" (www.nutrinet.ch); the prevention program and competence center "Suisse Balance, Ernährung und Bewegung kinderleicht" (www.suissebalance.ch), provides an overview on their website of accomplished and ongoing nutrition and physical activity projects. The research of publications in sector specific business magazines or professional magazines and in the internet identified various other targeted activities ongoing in Swiss communal catering (see Table 11).

Table 11 Preliminary, non-exhaustive overview of the number of health-promoting activities in Swiss communal catering (CC)*

| | Swiss communal catering sector | | | | | | |
|---|---|---|---|---|---|---|---|
| | Communal catering categories# | | | | Suppliers (concerns all CC categories) | | |
| Scope of initiative | Business | Care | Education | All | Vending | Food industry & Primary producers | TOTAL number |
| National | 1 | -- | 2 | 2 | 2 | 4 | *11* |
| Regional | -- | 1 | 8 | -- | -- | 1 | *10* |
| Local | 2 | 1 | 1 | -- | -- | -- | 4 |
| Establishment | -- | 2 | 1 | -- | -- | -- | 3 |
| TOTAL number | 3 | 4 | *12* | 2 | 2 | 5 | 28 |

* Status Nov. 2008. This overview is based on publications in sector specific business magazines/professional magazines and various websites and makes no claim to be complete; #for the definition see chapter 4.1



To date, no comprehensive national health-promoting quality standards for communal catering exist. Nevertheless, many organizations and institutions already engage in healthy food and service provision for their customers. Of course, all players in the communal catering sector (producers, suppliers, catering establishments) must abide by provisions and regulations in federal law, which constitute binding input/structure criteria for quality standards. They concern in principle the following fields (109):

- consumer protection and food safety;
- occupational health and safety;
- processes and operations;
- spatial operating requirements.

Compliance with the corresponding regulations is usually under cantonal control.

The researched information about health-promoting activities was often rudimentary. Therefore, the presented overview provides an incomplete snapshot. A systematic assessment and evaluation across the sector, as planned with the present research project in the framework of the “National Program on Nutrition and Physical Activity 2008-2012” (108), is therefore all the more important.

Around 75% of the identified activities were initiatives at the national and regional level. They normally concern several communal catering establishments and thus reach a large number of end-consumers.

## Activities at national level

For activities at the national level -about 40% of all activities- the following trends were observed.

The operation management of many communal catering establishments across Switzerland is outsourced to specialist catering companies (see Table 12). This is especially true in the education and business categories. In the care category, however, internal management is still predominant (96%) (110). Nonetheless, at the EU level the outsourcing rate is currently estimated 30-35% and, it is expected that the “Health and Welfare” sector will, by 2012, be one of the main sources of growth for contract catering companies (111). In this respect, the four major contract caterers in Switzerland (Compass Group Schweiz AG, Groupe DSR, SV Schweiz, ZFV-Unternehmungen) represent a position of influence in the communal catering sector. They are organized in the Swiss Catering Association (SCA) and achieve an annual turnover of 900 Mio Swiss Francs in Switzerland with a total of 9‘100 employees (112). Other smaller contract catering companies gain influence at regional levels, such as “Novae Restauration S.A.”, which counts 420 employees working in 40 school and business restaurants in Western Switzerland. Table 12 summarizes the individually promoted nutrition concepts of the mentioned companies, which mostly refer to the Swiss Society for Nutrition (SSN) food guide pyramid as a tool for planning a balanced diet. However, the underlying implementation of the SSN food guide in communal catering practice is not always obvious. That is, catering companies are rather more outcome oriented in their communication strategy. However, intra-sector organizations (e.g. SVG or the employers’ association GastroSuisse and their cantonal sections, etc.) offer comprehensive training programs that are implementation/process-oriented.

With respect to health-promoting activities at the national level, the food industry is attentive to provide allergen-free products to their bulk buyers. Furthermore, companies producing ready meals for delivery to institutions (e.g. school or business lunch programs) focus especially on the nutrient composition and nutrient preservation during preparation, transport and reheating of the meals.

Primary producers or product specific inter-trade organizations, for example of fruits and vegetables, milk or bread, foremost engage in promoting healthy snacks during recess.
Regarding vending, however, it proved difficult to get a general idea of the products offered in vending machines; classical snack products seemed to prevail.

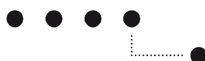
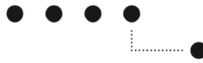


Table 12 Overview of nutrition concepts in Swiss contract catering by communal catering categories*

| Contract catering company<br>Internet address | Nutrition Concepts | | | Special issues |
|---|---|---|---|---|
| | Business | Care | Education | |
| Compass Group Schweiz<br>www.compass-group.ch | ▪ Eurest: Staff restaurants (lunch), snacks, conference catering | ▪ Medirest: for homes and hospitals | ▪ Scolarest: school catering concept ESSEN-LERNEN-LEBEN (eating – learning- living); offers nutrition training courses | ▪ Partnership/sponsor-ship Kimi Krippen AG (day care)<br>▪ Special menu „For Me“, optimized in nutrient and energy content (max. 600 kcal) |
| Groupe DSR<br>www.dsr.ch | ▪ Business and Industry: market leader for staff catering in French speaking part of Switzerland<br>▪ “Flexi-Self”: ready to use modular lunch concept for SMEs | ▪ Senior citizen homes and specialized institutions | ▪ Educational institutions: healthy balanced diet; annual culinary activities organized in the school restaurants by the DSR kitchen teams | ▪ „Fourchette verte” hallmark was accorded to some DSR restaurants<br>▪ Nutritional advice and tips; reference to the Food Guide Pyramid (SSN) |
| Novae Restauration S.A.<br>www.novae-restauration.ch<br><br>Vivae Restauration<br>www.vivae-restauration.ch | ▪ En entreprise (in companies) | No activity for Novae Rest.<br>▪ Link to Vivae restauration : working with a dietitian | Dans l’enseignement (in the education sector): “Fourchette verte des tout petits” hallmark was accorded (Geneva) | |
| SV Schweiz<br>www.sv-group.ch | ▪ fit4life: balanced energy reduced (500 kcal) dishes plus nutritional information and services.<br>▪ Business lunch menus “Tasty SV Fine Cuisine” for SMEs without catering facility | ▪ “Tasty SV Fine Cuisine” meals on wheels for home bound people in need for care | ▪ fit@school: Lu'C brochure with tips for healthy nutrition (SSN Food Guide Pyramid)<br>▪ School lunch menus “Tasty SV Fine Cuisine” | ▪ Member of Quality Catering Partners International QCPI www.qcpi.info |
| ZFV-Unternehmungen<br>www.zfv.ch | ▪ Staff restaurants | No activity identified | ▪ School and university restaurants | ▪ “Bewusst geniessen” (conscious indulgence): assessment grid for nutritional analyses of dishes<br>▪ Nutrition information (SSN Food Guide Pyramid) |

* This overview (status March 2009) is based on the information posted on the indicated websites and makes no claim to be complete



## Activities at regional and local level

Activities at the regional level (35%) and at the local level (14%) are in general coordinated. For example, in the region of Lake Constance, a cross-border project -Switzerland, Germany, and Austria- promotes the use of seasonal and regional agricultural products in communal and commercial catering, focusing on the aspect of ecological sustainability (113).

The most prominent example of a regionally coordinated project in Switzerland is “Fourchette verte suisse” (FVS) (107), which focuses on health promotion in commercial and communal catering. The responsible association (Fédération FVS) unifies seven cantonal sections in Western Switzerland and Ticino. It is planned to expand the project to selected Swiss German cantons (Portolès E., personal information January 2009). Aiming at healthy nutrition in a healthy environment, FVS has defined quality criteria for healthy dishes and accords a hallmark, the green fork, for restaurants meeting the age/population group-dependent standards. The primarily food-based nutrition criteria for a balanced dish do not formally refer to the SSN food guide pyramid.

Other identified activities (Table 11) at the regional or local level are projects organized and carried out by communal or cantonal public authorities for health (promotion), education and/or social welfare. The projects are mainly found in the school setting and are often supported by Suisse Balance. Thus they comply with recognized health promotional quality standards; the defined nutrition criteria or recommendations mostly rely on the SSN food guide pyramid. In general projects sponsored by Suisse Balance should serve as good examples for other organizations or institutions. By providing support (e.g. an information platform), they allow for a multiplication effect in the sense of a “Good Practice” approach.

With respect to the present research project, the development of unique nutritional quality standards for communal catering, based on the SSN food guide pyramid would seem to be indicated, to thus direct the manifold approaches towards a common evidence-based and practice-oriented basis. Such nutritional quality standards should build the core of healthy catering. However, they must be placed in the broader context of health promotion.

## Specific issues by communal catering categories

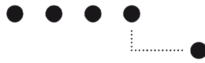
As shown in Table 11, at least 40% of the identified activities were carried out in the educational sector, followed by activities in the business and care sectors. Category-specific observations (for definition of the communal catering categories, see Table 5, page 21) were the following.

### *Education catering*

As mentioned above, many projects in the educational sector (day care centers, schools, etc.) are organized by public authorities and are supported by Suisse Balance. The general objective of the nutrition projects is to assure a qualitatively improved dietary food supply and consumption in the educational establishments. Hereunto, they mostly aim at a food offer conforming to the SSN food guide. The identified projects thus do not pay particular attention to other critical catering aspects, such as the design and atmosphere of the premises or questions of interface management. As to health promotion practice, the school setting allows the principles of heath equity, participation, and empowerment to be put into practice. Many of the projects focus on the subject of “healthy snacking in the school environment”. By defining a clear and restricted focus for the action, students actively participate in providing healthy foods at school, and older students learn to take over more responsibility in a group. Furthermore, various aspects of a healthy snack supply, such as nutritional and economic aspects, can become teaching content. The cost- and work-benefit ratios of such interactive projects are rated well. For schools without canteen (no lunch provided), school catering during recess is the most practical way to sensitize students about matters of healthy nutrition. In this respect the vending business must be specifically considered when defining quality standards for a health-promoting communal catering.

### *Education and Business catering*

Due to changing societal structures, the demand for meals consumed outside the home is constantly growing (see chapter 4.2). Today, lunch time catering concerns the educational and the business sector. Contract catering companies react on the specific requirements with target-group specific concepts (see Table 12). Weight control has become an issue in education and business catering concepts. In this regard, the importance of educational elements in health-promoting catering, which should consider dietary and physical activity aspects, is recognized. The developed concepts of prepared delivered meals for business and educational institutions (see Table 12: SME and school lunch services/“Mittagstisch”; cook & hold catering system) offer an opportunity to increase the caterers’ market share. However, basic (infra-) structural problems (no food service/canteens),



particularly in the educational sector, thus are not solved. Furthermore, outsourcing the food service completely renders the contribution of students to catering apart from consumption more difficult.

Recently a new quality trend is observed in business catering: “the staff restaurant run by a top chef” (114). Institutions, with internally managed or outsourced communal catering establishments, declare health promotion a matter of quality policy and are willing to invest (high subsidization) since they consider the payback guaranteed. Besides gastronomic and nutritional quality aspects, they also focus on factors of relationship management, such as design and social interaction/communication.

*Care*

Care catering (excluding staff restaurants in care institutions, which are considered business catering) provides all-day catering service to partly or fully captive customers. The customers’ freedom of choice thus is restricted. The offered/promoted catering quality may be a factor, which customers and/or their relatives consider when choosing a certain care institution. As mentioned above, in Switzerland the majority of care catering establishments are internally managed so far (110). However, for economic reasons (cost containment) care institutions may build local or regional consortiums.

Identified health-promoting activities in the care category (Table 11) concern seniors’ and nursing homes, hospitals and penal institutions. One group of activities is focusing on continual education and consulting services for professionals in the care sector. Target groups are different levels and kind of professions across institutions. Courses address issues of relationship management (e.g. communication with and support strategies for the elderly and/or demented customer; food service styles and their implications), interface management (e.g. kitchen/facility management/care), health promotion practice (allow lifelong participation) and, general nutritional management. The second group of activities considers in particular quality of the food on offer, food consumption and related issues of interface or relationship management. Larger hospitals have reported about their related research activities (115, 116) (see also chapter 4.5). In general, communal catering in health care institutions, in particular hospitals and seniors’/nursing homes are largely concerned about coverage of (special) dietary needs as well as securing high hygienic standards. Although there are no specific nutrition guidelines for hospital/health care catering so far, most institutions define institutional catering concepts. Nevertheless, malnutrition is recognized as an important problem in health care institutions and institutional catering is one of the players in an interdisciplinary nutrition commission to take recommended actions, including improvement of multilevel food service quality (117). Overall, for compliance with legal requirements (Bundesgesetz über die Krankenversicherung KVG, Verordnung über die Krankenversicherung KVV) health care institutions (hospitals, homes) need a continual quality management system in place. The Foundation “sanaCert Suisse” (www.sanacert.ch) offers certification of QMS in health care, i.e. conformity with their defined standards, which include a nutrition standard for patients and their specific dietary needs (118).

Health-promoting activities reported from penal institutions concerned the reformulation of the food supply by dietitians to meet nutrition standards. However, it was difficult to judge how well the customers could be or were integrated in the process.

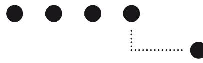
Overall, the health care sector is per se sensitized for health promoting issues. Mostly representing public-law institutions, it is assumed that the (compulsory or not) implementation of quality standards in care catering is easier than in the other catering categories.

### 4.4.2 Developments and experiences in other countries

Considering international health-promoting strategies and interventions in communal catering for application in Switzerland requires thinking about limiting differences in, for example, the political, demographic, social, cultural and economic realities; nationally predominant health problems; lifestyle and food culture (dietary origins). Nevertheless, the present research project can learn from and build on the existing large body of information about development and implementation of quality standards for a health-promoting communal catering in other countries.

#### Finland and Sweden: workplace and school food service traditions

The Scandinavian countries of Norway, Finland and Sweden has up to three decades of experience with nutrition policies and dietary intervention strategies for improvement of diet-related population health and for reduction of social differences (23). Their nutrition policies emphasize co-operation between different sectors, including the



catering sector, although this collaborative approach may generate conflicts between economic, general health and consumer interests. Food service in schools and at the workplace is standard practice in Finland and Sweden, but less so in Norway.

*Finland*

In Finland the majority of out-of-home meals are served in public non-commercial establishments (23) and the tradition to take mid-day lunch at the workplace cafeteria has not changed over the last 20 years. Also the differences in the frequency of cafeteria use by gender (women > men), by place of residence (urban > rural), and by educational level (higher > lower) are still unchanged (119). Moreover, meals served in non-commercial establishments *must* always include fresh vegetables; a regulation which is said to have taught the Finns to eat vegetables (23).

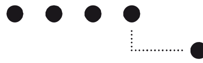
Between 1986 and 1993 catering guidelines have been issued for the following different catering types, thus covering almost three-quarters of the population: workplace, child-care and preschools, school, university, military, the elderly, hospital, and penal institutions (23). These guidelines are based on the general dietary recommendations of the National Nutrition Council and on the Nordic Nutrition Recommendations. They have advisory status but are closely followed, in particular in the public sector. Overall, the guidelines are primarily nutrient-based but give advice on how to translate the nutrient recommendations into food choices, preparation and menus (23). A major focus of the guidelines is on offering support to those who plan and organize catering, but they also serve as training material for catering personnel.

Regarding school catering in Finland, free lunch is served to all students in compulsory education (elementary, high and vocational schools; ages 7-18 years); university students are offered subsidized meals (23, 120). While *provision of school lunch* is *compulsory*, the *composition* of the school lunch is subject to *recommendation only*. In March 2008 the National Nutrition Council published updated guidelines for school food based on the 2005 recommendations for the Finnish population. Catering instructions concern the nutritional value of the meal and other catering-related issues such as special diets, the time and place of serving lunch, the school's educational task, and guiding and supervising the school lunch. The municipal food service directors are made responsible for the practical implementation, with specific funds allocated for this purpose. The school meal is supposed to cover one third of the student's daily nutritional needs. The guidelines define the macronutrient proportions by percentage of energy provision (i.e., 55-60% of energy from carbohydrates, 30% from fat; 10-15% from protein) and make recommendations for the main food components of a meal (120, 121).

*Sweden*

In Sweden a quarter of the consumption outside the home is provided by institutional food services, which have been recognized as having an important impact on public health, provided that well trained staff and an ample supply of nutritionally appropriate recipes are available (23). Since 1998 local authorities are obligated by l*aw to provide a free school meal everyday* to students in compulsory education (120). In 2004, new nutrient- and food-based *non-compulsory guidelines* for school lunches were published by the Centre for Applied Nutrition and the Swedish National Food Administration. They are based on the 1997 Swedish Nutrition Recommendations (SNR) for children and adolescents of school age. The guidelines aim to support schools in composing nutritionally balanced meals and in planning, purchasing and preparing the meals. Hence they provide practical advice on how to put together and prepare meals so that the recommendations for energy and nutrient content in school lunches are met. The guidelines are suggested to be used as a complement to or instead of nutrient composition calculations (122).

Moreover, in 1993 the keyhole symbol - a white keyhole in a green or black circle- was introduced in the catering sector, labeling dishes with less than 30% of energy from fat, higher fiber and lower sugar content than non-labeled alternatives. This national symbol labeling system was established in 1989 by the Swedish National Food Administration (NFA) for labeling of selected foods (23). The keyhole symbol aims to help consumers identify the healthier option when buying food or eating out. It will be introduced in Denmark and Norway in 2009. The keyhole, a registered trademark of the NFA, is a *voluntary label*. However, if food producers, including restaurants, decide to use the keyhole symbol, they need to comply with the criteria specified by the NFA, and they are themselves responsible for ensuring that food/meals with the symbol conform to these regulations (see (123)). Recognizing the burden on caterers for the required nutrient composition calculations, the NFA developed a collection of recipes for communal catering in 1995. The awareness of the symbol's meaning was shown to be very high among Swedes. However, the use and impact of labeled foods was not necessarily reported. Hence more emphasis should be placed on implementation (23). Currently the NFA introduces the Keyhole Restaurant Certification 2009 (124). Certification requires that the restaurants: attend specific training sessions for chefs and



staff; provide information to consumers; include at least one daily keyhole dish on the menu; fulfill defined nutritional criteria at the food and macronutrient level for the keyhole dish and all extras; perform yearly follow-up and evaluation. The meals must be calculated according to a macronutrient profile and should follow the so-called "plate model" to ensure that the meal offers the correct proportions of the three nutrient or food groups: carbohydrates, fruit and vegetables, protein – plus bread and low-fat margarine (122).

The implementation of communal catering guidelines or labeling standards as described above will be accountable for new developments in catering establishments. Roos et al. (23) therefore underline the importance of having specialized nutritionists make the training of different types of personnel and community involvement possible.

## United Kingdom (UK): leading role in standard development for nutrition in institutions

The UK has had long-standing experiences regarding nutrition in institutions. A comprehensive overview of the development of standards and guidelines with respect to catering in hospitals, care homes for the elderly, prisons, the armed forces and schools is provided by Cross and MacDonald (125). Issues of interest with respect to quality standard development and implementation in the mentioned areas are summarized below.

### *Hospital*

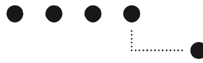
The hospital food service is a two-part environment. Ordinary diets for general patients are produced in the main kitchen while special diets are prepared in the diet kitchen. To offer free choice of nutritionally balanced meals to all patients requires a team of catering and dietary specialists as well as a well-functioning meal service system. Cooperation between different staff groups and patients has to be managed at many interfaces.

In response to this situation, nutrition guidelines for hospital catering and an audit checklist were introduced in 1995/1996. The guidelines emphasized nutritional aspects while recognizing the great importance of the caterer's role in addressing issues such as food quality, taste and good preparation to ensure that the food was actually eaten. Nonetheless, the guidelines did not solve the problem of who took responsibility for the actual feeding of the patients. Recognizing the particular importance of meal service quality in hospitals, in 1999 a definition of roles and responsibilities regarding nutritional care at the ward level was requested, with food provision being managed as an integral component of clinical care rather than as a "hotel function". In contrast a trend change towards a "hotel service culture in hospitals" is being discussed in Switzerland (126). Since 2002 wards in the UK are required to have identified matrons, who also have nutrition-related responsibilities. An evaluation showed however that their involvement in catering issues and in improvement of nutritional standards was rather limited.

Hospital food standards were set within the framework of the UK "Better Hospital Food Program" introduced in 2001. Including the National Health Service (NHS) menu and NHS recipe book (incorporating "flexi menu", protected mealtimes, 24-hour catering), effective changes to hospital food service were expected. Different kinds of assessments are carried out regularly. Finally, in 2003, the UK Government (Health and Social Care) defined core standards in seven domains, of which the domain of "patient focus" contains standards directly related to food provision. The specific issues are: food choice, food safety, balanced diet, meeting individual nutritional needs, and 24-hour food access. They are outlined in the Department of Health's Standards for Better Health. Although the food service has improved overall, specific nutritional problems are still prevalent, malnutrition in particular, a European-wide problem. In this regard, a 1999 Council of Europe survey on nutrition programs in hospitals reviewed current practice of hospital food provision in order to highlight deficiencies and issue guidelines to improve the nutritional care and support of hospitalized patients. Five major problems were identified across participating countries (Switzerland included) (127):

- Lack of clearly defined responsibilities in planning and managing nutritional care;
- Lack of sufficient education level with regard to nutrition among all staff groups;
- Lack of influence and knowledge of the patients;
- Lack of cooperation between different staff groups;
- Lack of involvement from the hospital manager.

In November 2003 The Council of Europe released a resolution on food and nutritional care in hospitals. Some of the recommendations concern the food service practice (organization, contracting, meal service and eating environment, food temperature and hygiene), the hospital food but also food service related economic issues (128). This document could be considered as an auxiliary to the Swiss quality standards for communal catering currently under development.



*Care homes for the elderly*

Food service in care homes for the elderly means catering for a diverse target group: they are more or less active people, some have increasing dietary needs due to emerging health problems or pose special feeding challenges (e.g. demented persons), and their overall taste perception is decreasing. Moreover, the meal on offer could be a target for complaint in an attempt to draw attention to a more general dissatisfaction with life or certain aspects of it.

In the 1980s the code of practice “Home Life” came into force which also considered “diet and food preparation”, i.e. the style of catering and the variety and presentation of food. Taking into account the residents’ dietary needs and wishes was understood as part of the institutional philosophy. Also some local authorities provided nutritional standards. However, the registration and inspection of homes and thus regulation of care and food standards proved difficult. The 1992 study “Nutrition of the elderly people” by the Committee on Medical Aspects of Food Policy (COMA) provided interesting results with respect to quality standard development: the report suggested that elderly people 65 years of age and older should adopt, where possible, eating and active, energy expending lifestyle patterns similar to those advised for maintaining health in younger adults. An energy intake closer to that of younger adults would easily ensure adequate nutrient intakes. Nonetheless, special nutritional needs arise as soon as illnesses and disabilities occur, requiring the cooperation ofdietetic specialists. Yet, the home catering sector still requested specific guidelines on appropriate nutritional standards for older people. In 1995 the Caroline Walker Trust (CWT) published “Eating well for older people”, guidelines for food in residential and nursing homes and for community meals. An additional guideline “Eating well for older people with dementia” was published in 1998. However, an evaluation revealed certain implementation weaknesses such as lack of meal variety, inappropriate nutrient composition of the meal and an inadequate amount of consumption. A specific computer program for menu planning (CORA – menu planner) was later launched by CWT to assist food service managers in providing nutritionally appropriate foods.

Following further developments, “National Minimal Standards (NMS) and Care Home Regulations for Care Homes for Older People” were published in 2002. The Care Home Regulations are *mandatory*, but the NMS are *not legally binding*; however they are linked to the regulations operation. The NMS include a standard on meal and mealtimes containing nine requirements. The overall outcome criterion is defined as “service users receive a wholesome appealing balanced diet in pleasurable surroundings at times convenient to them”. Inspections showed that about one-sixth of care homes, especially homes with nursing, did not meet the meal and mealtime standards in 2006. Inspections currently run on three levels: (1) key inspections, a major complete assessment; (2) random, unannounced inspections on specific issues, and (3) thematic inspections, e.g. focusing on nutrition.

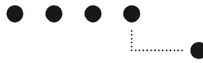
Further guidance documents were developed in the UK in 2007, for example the “Guidance on food served to older people in residential care” by the Food Standards Agency. These primarily *food-based* guidelines aim at care homes for healthy people 75 years and older who do not have specific nutritional requirements.

*Penal institutions*

Food matters a great deal to people in custody since meals break up the monotonous routine and provide an opportunity for pleasure. Over the centuries, diets in prisons have taken on different meanings. In the 18th century diets may have been restricted as a form of discipline and punishment, but today provision of sufficient food is standard and can be important for keeping the peace. The International Centre for Prison Studies (ICPS at King’s College London, see (129)) has published *internationally agreed standards* on the use of imprisonment and conditions of detention. They are based on the international human rights standards by the United Nations. The basic international standards on the provision of food include the following issues:

- Provision of sufficient food and drink (no hunger, no illness related to under-nourishment);
- Regular frequency of meal provision per 24 hour period;
- Meal consumption in appropriate circumstances (dining room, utensils, cleanliness);
- Access to clean water.

Depending on the institutions, the food service target groups are juveniles, young offenders or adults of diverse cultural backgrounds, sometimes placed in different security categories. Special dietary requirements are hence possible and have to be fulfilled. In the UK the quality of the food offered in prisons has steadily increased, especially with the introduction of a greater variety of foods and vegetables from in-house agriculture. By 2005 all UK prisons have adopted a *pre-select, multi-choice, cyclic menu for lunch and dinner*, based on the requirements set in the “Prison Service Catering Manual”. This was introduced in 1999 following complaints and riots about the food service. The manual *advises* the food service provider about good catering practices, food safety and menu management. It defines a minimum of two-week and a maximum of five-week menu cycles. All menus should



include a healthy option which must be so-marked, and a specific staff member should be responsible for healthy eating. Meals are selected three to five days in advance. An *award system* was introduced in recognition of high standards attained. Penal institutions in general provide the possibility of *participation and empowerment*. Prisoners can work in the kitchen, as an apprentice or taking vocational qualifications in, for example, catering, food hygiene or food preparation.

*Military*

The armed forces food service caters mainly to male, presumably fit and healthy adults who are frequently engaged in strenuous physical activity. The food service must be prepared to deal with different logistical aspects of soldiers who are on the move or are engaged in operations involving consumption in different environments (no canteens; changing climates etc.). Three main areas of food provision are distinguished: (1) non-operational (canteens/barracks for recruits); (2) operational (ration packs; nutritious, calorific food, light in weight and occupying minimal space); and (3) civilian (business restaurant/mess-canteen). In the UK armed forces the food is free to personnel on exercises and operations. The personnel based at the units pay however for their food as they dine. All personnel are entitled to a core menu and to having access to nutritionally balanced and healthy food.

The UK Ministry of Defense made a nutrition policy statement and the Defense Food Service Integrated Project Team (DFS IPT) released a policy on healthy catering. The DFS IPT is responsible for the quality and types of meals prepared for the UK's armed forces worldwide. Moreover, it is involved in researching and developing the operational ration pack. The "Defense Catering Manual", a set of regulations, instructions and advice, governs every aspect of food provision in the UK armed forces. It is based on the government's "Balance of Good Health – Eat well plate". It provides general information on the role of nutrition in maintaining and promoting health. The manual offers suggestions to catering managers promoting healthy diets by providing information about the benefits and presenting an especially attractive display. In addition to the core choices, a vegetarian option must always be available. Special requirements of ethnical/religious groups and common medical requirements (diabetics, gluten-free, etc.) should be considered. For operational ration packs specific standards are defined, with long transport taken into account. Quality monitoring is performed by internal inspections.

For educational purposes a "Commanders guide to nutrition" was introduced for senior members in 2005. Further, a "UK armed forces personal guide to nutrition" was published in 2006 to ensure that new entry trainees have a basic understanding of the principles of nutrition and healthy eating. Additionally an "Armed Forces Nutritional Advisory Service" was launched to provide information and advice on diet and nutrition and military feeding to the military personnel and civil servants.

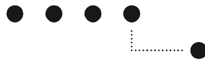
*Schools*

School catering has a long history in the UK, going back to around 1900. Over the last century, the policy and provision concepts of the school meal service have often changed (130). First school meal provision was targeted towards *educational purposes*, enabling the (most) needy to benefit from their education (Education (Provision of Meals) Act 1906). Later school meal provision turned to fulfill *health and welfare purposes*, offering a general lunchtime meal service which should benefit all children. However, as of 1941 free school meals were available to financially deprived children only, but evidence for malnutrition was no longer needed.

The first national *compulsory* nutritional standards were set in 1941 (Education Act 1944, duty to provide school meals in primary and secondary schools). These standards were updated in 1955 and 1975 in response to the recognized diet quality-health relationship (COMA report 1974).
However, in 1980, the *statutory duty was removed* (Education Act 1980). Thus from 1980 to 1998 school meal service was a discretionary local service. The Local Education Authorities (LEAs) became a profit-oriented market force since they were *removed from keeping to nutritional standards* and from selling meals at a fixed price. Only in 1997 was a *system of "Best Value"* introduced by the government to replace the compulsory competitive tendering which had been enforced in 1988 and extolled price over value and quantity over quality. The target was that school meals again meet national nutrition standards.

In 1999 the National Healthy School Standard (NHSS) was established in an endeavor to create health-promoting schools. Schools were expected to join the NHSS and to achieve the quality standards set in areas such as leadership, policy, development and curriculum planning. They had also to work on specific topics, such as healthy eating, for which targets were defined.

In 2001 *compulsory minimal food-based standards for school lunches* were introduced for nursery, primary and secondary schools (Education (Nutrition Standards for School Lunches) (England) Regulations 2000) (131). These standards expressed provision frequencies of items from the main food groups presented in the "Balance of



Good Health" model, a food guide similar to the SSN food pyramid in Switzerland. The standards did not refer to portion sizes however. A complementary guidance document was targeted to school caterers for support in standard implementation. It included additional recommendations regarding drinking water, milk and provision of hot food. The LEAs, or -in case of delegation, the individual school governing body, were responsible to ensure that the standards were met. In addition to monitoring compliance with the standards, the caterers were advised to monitor the nutrient content of the provided meals by either food composition calculation or by chemical analyses of food samples. The results could then be compared to the "CWT Guidelines for School Meals", that is the recommended nutrient content of an average school meal provided for children over a one week period.

In 2003 the Department for Education and Skills and the Food Standards Agency commissioned an assessment of compliance with the standards and the measurement of food consumption in secondary school pupils (11-18 yrs). Seventy nine secondary schools in England participated in the survey about catering practice, food provision at lunchtime and information on the pupils' food selections. Overall it was shown that the National Nutrition Standards and contract specifications failed to have a substantial positive influence on food choice. Therefore strategies were considered which constrain choice to healthy options, manipulate recipes, use modern or "cool" presentation techniques (e.g. vending machine with healthy offers) and provide encouragement through rewards. Based on the evidence a series of recommendations were made. Since the food-based standards did not yield a profile of offered food that reflected the food guide and the nutrient profile failed to meet the CWT guidelines, it was recommended that standards for school food *must be compulsory and based on a combination of food-based and nutrient-based guidelines*. It was further suggested that the lunch as chosen must be a combination of foods that meet the food guide and thus most likely will meet the CWT guidelines. Last but not least, the development of new standards applying a *whole school approach* was recommended. In spring 2005 the government announced the following corresponding measures (125):

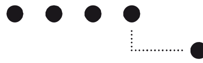
- New, minimal nutritional standards for school meals;
- Establishment of an independent School Meals Review Panel (SMRP), a multi-disciplinary expert group to develop new standards;
- Establishment of a School Food Trust (SFT), commissioned to transform school food and food skills, promote the education and health of children and young people and improve the quality of food in schools;
- Funding for authorities and schools;
- New voluntary vocational qualifications for catering staff;
- Monitoring of standards (Office for Standards in Education, Children's Services and Skills, Ofsted);
- Building and refurbishment of school kitchens for on-site cooking (cook-serve).

New interim food-based standards for school lunches were introduced in 2006. Ofsted (132) evaluated the progress schools were making in implementing these interim standards and identified strategies that were used to help pupils (4-18 years) and families understand healthy eating. Overall the food on offer met the new interim standards and it was shown that the children had a good general understanding of healthy eating. However, that knowledge had little bearing on the food they chose to eat. Adoption of school meals had fallen for complex reasons, including lack of consultation with pupils and parents, poor marketing of new menus, high costs for low income families, lack of food choice, and poor organization in the dining area (e.g., long line ups). However, some examples demonstrated that a partnership approach between staff, students and their families and the senior managers was successful in encouraging healthy choices.
Until September 2009 a series of new UK standards will be introduced which cover all food sold or served in schools. In 2007 non-lunch food-based standards for school were introduced, followed 2008 by nutrient-based standards and new food-based standards for school lunches in primary schools and on a compulsory level in 2009 in secondary schools (133).

### European Network of Health Promoting Schools

In many countries a specific focus was placed on education/school catering since schools are a suitable setting to reach youth with integral approaches in matters of health promotion. Several authors assembled information focusing on school catering across the globe (e.g. (120, 134-136).

The comprehensive reviews by the UK School Food Trust show that only a few countries have a true school meal tradition (120, 134). In some countries standards or guidelines were developed during the last 10 to 20 years, in others the development is ongoing or has recently started, as in Germany and Switzerland. However, effect



evaluation for implemented standards is mostly absent. The reviews provide further valuable information about the different nutrient- and/or food-based standards and guidelines for school meals and other foods provided in schools, funding issues (governmental subsidies) and catering providers, the dining environment and time management.

Many of the European countries considered in the School Food Trust reviews are members of the European Network of Health Promoting Schools (ENHPS). They support the development of a "whole-school approach" to health that involves integrating health promotion into all aspects of schools (137). One of the key problems to overcome is that food provision in schools rarely reflects what is taught in nutrition education programs. School nutrition policies are primarily initiated and formulated by health rather than by education agencies or in partnership. They mostly address the dietary principles of access, adequacy, and moderation. Health agencies now aim at involving the whole school by linking classroom education with food services, other services and supporters in the school, the school environment, and the student's home. Thus the key challenge is to increase the priority of nutrition within schools and to generate support among members of the educational community, administrators, staff, students, parents and catering staff (138).

This "whole-institution" approach could be transferred to other communal catering categories. Yet, such a collective approach to change may generate conflicts within hierarchical organizations most comfortable with a top-down management style. Still, it is more complementary to the health-promoting approach to change which enables better participation. So far some written school health policies include nutrition (137). However, the requirements of implementation and evaluation of specific nutritional standards or criteria were identified as a weak point of nutrition policies (138). Herewith the question arises if after a first review and revision in the field and irrespective of the catering category nutritional quality standards for Swiss communal catering should be enforced by law.

## Canada and the United States of America (USA): school nutrition policies and programs

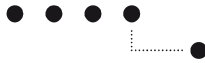
The two North American countries differ in their traditions of school catering (120). While the USA has federally assisted school lunch programs in place, no funds are provided for a national school meal program in Canada so far. Recent Canadian provincial activities are however promising in this regard.

### *Canada*

In Canada there are no national meal programs or school nutrition policies. They fall under provincial jurisdiction. However, the federal Ministry of Health recommended in 1990 and 1996 that provincial and municipal governments develop comprehensive and coordinated nutrition policies. Schools in particular were called upon to implement the policies and to promote increased availability of healthy foods (138). Provincial activities vary widely in this respect; McKenna reported about provinces where the implementation of school nutrition policies was either unsuccessful or did not become visible.

In the province of Ontario, the 'Dietitians of Canada' has produced the background paper "School Food and Nutrition Recommendations for Ontario Ministry of Education Regarding Snacks and Beverages Dispensed by Vending Machines" in 2004 as a basis for collaborative work with the provincial Ministry on school food and nutrition recommendations (139, 140). The dietitians stressed that schools can contribute to the students long-term health through classroom lessons on healthy eating and modeling healthy food choice by offering only healthy food selections at every opportunity, including vending machines. As part of the Poverty Reduction Strategy, the Student Nutrition Program by the Ontario Ministry of Children and Youth Service focuses on the provision of healthy breakfasts, snacks, and lunches to help children learn (see (141)). Breakfast and/or lunch programs are developed by schools and community agencies and are run by volunteers, including parents, teachers and community agencies. They follow the program-specific Nutrition Guidelines that the Ministry of Children and Youth Services have developed along with the Ministries of Education and of Health Promotion, Ontario Ministry of Agriculture, Food and Rural Affairs, Dietitians of Canada, Ontario Society of Nutrition Professionals in Public Health, Public Health Units, and Department of Family Relations and Applied Nutrition at the University of Guelph. A new governmental investment in 2008 supports the creation of approximately 700 new breakfast programs and the expansion of 300 existing programs in communities with the highest need.

The provincial government of Québec introduced the Action Plan "Investir pour l'avenir (invest in the future) 2006-2012" for promotion of healthy lifestyles and prevention of body-weight related health problems (see (142)). Within the framework of this action plan and of strategic measures planned for action in youth (2006-2009), the Québec Ministries for Education, Leisure and Sports, for Health and Social Services, and for Agriculture, Fisheries and Nutrition published a policy for healthy nutrition and active lifestyle targeted at educational institutions in 2008.



This nutrition policy "Pour une *virage santé* à l'école" (towards a turning point for health in schools) is directed to school commissions, to public and private pre-school, primary and secondary schools, as well as to centers of professional training and adult education. Seven thematic leaflets are provided to support the educational institutions and all concerned parties in implementing healthy nutrition. For example, leaflet #1 "Menus santé en milieu scolaire" (healthy dishes at schools) presents *food-based* guidelines focusing on food variety and quality. The University of Laval Québec offers a good example of nutrition policy implementation in the field (see (143)). The university's nutrition policy also includes regulations for vending machines. Moreover a nutrition advisory office was established, where BSc students in nutrition from the University of Laval are supporting the population in nutritional matters. This is a concept which could be considered at the Berne and Geneva Universities of Applied Sciences.

*USA*

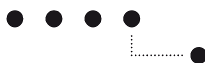
The United States Department of Agriculture (USDA) supports national School Nutrition Dietary Assessment (SNDA) studies to evaluate the role of the National School Lunch Program (NSLP, in effect since 1946) and the National School Breakfast Program (NSBP, in effect since 1966). Both programs are under the National School Lunch Act. The SNDA studies provide a complete picture of the food and nutrient content of school meals, provide national benchmarks for determining how well school meals meet nutrition standards, and investigate time trends (144). The last of three SNDA studies was carried out in 2004/05. It provides the most recent information for elementary, middle and high schools about: (1) the school meal programs "competitive" foods, i.e., foods offered at schools other than meals served through USDA's school breakfast, lunch and after-school snack programs; and (2) the overall school food environment. Story (144) concluded from the summarized findings and policy implications that despite nutritional quality improvement of the NLSP and NSBP school meals and of competitive foods there is still much room for improvement. Although standards for key nutrients are mostly met by breakfast and lunches, lunches are still too high in saturated fat and sodium, and fruits, vegetables and whole grain components are underrepresented. The competitive environment still needs to be controlled. Strategies could rely on defining compulsory nutritional standards for these foods, limiting access or even banning them from school.

In 2003 the American Dietetic Association (ADA), Society for Nutrition Education (SNE) and American School Food Service Association (ASFSA) took the position that comprehensive nutrition services must be provided to all students from preschool to grade 12 (145). These nutrition services should be integrated with a coordinated "Comprehensive School Health Program (CSHP)" and implemented through a school nutrition policy. Nutrition service provision thus represents one of eight interdependent components of a coordinated CSHP for healthy children. The other components are the school environment, health and physical education curriculum, health service program, counseling, psychological and social services program, family and community involvement activities, and staff health promotion program. Each component supports empowerment, involvement of pupils and parents, improvement in schools' health culture and incorporation of health promotion in the existing student care structure. Within the CSHP model guidelines on how to develop school health activities are provided. Schools are recommended to adopt a coordinated nutrition policy which promotes healthful eating through classroom lessons and a supportive environment. Schools are enabled to build upon existing health activities and projects. The nutrition policies may address issues related to food and meals on offer, USDA school nutrient standards, pricing/subsidies, staff qualification, curricula, etc.

Another position of the American Dietetic Association (146) requires all child-care programs to achieve recommended benchmarks for meeting children's nutrition and nutrition education needs in a safe, sanitary, and supportive environment. Nutrition professionals should work in close partnership with care providers and families to ensure that meals and snacks reflect recommendations and meet the children's needs.

### The Netherlands: an example of a tailored approach

In the Netherlands an action program on promoting health in schools was introduced in 2002 and developments at national and local level concerning health-promoting schools have a growing impact. The above described CSHP model (USA) has been tailored to the Dutch situation for implementation in the Netherlands (147). However, implementation of this model is considered challenging since the perspective of the health professional is fundamentally changed by it. So far health promotion workers and nutrition professionals have defined the nutrition problems and implemented corresponding actions. With the CSHP model, representing a bottom-up approach, the schools are called upon by experts to act as owners of their nutrition/food-related problems and to set their own priorities. The professionals will support the schools in identifying their individual needs and provide best assistance. The focus of the health professionals thus shifts more towards the process than towards the



content.

Regarding effect evaluation, the Food and Consumer Product Safety Authority in the Netherlands investigated the role they can play in the area of diet and health by monitoring developments in the market (148). Projects carried out related among others to the food supply in schools. Results confirmed their potential role in the development and implementation of food and nutrition policies through laboratory analysis (food composition) and field inspections.
In this respect, the possible role of the cantonal laboratories and their respective inspectors in implementation and control of health-promoting quality standards in Swiss communal catering should be considered and discussed.

## The neighboring countries: Quality standards for communal catering, a progressing issue

The overview about developments and experiences in other countries is completed by focusing on the four neighboring countries of Switzerland: Austria, Germany, France and Italy. The following information includes results from guided interviews conducted with experts from Austria, France and Germany (see chapter 3.3) in the framework of the present research project.

*Austria*

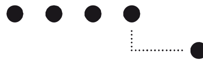
In 2005 a survey of the Austrian communal catering market was carried out to establish a comprehensive structured market overview. The study was primarily driven by economic interests (149). Beside descriptive characteristics of the sector, specific focus was put on current trends and future developments of implemented catering systems, numbers and qualifications/trainings of staff, and the implementation of EU food safety regulations.

So far, there are no national Austrian quality standards for communal catering. However, the quality hallmark (ÖGE-Gütesiegel) "Nährstoffoptimierte Speisenqualität" (nutrient-optimized meal quality) by the Austrian Society for Nutrition (ÖGE) was developed in cooperation with the German Society for Nutrition (DGE). The hallmark was approved by the Austrian Ministry for Agriculture and Forestry in June 2007 and can be applied for by all communal catering establishments. Thus a uniform assessment is employed in Austria and Germany to accord a bi-nationally recognized hallmark for "healthy meals" in communal catering (see also chapter4.3.7, page 46) (150). Accordance with the hallmark requires conformity of the nutritional composition of meals with the target-group specific D-A-CH reference values, and their nutrient preserving preparation. A yearly on-site audit is conducted by trained auditors following a specifically prepared handbook. Audits also focus on compliance with the recipes and portion sizes as well as on consumer acceptance of the meals in order to avoid misuse of the hallmark solely for marketing purposes (105, 106, 150).

Because contract caterers provide services across borders, European standards are discussed. As to hygiene, the European Federation of Contract Catering Organizations (FERCO) has asked the EU Commission in January 2007 to consider the development of a Community Guide to Good Practices for Hygiene in the Contract Catering sector (151). The "Arbeitsgemeinschaft Grossküchen Österreichs" (AGÖ; Consortium of Austrian Communal Catering establishments) represents all the various sectors' interests in this respect, although the consortium is mainly constituted of establishments in the Vienna and Lower Austria regions.

Besides ÖGE, Gastromed International, an Austrian profit-oriented catering consulting business offers the so called "Kessel Analyse" (kettle analysis) (152) to communal catering establishments in Austria and Germany. The analysis is described as a motivational tool rather than a control instrument. Self-evaluation will promote and require training within the establishment, thus initiating innovative improvements and developments. Institutions may further participate in the Kessel contest, which is based on self-evaluation, benchmarking and certification (Kessel hallmark). Beside nutrition-related objectives, economic interests and introduction of a total QMS are central.

The issue of a health-promoting communal catering has steadily gained importance in Austria. Many stakeholders from health and nutrition sciences, politics, marketing, etc. are interested. Health-promoting communal catering is not a specific field of applied research in Austria. However, it is taught at the University of Vienna, Department of Nutritional Sciences by G. Frisch (150). In 1998 The "Fonds Gesundes Österreich" (Healthy Austria Funds) (153) was introduced, which supports health-promoting projects in communal catering. Since 2006 the "Fonds" is an integrative part of "Gesundheit Österreich GmbH" (Health Austria Ltd) (154) which was established by federal law as a national public health institute and competence center for health promotion. As to workplace health promotion, the Association of Austrian Social Insurances published a practical guide for business catering,



focusing on management and marketing of health-promoting projects, and nutritional food service criteria (155). There are few all-day schools in Austria, most of them being in Vienna. For educational catering no specific nutrition policy exists (135, 136). The public owners are responsible for the food service. The city of Vienna is however particularly active and has defined binding specifications in the form of a service catalogue. This catalogue comprises a description of the services, including health-promoting services, to be provided by contract caterers. Moreover, in Vienna 30% of the food offered should be organic. For tuck shops, non-compulsory guidelines require a “balanced” food offer avoiding products rich in sugar.

Regarding practice, Frisch (150) considers the introduction of health promotion practice in communal catering as a balancing act. With increasing out-of-home consumption consumers require a tasty and health-promoting food service. However, the sector is diverse and in particular the internally managed communal catering establishments are challenged by questions about the cost-effectiveness of a health-promotional approach. Nonetheless, military catering in Austria (150) is applying for the ÖGE hallmark (see above). It is planned to continuously decrease the use of high-grade convenience products by promoting the use of fresh products in the armed forces cook & chill central kitchens. Furthe, a healthy menu line is planned. Core elements are the establishment of a centralized recipe database and a quality assurance system.

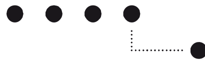
*Germany*

Every year the magazine “GV Praxis” publishes summary statistics about communal catering in Germany, which is –as in Austria, mainly driven by economic interests (see (156)). The figures are based on different market studies. At the national level, large contract catering companies are market leaders; however, at the regional level many smaller communal catering establishments are active, in particular in the educational sector (157). The German communal catering market is heterogeneous; just as the corresponding scene of associations which represent diverse interests. There is no exclusive communal catering association representing the entire sector. For example, the “DEHOGA Bundesverband”, the German hotel and food service industry association (158) represents interests of employers and professions via 17 federal state associations, comparable to GastroSuisse (159) with its cantonal subgroups in Switzerland. DEHOGA runs a specific division of communal catering though. The „Deutsches Institut für Gemeinschaftsverpflegung e.V.“ (D.I.G, German Communal Catering Institute) (160); more specifically assembles catering establishments in the private sector manufacturing and service industries. D.I.G. has published guidelines concerning variety, quality and safety of the food offered, considering the recommendations of the German Society for Nutrition (DGE), ecology, and staff qualification/training. D.I.G members are committed to voluntary self-evaluation and application of the quality control system by the University HS Niederrhein (see (161)).

Since business catering is an economically important catering category, a telephone survey was conducted in 2003/2004 to assess up-to-date data on structure and process quality characteristics in 1’095 representative business catering establishments providing lunch (162). The food services for employees in the care and educational sector and through vending machines, kiosk and cafeterias were excluded from the study. The results revealed the complexity of multilevel organizations. Type, quality and quantity of the food offers, as well as the applied quality management, were shown to be independent of establishment size. Specific needs with respect to the qualifications of the employees and to the development and implementation of specific quality measures were identified. The present research project will consider similar questions when characterizing Swiss communal catering, thus allowing for data comparisons across countries.

Many other surveys are carried-out in the area of communal catering in Germany, but most are done at the regional level. Several research institutions are active in this regard: at the federal level the ‘Bundesforschungsinstitut für Ernährung und Lebensmittel’ and at the regional and local levels different Universities and Universities of Applied Sciences, for example Hochschule Albstadt-Sigmaringen, Hochschule Fulda, Universität Giessen, Hochschule für angewandte Wissenschaft Hamburg, Fachhochschule Münster, and Hochschule Niederrhein (157). Many studies focus on school catering. the issues investigated include for example: sustainability (use of organic foods and regionally produced foods); economics, nutrition education and interface management; food environment; development and implementation of quality standards; aesthetic/sensory food quality; etc. (e.g. (163)).

Health-promoting communal catering became a major politically driven interest in the last decade (top-down). In 2004 a program for the establishment of all-day schools was initiated requiring the development of systematic school catering in Germany. The German Society for Nutrition (DGE) was commissioned to develop the first framework criteria for school food offers. The 2007 Declaration of Badenweiler (see chapter 2.1.3) and new survey results about obesity prevalence in German youth (Kinder- und Jugendgesundheitssurveys KIGG) and adults (Nationale Verzehrsstudie II, 2008) were driving factors in the further development of quality standards



(164). The national action plan "IN FORM - Deutschlands Initiative für gesunde Ernährung und mehr Bewegung" (Fit – Germans initiative for healthy nutrition and more physical activity ) (165) was introduced in December 2008 by the Federal Ministry of Nutrition, Agriculture and Consumer Protection (BMELV) and the Federal Ministry of Health. It defines the specific action area of quality improvement in out-of-home consumption. Crucial issues include target group orientation, quality of food service and service providers as well as improved access to school catering (166). The DGE is commissioned to develop quality standards in all settings, financially supported by BMELV. The society has previous experience in nutritional quality of communal catering. The “Referat GV” (communal catering unit) developed and introduced the DGE hallmark “Geprüfte Speisenqualität” (see chapter4.3.7, page 46) upon which the ÖGE hallmark is based (see section above about Austria).
The potential role of the Swiss Society for Nutrition (SSN/SGE) in quality standard implementation should be discussed in the framework of the planned stakeholder interviews in the present research project.

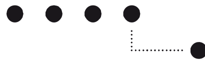
The scientific part in standard development by the DGE communal catering unit is being covered by the Hamburg University of Applied Sciences, Faculty of Life Sciences (Prof. Ulrike Arens-Azevedo) (164), in collaboration with a multidisciplinary expert panel.
The first national *non-compulsory* quality standards for school catering “Schule + Essen = Note 1” (school + eating = mark 1/excellent) were officially introduced in September 2007, embedded in a project of support activities (167). The quality standards development was based on the principles of quality management, thus allowing for continuous improvement. The earlier described quality dimensions of structure, process and output quality were considered (see chapter 4.3.3). For school catering, the objectives are to enhance children’s overall performance and ensure a balanced and varying food offer. Corresponding to a whole-school approach food service should contribute to nutritional and cultural education. The standards are food- and nutrient-based, considering the German food guide pyramid and the “Optimix” (optimierte Mischkost, optimized varied diet) concept (168), which is based in turn on dietary reference values (D-A-CH Referenzwerte) and aspects of preventive medicine. The following facets are also considered in the standards: sustainable organic food offers, nutritional/physiological and sensory requirements, processing and hygiene, and service. The standards also allow for internal quality control. Specific food (menu) and nutrient checklist are provided for this purpose.
In March 2008 the launch of national quality standards for business catering “Job & Fit – Mit Genuss zum Erfolg” (with enjoyment to success) followed (169).

Based on first practical experiences the existing German standards are currently in revision and new standards are under development for day-care centers, seniors homes, etc. Applied nutrient reference values for school meals are also being discussed. Resistance by the food industry and lobbying groups highlight how important it is to consider all interest groups when developing quality standards. Also, unresolved issues of implementation control, which is crucial to continuous quality improvement and possible certification, need to be solved. The “Arbeitsgemeinschaft (AG) Schulverpflegung” (school catering consortium) of the University HS Niederrhein in cooperation with the consumer advice center of North Rhine-Westphalia (NRW) offer for example a certification service to all-day schools in NRW or elsewhere in Germany (161). However, to guarantee an efficient nation-wide program requires very large numbers of qualified personnel and sufficient financial resources, which pose particular challenges to university-based services.

In the framework of the German action plan IN FORM (see above) so called “Vernetzungsstellen” (network centers) were established in the different federal states of Germany (see (170)). They will provide practical support in implementing the school catering standards, following the example and experiences of the federal state of Berlin (171).

*France*

In France about 85% of all meals served outside the home are provided by communal catering. That corresponds to almost four billion of meals per year or 11 million meals per day consumed in educational, health and social welfare (care), and business catering establishments (51). A distinct characteristic of communal catering in France is its social character. The community provides life-long food service to French citizens. This starts with hospital food service to conceiving mothers, followed by private or public day-care catering, pre-school and elementary school catering organized by the municipality, secondary school catering organized at the regional/departmental level to children and adolescents, and food service to university students organized by specific regional university centers. Later in life food service is provided to adults at the workplace, during hospital stays, and at homes for the elderly (172). Due to a lower VAT rate, food in communal catering (5.5% VAT) is cheaper than in commercial catering (19.6% VAT). Moreover, a variable fraction of the meal costs is typically subsidized. In private business catering establishments social welfare committees (comité d’oeuvre social COS) or the works council may offer financial support. However, business catering establishments can only benefit from the lower VAT rate if the



unions or the work councils contribute to the food service. In school catering the municipality covers part of the food service costs through the community and taxes (172).

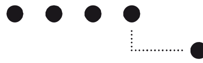
Regarding operation management, about 30% of the communal catering establishments are outsourced, i.e., managed by external, commercial specialist catering companies (contract caterers). The remaining 70% are internally managed ((172) referring to www.girafoodservice.com). The professional interests and requirements of these communal catering establishments are represented by different organizations.
The “Syndicat National de la Restauration Collective SNRC“ (national communal catering union) (173) comprises 31 contract catering organizations. The SNRC is comparable to the Swiss Catering Association (SCA) and is a member of the European Federation of Contract catering Organizations (FERCO) (see chapter 4.4.1). For internally managed communal catering establishments, the “Association de la restauration collective en gestion directe” (CCC France) (174) provides information and training services. Regional sub-associations unify different professional groups such as directors, administrators, cooks, dietitians, and others; they support member establishments in organizing activities at the local level. Moreover, the “Association Nationale des Directeurs de Restauration Municipale ANDRM” (national association of municipal food service directors) (175) represents the internally managed community catering establishments at the municipality level, with the objective of providing caterers with an exchange and support platform. A major focus is on the promotion of school catering through cooperation with partner institutions in the areas of quality management, health, education, finances, agriculture, and also with media.

Directed by the president of ANDRM, a group of communal catering professionals published a comprehensive manual on how to manage a municipal or school food service (176). The manual puts communal catering in a public health perspective. It provides the caterer with advice about nutrition education, and imparts the necessary knowledge to offer a nutritious and safe food service (education, care and business catering at the municipality public level) in the form of specific recommendations and legal requirements. With respect to continual quality improvement in communal catering(see Figure 11, page 38), the service standard for school canteen catering NF X 50-220 by the Association Française de Normalisation AFNOR (French standards association) is referenced (98).

The AFNOR standard concerns the municipal school lunch food services and focuses on regulations, requirements and recommendations with respect to: the design and equipment of the premises, the supervision and support of the children, the meal and meal-time organization, the educational role of the catering personnel, the organization of the communal lunch activity, the transparency at interfaces within the food service, the institution, and with different external third partners, and social equality issues. By promoting a transparent school food service policy, the standard aims at: consolidating the school catering image vis-à-vis different interested and concerned groups; indicating quality criteria which respect existing requirements and recommendations; unifying the food service professionals towards achievement of a common goal. However, detailed procedures for implementation and control of adherence to the standard have not yet been specified (172). For meal/nutrition related issues the AFNOR standard refers to a guide of the “Groupement Permanente d’Etudes de Marché sur les denrées Alimentaires” (GPEM-DA). The GPEM-DA has in the meantime changed to “Groupe d’étude des Marchés de Restauration Collective et de Nutrition GEM-RCN” (Food service industry and nutrition study group,) which was responsible for publishing revised nutrition recommendations for communal catering in 2007 (177).

Since 1971 a series of circulars, i.e., official though non-compulsory recommendations were introduced in France. While the 1971 students’ circular focused only on public procurement, increasing attention was paid to the nutrition composition of the communal catering food offer during the 1990s. In 1992 and 1996 menus served in secondary schools across France were analyzed for their nutritional quality (178). A proportional increase in the use of convenience products and less investment in procurement were reported, which may have explained some of the observed nutrient imbalances, i.e., high fat and protein contents of the meals, but low carbohydrate and calcium contents. Therefore, it was suggested that nutritional criteria should be set which will support communal caterers in establishing their product/tender specifications (179), resulting in publication of the first *food- and nutrient-based* recommendations by GPEM-DA in 1999 (180). Their objectives are to improve the nutritional quality of meals offered in communal catering and to provide tools for their implementation control. The recommendations apply to the general population served in all communal catering categories, i.e., education, care, and business. The following issues are covered: the individual’s nutritional needs for calcium, iron, lipids and dietary fibers; the food-based meal structure; menu planning considering food variety, frequency and quantity according to the nutrient-based recommendations; introduction of an information policy and control of frequency of food group provision and product specifications.

Within the French national food consumption survey INCA (Enquête individuelle et nationale sur les consommations alimentaires) issues of school catering were investigated in 1998/1999. Overall it was shown that



the frequency of school canteen use was associated with the socio-economic and lifestyle factors of age (older > younger), geographic region (West > East) and place of residence (rural > urban), household income (higher > lower), body weight for boys (lower > higher) and physical activity (more > less), and girls' interest in nutrition and cooking (less > more) (181). Nutrient intake analyses and their comparison with the 1999 GPEM-DA nutrition recommendations confirmed that meals consumed at school provided too much fat but insufficient calcium, thus underlining the importance of enforcing practical application of the recommendations (182).

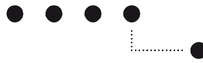
Since 25 June 2001, school catering is regulated by the inter-ministerial circular n° 2001-118 on the composition of meals served in schools and food safety (183, 184). This non-compulsory circular underlines the variable nutritional needs of children and adolescents, and defines the quantity of protein, calcium and iron to be provided with lunch by school grades. Special focus is placed on nutrition education which should consider variability, aesthetic (taste) and cultural aspects of food and food intake. The circular is based on the 1999 GPEM-DA nutrition recommendations, hence focusing on foods which ensure an increased intake of dietary fibers and vitamins, iron and calcium, but reducing fat intake. The handling of special dietary needs of children with an allergy, food intolerance or a chronic illness is specified in detail. In this respect the circular n° 2003-135 dated 8 September 2003 describes how to proceed (185). Moreover, implementation and control of food safety issues (hygiene) are described in detail. In France the departmental veterinary services are in charge of the food safety controls in the field, somewhat comparable to the cantonal laboratories in Switzerland (see (186)).

This 2001 circular was integrated into the French National Nutrition and Health Program (Programme Nationale Nutrition Santé PNNS, see (187)) which was implemented by the Ministry of Health in 2001 for a period of five years, and then extended up to 2010 (188). The PNNS reflects a strong political investment in public health in France. The overall goal of the PNNS is to improve the population's health through nutritional intervention. A series of actions and measures have been or will be implemented. Some concern communal catering, such as the implementation of the described school meals and food safety regulations in 2001, the legal ban of vending machines in schools in 2005 (189), or the circular n°2008-090 – 229 prohibiting sales and consumption of energy drinks in school establishments (190). In collaboration with the "Institut national de prévention et d'éducation pour la santé INPES" (national institute for prevention and health education) intervention tools targeted at teachers were disseminated. Posters and nutrition guides will help in implementing nutrition projects in the curriculum (see (191)). Furthermore, a PNNS "seal of approval" logo is awarded by an expert panel to institutions for activities conforming to the PNNS objectives (192).

In 2005, the "Agence française de security sanitaire des aliments Afssa" (French Food safety agency), together with the Ministries of Health, Agriculture and Education, conducted a representative national study to evaluate the awareness about and implementation of the 2001 circular (193). It was found that half of the participating establishments claimed to apply the circular, but 10% were still unaware of it. Forty percent of the establishments assigned the control of menu composition to a health/nutrition professional. Although nutrition training was offered to the person responsible for procurement in 40% of the establishments, the price remained the major factor when purchasing foods. A staff nutrition training plan was introduced in 45% of the establishments. Hygiene standards were generally met; however, about two thirds of the participating school canteens did not pay the necessary attention to the defined nutritional standards. In conclusion, Afssa suggested measures in the following areas: application of a cooperative approach to procurement and nutritional/dietary matters respecting restricted financial and human resources; development and introduction of new practical tools for menu planning, organization and nutritional education activities; offering more nutritional training opportunities for food service personnel; and changing the non-compulsory status of the recommendations about the nutritional composition of meals to *compulsory*.

The above outlined 2001 nutrition recommendations for communal catering were reworked by the GEM-RCN in 2007 (177). The revised recommendations clearly focus on prevention of obesity in the general population and malnutrition in the elderly. They are again related to the PNNS (see above). Catering staff training and integration of nutrition specialists (e.g. dietitians) in the catering team are considered essential. Moreover, the necessity of communication and support of the consumers in need of assistance in nutritional matters is emphasized. Institutions are encouraged to provide sufficient financial support for assuring that a food supply of recommended and required quality is delivered. The recommendations should serve as a reference in procurement. They do not consider the structural or environmental issues, which are, however, outlined in the AFNOR standard (98).

Although the 2007 *food- and nutrient-based* recommendations are targeted at all age groups fed in communal catering institutions, they still do not apply to the entire sector since -with the exception of food allergies- they do not consider food service recommendations for ill persons. Yet, parts of the recommendations can still be used. Nonetheless, in care/hospital catering specific national recommendations for this target group are considered particularly important to allow for the competent application of expert skills in light of growing economic pressure



(172).

Also, consumer groups are calling for heath-promotion actions. For example, the movement “obésipub” by the “Union fédérale des consommateurs, UFC-Que choisir” (federal consumer association) (194) supports the banning of TV food ads, a ban on sweets in supermarkets, and compulsory regulation of the school food service.

*Italy*

In 1974 school meals in Italy became legally recognized as an integral part of people’s right to education (195). The development of the education food service in Italy is mainly affected by issues of creative sustainable procurement (196). In 1986 the National Institute for Nutrition published “Guidelines for a Healthy Italian Diet” promoting the Mediterranean food model in communal catering. In the following years the first organic meal systems and hospital menus were introduced at the local level and the first organic university canteen was established. This trend is ongoing, especially in school catering (195). Thus in public communal catering a clear priority was set for local, organic and traditional foods. The key factor is recreating cultural values which foster sustainable food production and consumption. In general, school menus are elaborated by nutritionists and pediatricians from the Municipality, based on guidelines by the National Institute for Research on Food and Nutrition and the recommendations on energy and nutrient intakes for the Italian population (195). In Italy a whole-school approach is applied. Parents can establish a canteen committee to help in monitoring the hygiene and quality of the food and to assess the menu implementation in cooperation with school councils and food suppliers. Students participate when schools regularly review menus, ingredients, cooking styles and suppliers (195). In 2004 the local administration of Rome considered specific requirements for the city’s school meal service in a public appeal, establishing that the contractee must provide healthy and organic snacks for children and must guarantee warm meals based on typical products and traditional recipes. To this end nutritionists have visited Rome city schools to identify traditional recipes meeting children’s tastes, resulting in a corresponding recipe book. Moreover the catering service is expected to eliminate frozen and fried foods and to use organic ingredients and fair trade products. Also the layout of the school dining area has undergone changes due to this reform for improvement of ambiance and interaction. Corresponding financial support was allocated by the city of Rome and meals are subsidized or -depending on family income- offered for free. A, but not necessarily the primary success factor identified is policy intervention or provision of incentives for procurement of specific product segments (195).

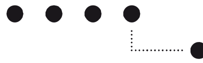
The Piemont region introduced a comprehensive obesity action plan based on monitoring (nutrition survey), awareness campaigns/nutrition education of the food industry, and health promotion in high risk groups (197). With respect to communal catering the following activities were outlined: establishment of guidelines for food services in schools, hospitals and homes; health-promoting projects in business catering; improvement of nutrition education in schools; nutrition surveillance of school catering.

## The Good Practice approach: examples of Belgium and Germany

A health-promoting communal catering establishment (school, enterprise, home or other) is characterized by several dimensions of communal catering quality, including nutrition (food-related quality), but also aesthetics (taste, smell, look, etc.) of the offered food, the social environment (e.g. organization of the meal, atmosphere during meals), and the overall conditions of food production (sustainability, work site quality for employees, economics, etc.) (198). Applying a “Good Practice” approach for quality improvement in communal catering (see chapter 4.3.6), as is planned for the present research project, thus requires consideration of many overlapping quality aspects.

*Belgium*

The Roi Baudouin Foundation published under the title “Mieux manger à l’école” (Eating better at schools) a national call for projects in 2006 intending to improve Belgian school catering (199, 200). In the French community this activity was implemented within a policy for improvement of dietary and physical activity behaviors in youth by the ministers of Education, Health and Sports. Concrete and innovative projects with the objective of markedly improving the nutritional quality of school food services (cold and warm meals, snacks and beverages) and which respond at the same time to the students’ requirements and food preferences are supported. Participation was possible for pre-schools, primary and secondary schools (catering managers; school directors; facility managers), central kitchen managers, local health promotion centers, school health promotion services, psycho-medical and social centers, and all non-commercial organizations that develop



specific projects with one or several schools. Information and awareness campaigns, training projects or infrastructural improvements of canteens were not considered. The following selection criteria were applied by an independent jury:

- Suggestion for concrete and democratic solutions;
- Innovative character of the project for the establishment;
- Long-term projects (sustainability);
- Economic, technical, administrative and logistical feasibility;
- Consideration of children's dietary preferences;
- Consideration of the target group's cultural and social diversity;
- Encouraging the participation of students and/or parents in project development and/or implementation;
- Encouraging non-school (external) partnerships;
- Respecting dietary needs due to medical reasons.

Selected projects received financial support. Moreover they were invited to join a network of food service managers and school managers with the objective of exchanging experiences and good practices, including on-site visits. The selected projects were published in 2008 in a practical guide for communal catering managers. It gives practical hints to other establishments on how to improve their food service (201).

*Germany*

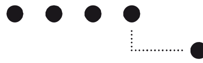
The Bavarian Federal Ministry for Environment and Health carried out two contests in 2007/2008 in the framework of the health strategy "Gesund.Leben.Bayern" (Healthy Living in Bavaria):

The contest "Essen pro Gesundheit in der Ausser-Haus-Verpflegung: Gut essen – mehr wissen – gesund geniessen" (Healthy Eating outside the home: eating well – knowing more – enjoying healthfully) was open to establishments offering full or partial food service in the education, care and business catering categories, as well as to the commercial food service industry. Evaluation criteria were set according to three areas: (1) Eating well – food presentation, ambiance, and customer satisfaction; (2) Knowing more – communication and information, including customer surveys; (3) Enjoying healthfully – food quality, preparation and variety. An interdisciplinary jury selected 19 establishments as winners; they are presented on-line (see (202)).

The second contest "S.P.I.C.E – Gesundheitsförderliche Pausenverpflegung – Wettbewerb für Schulen mit gewerblichen Anbietern" (Health-promoting snacks – contest for schools with commercial vendors) was open to all Bavarian schools with a commercial tuck shop managed by the janitor or another commercial vendor (203). Evaluation criteria were: health-promoting offer; communication, marketing and cost-effectiveness; example of good practice; and presentation. The 10 best schools/tuck shops were financially awarded for alignment of food quality requirements with economic aspects and students acceptance.

In 2008 the German Society for Nutrition, Section of Lower Saxony, the Lower Saxony Ministry for Nutrition, Agriculture and Consumer protection and Development, and the Heinz Lohmann Foundation carried out the contest "Wer richtig isst, ist besser drauf" (Who eats right feels better) (see (204)). Nutrition projects carried out in Lower Saxony school cafeterias and canteens by student groups in grade 5-13 or by other initiators were included. Submitted concepts were evaluated by a jury based on the following criteria: quality of the food offer (tasty, healthy, and attractive); sustainability; catering frequency; integration of catering in school activities; students' participation. The financial award for school catering was given to 9 out of the 50 participating schools.

The exemplary Good Practice initiatives mentioned above were time restricted, though sometimes repeated, and involved a financial award. Such contest-based, short-term character initiatives may however limit the continual improvement of the sector as a whole. In the present Swiss research project, the establishment of a long-term, low-threshold concept is planned, which should allow institutions to continuously improve and gradually strive for excellence over time (see Fig 14, page 41). Being visibly presented as an "example of good practice" is considered an award and could serve as an acceptable health-promoting marketing tool for institutions involved.



## 4.5 Applied research and development in communal catering

The present chapter provides a comprehensive overview of international research activities in communal catering, highlighting identified critical points and problems in the sector. The overview is based on an extensive literature research as described in chapter 3.2. The main research findings are presented by the following areas: communal catering in general and the specific communal catering categories, i.e. education (school), business, and care catering. Within these areas, research findings were, whenever possible, classified by the quality dimensions of input, process, and output/outcome quality (see chapter 4.3.2), differentiating between consumer and service provider perspectives. Through this approach, important issues are identified which must be considered in the development of health-promoting quality standards for communal catering.

Many studies target output quality; however, the issues investigated were more specifically input quality- or process quality-related. The studies were thus classified by the investigated issues. In the context of output/outcome criteria, certain research activities were carried out to measure the effect of different health promotion programs. In particular, the effects of healthy and tasty food supply on the coverage of physiological requirements, health maintenance, and improvement were investigated. These research activities are described separately.

### 4.5.1 Communal catering in general

#### Input quality

Two Northern European studies carried out in the mid 1990s focused on the training of human resources in communal catering (205, 206). Study participants were 100 final year undergraduates in hospitality management, and 71 students studying for other catering-related qualifications. One aim was to assess the students' nutrition knowledge as well as the related teaching content. The study findings suggested that students entered the catering industry insufficiently trained to act according to the recommendations of current nutritional guidelines. Presumably the curricula for catering professions have been further developed over the last decade.

#### Process quality

*Service provider perspective*

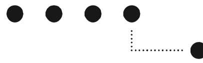
With regard to benchmarking, a research project was carried out to identify the use of performance measures by 247 food service directors. Current practices, attitudes and beliefs about benchmarking were determined. Food service directors perceived benchmarking as a useful management tool to improve processes, products and services (207).

Two research activities carried out in Austria focused on aspects of meal production. A literature review compared the catering systems "Cook and Freeze" and "Cook and Chill" with respect to hygienic and microbiological risks, nutrient preservation, preservation of sensory characteristics, convenience-characteristics, and their practical value (208). The other small-scale study investigated the impact of different catering systems, preservation methods, and storage conditions on hygienic markers (bio-burden), sensory characteristics, and nutrient content of meals. In total 11 meals were collected and analyzed, e.g. "Cook and Chill" meals after 3 days of storage, or "pasteurized plus Cook and Freeze" meals after 21 days of storage. For the contents of most investigated nutrients (carotenoids, vitamin E, vitamin D, vitamin B1, vitamin B2, calcium, magnesium, potassium, protein, fatty acids) no significant difference was observed between storage time and storage systems, except for L-Ascorbic acid. Deep frozen products showed smaller losses of L-Ascorbic acid than "Cook and Chill" and pasteurized food. The total counts of microorganisms were generally low (209).

*Consumer perspective*

With the overall intention to support more healthful choices, two U.S. studies explored consumer interests in nutrition information on food labels and on quick-service restaurant menu boards. The qualitative study of Lando and Labiner-Wolfe (210) used eight focus groups to elicit factors about nutrition information that consumers are most interested in. Findings suggested that participants were generally interested in having nutrition information available. Further, it was considered helpful if food products typically consumed at one eating occasion were labeled as a single serving, and if an icon on food labels as well as on the menu board would highlight the more healthful choices.

The issue of potential health benefits through providing nutrition information was also investigated in a commercial restaurant survey (211). Although not focused on communal catering, the results might still be useful



and transferable. In this study, consumers were first asked to estimate the nutrient content of typical restaurant meals. Then, they participated in an experiment on how the provision of nutrition information on the menus influences their purchase intentions and reported preferences. It was shown that the provision of nutrition information had a significant influence on the choice of those foods for which the amounts of calories, fat, and saturated fat substantially exceeded consumer's estimations.

Another qualitative study in the U.S. provided insights into consumer knowledge about menu labeling legislation and what information consumers consider most important to have on restaurant menus (212). Relating to consumers' dining experiences, consumers' main expectations from restaurants were consistency, accuracy, high-quality ingredients, nutritional information, value, and competency. Two further reviews looked into similar topics. While the review by Grunert and Wills (213) focused on consumers' perception and knowledge of nutrition information on food labels in general, the British review by Holdsworth and Haslam (214) was also concerned with nutrition information facets in communal catering. The review compared point-of-choice nutrition labeling schemes in different settings such as workplace canteens, public eating places, or in university cafeterias to describe the variety of schemes and determine the characteristics of effective interventions. The authors concluded that for nutrition labeling schemes to be effective, it was necessary to adapt them specifically to the target group and to use simple messages. Further, effectiveness seemed to be better if the message promoted the healthiness and taste of food. Yet, the most effective labeling format was not identified. Moreover, no results for long-term effects were provided.

An experimental study in the U.S. looked at consumers' comments on different menu names (215). In a six-week experiment, the comments of consumers eating foods with evocative, descriptive menu names were compared to the comments of consumers who were eating foods with regular menu names. The consumers rated the menus with evocative, descriptive names to be more appealing, tasty, and higher in calories. In practice, the use of descriptive names may help improve perceptions of foods in communal catering settings, and it may help when introducing new or unfamiliar foods.

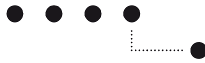
## Output/outcome quality

### *Consumer perspective*

Stroeble and De Castro (216) reviewed the research on ambient influences on consumers' food intake and food choices. Ambience factors identified were, for example, social variables, the type of food presentation and location, colors, light, temperature, smell, sound, meal frequency, meal times, and distractions such as television viewing. Overall, this review suggests that there are major influences of ambience on eating behavior and that its possible beneficial effects may be underestimated. Therefore, more attention should be paid to this topic, as well as with respect to quality standards for communal catering.

Research activities in Sweden and Norway were carried out to analyze physical and social aspects of two different dining room settings and their influences on consumers (217). Thirteen in depths interviews were conducted with the personnel at two Swedish hospital wards, and 22 observations and eight 'reflecting conversations' were carried out among the staff of Norwegian nurseries. The meal provisions to both groups, the hospital staff and the children in the nurseries, were restricted as to time and place. The dining rooms were not only used for eating, but also for other activities. Sometimes, the hospital staff takes their meals while working. Since the meal thus takes place quickly in between different tasks, the meal experiences may be disturbed by other activities and seemed to be less important.

A series of four U.S. studies examined the expected acceptability and expected quality of institutional food services (218). In the first study on identification of institutional food stereotypes, quantitative data on attitudes and expectations toward a variety of institutional foods were collected. Three groups of military personnel and university students participated. The second directly related study investigated civilian and military consumers' opinions about the reasons for poor acceptability as well as poor quality of foods served in institutions. The results showed especially low quality ratings for food presentation, food variety, and the physical setting of the institutional food services. These factors may contribute to consumers' negative perception towards institutional food services. The results of the third study demonstrated that civilian and military subjects perceive military foods to be of much lower sensory quality than commercial foods. In the fourth study, expectations for a food item were manipulated by labeling it as either a commercial or an institutional food. The effect of the changed acceptance was measured: when the expectation was low (bad previous experience, negative stereotype), the actual acceptance of the product adjusted to the lower expectation.



A review of the factors influencing food choice was completed in 2004 by the British Nutrition Foundation on behalf of the Food Standards Agency (219). The major part included a critical appraisal of published intervention studies, such as point-of-purchase interventions in a supermarket setting, environmental interventions in catering settings, interventions in a primary care setting and in a workplace setting, nutrition education interventions in school, college, and university settings, community based studies, peer-led interventions, and computerized individually tailored nutrition education. The key findings regarding nutrition education interventions in school, college, and university settings in the UK indicated that success often depends on the enthusiasm of the individuals involved. Regarding interventions carried out in workplace settings it was shown that employees' fruit and vegetable consumption benefits from nutrition education activities. The main results from further studies considered in this review are presented in the following chapter (see chapter 4.5.2).

*Service provider perspective*

In 1997 data were collected on the nutritional quality control implemented by 112 Finnish, 42 French, and 45 German public catering establishments. Written and face-to-face interviews were conducted. The study indicated a need for the promotion of nutritional quality control in these establishments. Overall, food-service personnel preferred food-based to nutrient-based control measures (220).

*Health promotion programs - Consumer and/or service provider perspective*

Established in 1990 in England, the "Heartbeat Award" (HBA) is given to a catering establishment in which healthy food choices are available, a nonsmoking area exists, and good standards for food hygiene are implemented. Holdsworths et al. (221) evaluated customers' perspectives of the HBA scheme in 11 public places (each had held the HBA for at least 1 year), interviewing 271 consumers. It was shown that consumers want healthy food choices to be available, but the availability of healthy food choices does not influence their choice of establishment. Generally, about half of the customers did not know that the catering establishment had received the award. Even more, i.e. 67% of consumers were unaware of the main criteria of the award and over 80% were unaware that menus had been assessed by a dietitian.

In New Zealand the effect of different National Heart Foundation health promotion programs were evaluated, such as "Just ask", "Heartbeat Awards", "Heartbeat Catering", "Heartbeat Challenge", or "Pick the tick", that target caterers, food manufacturers, workplaces, and schools. Besides a healthy nutrition/menus they also promote a smoke free environment (222). The evaluation demonstrated short- to medium-term effectiveness of some health promotion programs which may affect large numbers of people. The effect of the "Heartbeat Catering Program" (HCP) on the provision of healthy menu items was assessed through the perceptions of caterers and dietitians involved in the program (223). They stated that the HCP seemed to improve the nutritional value of food offered in different institutions such as boarding schools, university residences, prisons, and care homes for the elderly, workplace cafeterias, cafes and lunch bars. Caterers and dietitians proposed changes to the program resources to improve their practicability.

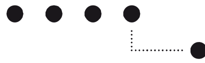
### 4.5.2 Business catering

#### Input quality

*Consumer perspective*

In Finland, research activities investigated the influence of working conditions on the use of institutional food services. Overall, workplace cafeteria use among Finnish adults between 1979 and 2001 showed the following trends (119). There was a slight decrease in the prevalence of cafeteria use; however, women were eating slightly more often in the cafeteria than men. Years of education had a positive influence on the prevalence of workplace cafeteria use among men and women. Moreover, the prevalence of cafeteria use was higher in the capital area than in other cities. Less important associations were found between marital and parental statuses with workplace cafeteria use. From 1997 to 2003, 3096 male and 3273 female Finnish 25-64 year old employees participated in three triennially cross-sectional surveys. Associations between working conditions and the use of staff canteens were analyzed, considering factors such as workplace size, occupation, working time, social support at work, and mental and physical strain at work (224). The results showed that the use of staff canteens was largely determined by the size of the workplace and by the employees' education. Gender differences were also found.

The "Helsinki Health Study" Survey (2474 employed women, 591 employed men) showed partially similar results. Employees with higher educational level, women with pre-school children, and normal weight men were more likely to eat their lunches at the staff canteen (225). The food habits of employees having lunch at staff canteens



followed recommended food patterns, especially concerning the consumption frequency of vegetables and fish.

In a German study, data on factors influencing nutrition and health of employees from 32 German enterprises (predominantly REWE-retail businesses) were collected by questionnaire (226). Factors considered were the working situation, business organization, environment and technical equipment, meal delivery system, meal offer, catering availability, catering systems, behavioral pattern, health status, and measures and actions for staff or employees.

*Service provider perspective*

A Danish study examined the effects using organic food in catering on the nutritional quality of the offered menus (227). 526 Danish “green” and “non-green” worksite catering managers were surveyed. The results indicated a strong correlation between a caterer’s positive attitude towards organic foods and healthier menus.

Qualitative research carried out in the U.S. elicited promoting and inhibiting factors for healthy eating. Fifteen in-depth interviews, five focus groups and community mapping were carried out with different worksite stakeholders such as administrators, managers, workers, and food service personal (228). The following key inhibiting or promoting factors for healthy eating were identified: stress-related eating in a downsizing workplace; engagement in employer-sponsored weight management prevention efforts, as long as the personal privacy is respected; and the organizational culture effect on access to the food environment.

## Process quality

*Service provider perspective*

A recent German study assessed a representative sample of 1095 business catering institutions regarding their operating structures and processes, meal offers, and issues of quality management as well as interface management (input and process quality characteristics) (162). Data were collected by telephone interviews and 92 communal catering managers were interviewed face-to-face. The results indicated heterogeneous operating structures, processes, and meal offers in business catering institutions. Suggestions for improvement were demonstrated such as keeping delivered meals warm and employment of qualified personnel.

The following Danish study investigated process as well as output quality criteria. The nutritional composition of foods offered in 15 worksite canteens was analyzed, and the impact of two meal serving systems compared, namely buffet style with a fixed price (eight canteens) and à la carte service with an individual price per item (seven canteens) (229). For laboratory analyses, double portions of meals were collected at each worksite canteen from 12 consumers on two different days. The original and duplicate portions were photographed and, after the employees had finished eating their lunches, plate waste was recorded. No association was found between the serving systems and the energy intake or the macronutrient compositions of the meals. However, the buffet style serving system was shown to be in better accord with increased fruit and vegetable consumption.

A study at a U.S. medical worksite cafeteria investigated the degree to which promotion of healthful meals influenced consumers’ quality perceptions (230). Prior to an intervention (marketing of healthy food), employees and students (n=540) completed self-administered questionnaires on their satisfaction with specific factors (food quality, price, food presentation, healthfulness and portion size of entrees, available food choices, availability of healthful choices, length of line (queuing), overall quality of cafeteria) to identify customers’ current perceptions of the cafeteria. The intervention’s impact was determined using a post intervention questionnaire (n=261). The results suggested that only marketing of healthful meals changed customer’s perceptions, whereas an interest in nutrition information was only present in a fraction of consumers.

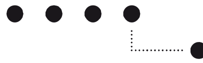
An evaluation of various types of customer food service feedback cards was carried out in 1982 by U.S. military personnel to measure their validity (231). The cards included behavior/attitude questions, food attribute ratings, and hedonic scales. Because of statistical advantages and validity, a four category and a seven-point scale rating card was recommended.

## Output / outcome quality

In the business catering context the effectiveness of several health-promotion programs was assessed and several intervention studies were carried out.

*Health promotion program – Consumer perspective*

An intervention study in Denmark aimed at increasing fruit and vegetable consumption (output) in worksite canteens and sought to obtain insights into effective practical strategies by modifying input factors (232). The



study included baseline data collection, an eight-hour training session (divided into two afternoons) for all canteen staff, goal setting, strategy development and implementation for each canteen, end-point data collection, and a follow-up data collection four months from the end of the intervention. The results indicated a large potential for canteens to increase customers' fruit and vegetable intakes at lunch time: management was identified as a central factor for success. Empowering the staff and getting everyone involved proactively are important key elements and therefore should be seriously considered by management.

The Canadian program "Eat Smart Workplace Cafeteria" was evaluated with a questionnaire (n=258), assessing staff frequency and purchases in the hospital cafeteria, their attitudes towards the program, as well as short-term changes in their eating behavior (233). The study also indicated possibilities for improvement.

Within the evaluation of the U.S. "Seattle 5 a Day worksite Program", fruit and vegetable consumption were measured before and after the intervention at 14 out of 28 worksites with cafeterias (14 interventions and 14 controls). After two years, the intervention effect was an increase of 0.3 serving per day (234).

In the "Working well trial", a U.S. worksite cancer prevention and control program, dietary intake was assessed using an 88-item semi-quantitative food frequency questionnaire, focusing on the intake of fruits and vegetables, fat, and dietary fiber (235). Statistically significant but small differences were observed for dietary intakes between baseline and three-year follow up (1990-1993).

Steenhuis et al. (236) described the effectiveness of two environmental programs employed in worksite cafeterias, a food supply program and a labeling program. They were implemented in combination with an educational program which aimed at reducing fat intake and increasing fruit and vegetable intake. The educational program provided information on healthy nutrition through brochures, table tents, and self-help posters. The food supply program consisted of an increased availability of labeled low-fat foods, fruits, and vegetables. Only the labeling measure showed a statistically significant effect on total fat intake for consumers who believed that they ate a high fat diet. Regarding the labeling program, sales data showed a statistically significant effect on desserts.

The worksite study "Promoting Activity and Changes in Eating" (PACE) is based on previous worksite-wide interventions and a modified ecological framework which included a social environmental level, several worksite factors (current finances in a company, unionizations, insurance costs, company morale, social norms) and factors affecting individuals (knowledge, attitudes and beliefs, life stress situation, job tasks) (237). Dietary behavior was assessed by measures such as frequency of consumption of fruits and vegetables, fast food restaurant meals and soft drinks, and eating while performing other activities. Preliminary results were presented. To understand employees' eating and physical activity decisions, 20 interviews were conducted to refine the framework for the intervention. The following major issues were elicited: employees' perceived physical activity to be rigorous exercise; they found it difficult to track their dietary intake; consumers preferred to receive healthy eating information from the Internet, flyers, and brochures.

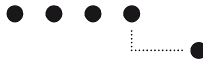
Anderson AS et al. (238) presented how to enable hospital staff to choose and eat healthier meals. Traditional recipes were adapted and a nutritional education program was implemented. The intervention was evaluated by means of a dietary intake questionnaire before and after the program implementation. Statistically significant effects in fat intake (decrease) and in carbohydrate and dietary fiber intakes (increase) were observed.

*Health promotion program – service provider perspective*

As mentioned above, the "Heartbeat Award Scheme" (HBA) was launched in England in 1990 as a part of the "Look after Your Heart" campaign. In 1995/96, 23 caterers in the UK responsible for implementing the scheme were interviewed face-to-face (239). The compliance of HBA premises with nutrition criteria was evaluated, and the impact of the scheme on food purchasing trends was assessed. It was found that for many locales compliance with many nutrition criteria is lacking.

Several studies designed to assess the influence of competitive pricing on eating behavior were summarized by French (240). In the "Changing Individuals' Purchase of Snacks" (CHIPS) study at 12 worksites and 12 secondary schools, lower prices (10, 25 and 50% price reductions) and point-of-purchase promotions on sales of lower-fat snacks in vending machines resulted in an increase in sales of the lower fat snacks (9, 39 and 93%). Two other studies focused on educational catering and therefore are considered in chapter 4.5.4.

Shimotsu (241) suggested a method to assess output quality, the "Worksite Environment Measure" (WEM). WEM was developed to evaluate the food, physical activity and weight management environments of the "Route H study" worksites and is described as a reliable measure. The method may also assess changes in the food environment, such as the number and type of vending machines, vending machine contents, microwave ovens, refrigerators, and water coolers.



### 4.5.3 Care catering

Input quality

*Service provider perspective*

A European study including Denmark, Finland, France, Germany, Norway, Sweden, Switzerland, and the UK assessed hospital food provision practices on the basis of the “Revised questionnaire for national contributions to the report on nutrition programs in hospitals” (127). The major problems identified concerned input quality aspects, such as absence of clearly defined responsibilities, absence of sufficient education, absence of patient influence, absence of co-operation among all staff groups, and absence of involvement by the hospital management.

Seventy four managers in the UK’s National Health Service responsible for catering and related facilities management were interviewed about their roles in terms of skills. The findings showed that the managers’ skills did not conform accurately to their allocated job responsibilities (242).

A German study assessed the nutrition and health status of elderly people (65+ yrs) in 10 nursing homes. Additionally, it provided important data about structural conditions, meal and care concepts, responsibilities, interface management, and staff education in the context of nutrition in institutions (243).

Process quality

*Service provider perspective*

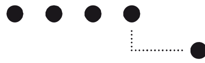
Different research papers analyzed issues of quality management in food service. For example, in the early 1990s a U.S. survey explored the use of “Continuous Quality Improvement” (CQI) in hospital food services (244). Data on demographics, consumers, implementation of CQI in hospital food services, and used quality indicators from 52 American Association of Hospital Food Service Administrators (ASHFA) were analyzed. The quality indicators that were identified were grouped under five categories: equipment, ingredients, labor and productivity, meals, and service. Under the category of equipment, the quality indicator most frequently mentioned was monitoring equipment temperature. The large number of quality indicators detected in the labor and productivity category suggested an increasing development toward “empowerment” of the food service staff.

A pilot study in one 48-bed site hospital also addressed the CQI topic (245). Long-term care staff was instructed in how to conduct CQI in the context of nutritional care by using a standardized direct observational protocol. Improvements in nutritional care processes, related to the adequacy and quality of daily feeding assistant care provision, were achieved after an initial training session and 12 weeks of CQI implementation.

Another study was designed to analyze catering service quality (CSQ) in a rehabilitation hospital over a two-year period by assessing the effectiveness of implemented quality improvement measures (246). The objective assessment of 572 meals included investigation of meal order accuracy, proper distribution of food on the trolley, route time, food weight, food temperature, and waste assessment. For the subjective assessment 591 interviews were conducted and included topics on the place of meal consumption, the possibility of having alternatives to the basic menu offered, opinions about menu variability, how the meal was served, whether timetables were respected, food quantity, cooking quality, food temperature, and hygienic standards. A significant amount of errors were found, for example lack of respect for patient preferences or at the moment of supplying the food trolley (qualitative and quantitative errors). It was shown that the food temperature at delivery needed to be increased in order to reduce leftover food. Moreover, patient satisfaction could be improved with increased menu variability, smaller portion sizes, and constant temperature and cooking quality.

In Australia, the nutritional quality of menus for patients in 80 hospitals was investigated by comparing data collected in 1986 and 1993 using similar surveys (247). Differences between menus prepared in hospitals with “Cook and Chill” or “Cook and Serve” catering systems were analyzed. Menus prepared by the “Cook and Chill” catering system met the nutritional recommendations, although the clients had fewer choices regarding serving sizes.

In-depth interviews were carried out with 26 food service providers and key informants in day-care settings for the elderly in Surrey (UK) to identify the methods providers use for food service evaluation (248). Factors influencing evaluation processes for food services were discussed to identify some of the methods currently used to measure service quality. The authors developed a benchmarking model. Identified service elements that could be used for benchmarking were food variety, food quality, cost, and environment.



*Service provider and Consumer perspectives*

A qualitative study design was used to identify the main issues concerning the quality of food service provision for long-term patients in Australian hospitals (249). Seventeen focus groups and four individual interviews with six stakeholder groups (n=98) comprising dietitians, nutrition assistants, patients, nurses, food service assistants, and food service managers were carried out. The main topics discussed were: portion sizes, preparation for eating and feeding assistance, menu variety, packaging, and the catering system. Moreover, the meal delivery system was shown to be a particularly important issue for care catering. Sheehan-Smith (250) investigated the characteristics, advantages, and disadvantages of a hotel-style room service as well as barriers and facilitators for its implementation. Hospital administrators, food service managers and room-service employees in four hospitals, but no patients, were interviewed. The main barriers to implementation that were identified were required support from nursing as well as costs. The great advantage, however, is the possibility of patients' control over their food choices.

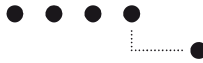
Another study in Canada analyzed the energy intakes of elderly people with cognitive impairment residing in long-term care institutions, comparing different meal delivery systems (251). One group of elderly people received meals in bulk (cafeteria style with waitress service), and the other group received meals by a traditional tray delivery system. The bulk food service and a home like dining environment led to better energy intakes in individuals at high risk for malnutrition.

In the UK, two hospital meal delivery systems (plate system and trolley system) were compared using the parameters of food safety and consumer opinion (252). Interviews were conducted and consumer opinion cards were assessed. Food samples from 27 meals -considered high-risk relative to microbiological contamination- were collected from breakfast, lunch, and supper on three consecutive days and analyzed microbiologically. At the final stage of preparation and immediately before consumption food temperatures were measured, and the time needed for the food to reach the patient was registered. The main topics of the interviews and consumer opinion cards were temperature, flavor, portion sizes, texture, and overall opinion. Chilled foods reheated with the plate system caused concern. Patient satisfaction and experience were better for the trolley system, related to the temperature and overall quality.

A qualitative study was carried out in the UK to identify factors contributing to patient satisfaction and to explain patient meal experiences (253). Focus group interviews were conducted separately with four doctors, five nurses, three ward hostesses, and ten patients together with their visitors. Open-ended interviews were conducted with the facilities manager, chief dietitian, orthopaedic ward dietitian, and chief pharmacist. Concerning the hospital food-service provision the key topics were: mealtimes; food quality, particularly the temperature and texture of the foods; and the meal delivery system. The trolley system was identified as an acceptable meal delivery system.

Another British study compared two different catering systems: "Cook and Chill" and a concept called "Steamplicity" (254). The latter applies a static, extended choice menu, revised patient ordering procedures, new cooking processes, and individual patient food heated/cooked at ward level. Semi-structured interviews were conducted with five patients, three catering managers, four visitors, four medical staff and a ward hostess. Additionally, 52 patients completed a written questionnaire. Patients preferred the "Steamplicity" catering system especially relative to food choice, ordering, delivery, and food quality. Consumption of larger portions was encouraged and thus food waste was reduced

Savghad (255) investigated various –also food service- aspects of care provided for the elderly in 18 geriatric care centers in central Hessen in Germany. A first questionnaire assessed general information regarding the types of care provision, number of employees, their training, the financial situation, availability of nutritional counseling, the range of diets available, number of meals per day, availability of food beyond regular mealtimes, place of food preparation, the number of fish meals, whether iodized salt was used, etc. A second questionnaire was used to assess the nutritional habits, asking about food preferences, wishes, and frequency of meal use. The study found that food was generally prepared in the geriatric care center's own catering facilities. Fresh vegetables and iodized salt were frequently used. Offering one fish meal per week was common. Mineral water and coffee were the most popular drinks. Most elderly individuals interviewed were satisfied with the range of meals, although a wider variety of salads and vegetables was requested. In eight centers, employees had no opportunity for further nutritional training.



## Output / outcome quality

### *Consumer perspective*

A Turkish survey analyzed how 374 hospitalized patients perceive different attributes of food and food service and determined factors which affect the level of food consumption (256). The questionnaire included issues such as the taste and smell of the food, the presentation and variety of the food on offer, food temperature, food delivery time, amount of food, cleanliness, behavior of the food delivery personnel, and food waste. The results indicated that patients who are dissatisfied with the taste, smell, and appearance of the food were more likely to be in the group of patients who ate less than 50% of the food provided.

In a UK study, satisfaction of 180 hospital patients with their foods' texture, flavor, temperature, and portion size was measured using a consumer opinion card and compared the meal delivery systems of plate and trolley service (257). The results demonstrated that patient satisfaction improved with choice at the point of consumption with a trolley system. In this context, the most relevant criteria were food temperature and texture.

Patient satisfaction concerning meals was also measured in two surveys in Germany, with the first survey carried out in winter (n=400) and the second survey in summer (n=320) (258). A standardized questionnaire was applied to obtain information about taste, quality, freshness, variety, portion sizes, and presentation of the food, psychological factors (anxiety, disgruntlement), diminished appetite, and other problems with eating. It was shown that the different factors were interdependent. Overall, food temperature was suggested to be very important. Identifying such parameters might be an effective and cost-effective way to increase patients' satisfaction in care institutions.

Rapp (259) summarized research which investigated different criteria that influence the meal experience in institutional eating locations, primarily in the care setting. The findings highlighted the importance of the atmosphere during the meal with respect to health and nutritional status, especially regarding patients' energy intake.

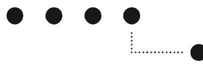
The impact of a selective menu program on patient satisfaction was investigated in a Korean health-care setting (260). One hundred thirty nine questionnaires were analyzed. Questions concerned the patient's involvement in meal planning; food quality regarding variety of meals, taste of meals, temperature of meals, nutritional balance, freshness of the food, meal attractiveness, side dishes, serving size, waste management; and service quality regarding cleanliness of the food container, cleanliness of the of the service personnel uniforms, sensitivity to patients, providing nutritional information, personnel kindness and empathy, timeliness of meal delivery and overall satisfaction. The most important issues for overall satisfaction were taste and offering nutritional information about menu items. The high usage group was more satisfied with selective menu choices than patients who used selective menu choices less frequently.

A Canadian study investigated patients' perceptions of hospital food service (261). Focus group interviews with 116 patients and nurses were conducted. Key topics discussed were food quality issues (flavor, texture, temperature, appearance), improved food freshness, appropriateness of food according to the patients'age and culture, condition and portion sizes of meals, food variety, food selection, food choices, inability to provide feedback, menu errors, accessibility of food on the units, service, tray layout, and waste. Patients held the view that food served in the hospital should exemplify a healthy diet.

### *Service provider perspective*

In Switzerland two studies were conducted to control the quality of the nutrition composition of hospital meals. In 2004 Iff et al. (115) investigated whether chemically analyzed macronutrient and energy contents of hospital meals complied with the nutritional value calculated from recipes. The data were also compared with the recommendations of the German, Austrian, and Swiss Societies for Nutrition (D-A-CH reference values). In all, 60 meals were analyzed, taking the seasonal menu plan for one year into account. The results were further compared with the chemical analyses conducted in 1996. The amount and ratio of macronutrients in the food served in 2004 were congruent with the nutritional profile calculated from all recipes. The authors concluded that periodic quality assessment is essential in hospital food preparation in order to meet nutritional recommendations and patients' expectations. In a study by Dupertuis et al. (116) the nutritional values of food served, consumed, and wasted during a 24h period were compared to patients' needs. Thus it was assessed whether the hospital meal service met patients' nutritional needs. Although sufficient food was provided, the hospital meal service did not meet the nutritional needs for more than two-thirds of the hospitalized patients. These results suggested that more efforts should be made to improve the hospital meal service to better met patients' needs as well as expectations.

In one German prison menus for 2 weeks were analyzed and results compared with the D-A-CH-reference values



(262). The analyzed menus more favorably met the recommendations than was found in an older study, but the fat and potassium contents of the menus were still too high.

Flanel and Fairchild (263) described one U.S. hospital's experience in applying quality improvement theories to inpatient clinical nutrition practice. Quality was measured by use of standardized nutrition practice guidelines. Improvements in the delivery of patient nutrition care were demonstrated, such as improved efficiencies in screening and intervention. It was shown that continuous quality improvement initiatives in the delivery of patient nutrition care do work, and that dietetics professionals can capitalize from the corresponding practice experience as a conceptual framework to justify or validate the quality of patient nutrition care in their institutions.

In three Danish hospitals a study was carried out to identify existing problems in the nutritional care of medical inpatients and to determine how the nutritional care for these inpatients could be improved and at what costs (264). Different professional groups (nursing staff, kitchen staff, clinical dieticians, catering officers, and hospital management representatives) were interviewed in focus groups or individually. Moreover, structured interviews were conducted with 75 patients. A health economic analysis was done to clarify the potential economic effect. Additionally, a literature review identified the potential for optimal nutritional care. Description of factors that promote or inhibit optimal nutritional care from the perspective of the food production (kitchen), the ward, and hospital management, as well as from the patients' perspectives led to the conclusion that all organizational levels have a significant potential for improvement.

A plate waste study conducted in an acute care hospital in Texas/U.S suggested a possibility for improving menu response and efficiency (265). The study showed how the method of plate waste could be used as a benchmark measurement of food items on offer. Three hundred eighty three trays in the first phase and 467 trays in the second phase were evaluated. Plate waste data were recorded directly on the tick sheet (scale of none consumed (1) to all consumed (6)). After the first phase some menus were replaced or modified. The data showed improvements for vegetable and bread roll consumption, but not for consumption of fruits and skim milk.

*Intervention studies*

In Germany different interventions with children aged 2 to 18 years were conducted to improve the daily diet of children in a hospital setting (266). The interventions were carried out in 2004 (n=230) and in 2006 (n=247). In one intervention, the patients obtained written information about what food they should choose. In another intervention the number of so-called healthy foods was increased, whereas in a third intervention the number of food components which are usually overconsumed were reduced in portion size. It was concluded that strictly enforced interventions were more effective than only providing information to the patient.

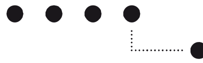
An intervention in a German hospital called "bayrisch bilanziert" (balanced à la Bavarian) provided an example for an easy way to offer wholesome menus for eight weeks. Menus were adjusted to D-A-CH reference values and also took local eating patterns into consideration. Inpatients were queried about their interest concerning this diet, and the results showed high acceptance (267).

### 4.5.4 Education/school catering

General aspects

In 2005 a European expert panel presented and discussed general research findings related to school catering in Europe (36). The main research topics were: organization of food provision at school; meal delivery concepts and outlets, e.g. lunch boxes, kiosk type outlets, vending machines, cash cafeterias, or canteens; financing of the food service; the food service operation; and consumers' requirements. Moreover, the expert panel discussed future developments of school food services, how schools could become more involved in promoting healthy eating, and how the food service can contribute in this respect. Issues receiving particular mention were: improvement of logistics; use of vending machines; nutritional evaluation of the food provision to meet standards; pricing policies; considering consumer demands; involving all stakeholders; and integrating food and nutrition topics into the school curriculum.

An earlier report had provided information on food and nutrition activities by schools involved in the European Network of Health Promoting Schools (ENHPS, see chapter 4.4.2, page 56) (268). Within the ENHPS different strategies are applied to develop a whole school approach to food and nutrition. For example: linking the school curriculum with the school dining room and other food outlets; involving students and parents; improving the design and environment of the school dining room; and collaborating with the school's catering service.



## Input quality

### *Food policies*

The most relevant research topic with respect to input quality in school catering was food policy. Most studies investigating this topic were carried out in the U.S. and Canada.

A study by French et al. (269) collected data on food-related policies and practices in secondary schools in Minnesota by interviewing 336 principals or assistant principals. Although 65% of the principals thought that a nutrition policy for high school was necessary, only 32% stated that a food policy was implemented at their school. The principles favored providing a healthful school food environment. However, 98% of the schools had soft drink vending machines installed, and 77% of principles mentioned having contracts with soft drink companies. In a second study, French et al. (270) collected baseline data from 20 Minnesota secondary schools on the food environment, particularly with regard to food policies and the availability and nutritional content of foods in the schools' à la carte areas and vending machines. The authors concluded that the availability of healthful foods and beverages in schools as well as school food policies that promoted healthful food choices among students would required greater attention.

The implementation of the Food and Nutrition Policy for schools in New Brunswick/Canada, which was proclaimed by the provincial Department of Education in 1991, was evaluated between 1997 and 1999 (37). The policy's objective was to promote good eating habits among school children. Semi-structured interviews were conducted with 50 persons involved in the policy process. The main factors influencing the implementation were described. One barrier was the sale of food for profit, although this topic was not mentioned in the policy. Opinions concerning food choices differed: some supported a wide variety of foods, others focused on providing a healthy choice. The absence of clear policy instructions was a further challenge. In addition, dietitians had very little involvement in the implementation process.

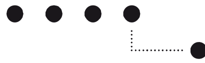
Another study assessed the effects of the Texas Public School Nutrition Policy on student lunch consumption in three middle schools ($6^{th}$-$8^{th}$ grade) from 2001 to 2006 (271). Self-reported food records on student lunch consumption and daily snack bar sales were collected, 2673 for the first year, 5273 for the second year, and 10324 for the third year. During the first year students completed food records, and in the following school year the Food Service director decided to implement local policy changes. Snack chips, candy, sweet desserts, and sweetened beverages were removed from snack bars and vending machines were removed from cafeterias. Consequently consumption of sweetened beverages and snack chips decreased, whereas the consumption of milk and vegetables increased, as did the intake of several nutrients (protein, fiber, vitamins A and C, calcium, and sodium). The authors concluded that school nutrition policies may improve the health-promoting quality of foods consumed by students at lunch. A recent review by Wharton et al. (272) provided an overview of studies and reports on the impact of changes in food-related school policies on the school revenues.

Twenty seven food service directors and six government agency employees were interviewed about their experiences with the USDA commodity food program to evaluate its impact on nutrient quality of food offered in schools (273). The main problems identified were high program-related administrative costs and food quality, e.g., few fruits and vegetables being offered through commodity distributions.

The key findings of the School Nutrition Dietary Assessment study in the U.S. and the implications for policy and practice in the National School Lunch Program and School Breakfast Program are published periodically. The latest developments were published in 2009 (274), indicating that most schools offered and served meals that met the Dietary Guidelines for protein, vitamins, and minerals. But future policy, practice, and research should focus on reducing levels of fat and sodium as well as increasing dietary fiber in school meals.

Another U.S. study examined different possibilities on how to determine the potential eligibility for free meals of students enrolled in the district (275). Information shared by state agencies allowed districts to automatically authorize students in eligible households for free meals without requiring the household to go through the entire application process. The results showed that direct certification led to a small but statistically significant positive effect on the free certification rate, i.e., program participation was effectively increased by moving to an automatic program.

In a critical review, Gross and Cinelli (276) tried to indentify the challenges school food service directors in the U.S. face in delivering healthful meals. With no regulated nutrition standards, competitive foods are relatively low in nutrient density and are high in fat, added sugars, and calories. Today's students go to school with established preferences for fast-foods, sweetened beverages, and salty snacks The ability of schools to support healthful eating is compromised in several ways: there are no national standards for school food service directors, and inconsistent nutrition messages, policies, and practices exist. This review concluded that dietetics professionals



should advocate nutrition integrity within coordinated school health programs.

The "Health Behavior in School-aged Children Study" (HBSC) in Flanders, Belgium described the availability of food items at primary and secondary schools and examined the influence of school food policy (including food offer, school food rules, nutrition education programs) and the aggregated school socioeconomic status on students' consumption of fruit, soft drinks, crisps, and sweets (277). Two hundred forty seven school principals participating in the HBSC study in 2002/2003 were asked to complete a short school policy questionnaire. The results indicated that only a few primary schools have a tuck shop or vending machine(s), however, in secondary schools -where students have larger amounts of pocket money available- vending machines were popular. Tuck shops and vending machines can be a welcome income source for schools. However, it is necessary to find the right balance between income, customer's requirements, and the provision of healthy foods. The items sold at the school were influenced by students' preferences. The availability of fresh fruits was rather limited but not that of high-fat and high-sugar items. The authors concluded that food policy may have an impact on adolescents' food habits.

A small German study evaluated legislation regulating food sales during school breaks. Staff members of the responsible department, representatives of consumer organizations, and other persons involved in this issue were interviewed (278). This study also included a situational analysis which showed that the janitors' role in food sales is small. The results demonstrated that legislation per se is of minor importance. However, schools are hiring more and more personnel who are responsible for food sales during school breaks but who require nutritional training, thus corresponding training courses should be offered to them.

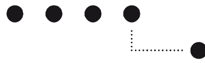
*Service provider perspective*

A cross-sectional Australian survey assessed characteristics of foodservices in Victoria government primary (n=150) and secondary (n=208) schools, including school canteen operating procedures, staff satisfaction, food policies and desired additional services. Survey participants were principals, canteen managers, and home economics teachers. Most schools wanted to improve the nutritional quality of their food services, especially via school food policies. The results demonstrated a major opportunity for professional organizations to advocate for the supply of healthier school foods (279).

A U.S. study used semi-structured interviews to explore high school personnel's perceptions of the school environment, their impact on obesity, and the potential impact of legislation regulating schools' food/beverage offerings (280). Eight school principals and seven dietitian/food service managers were interviewed. The authors identified a number of discrepancies between policy makers and school personnel. The main issues raised by the interviewees were: (1) obesity is a problem in general, but not in the particular school; (2) schools have been unfairly targeted above more salient factors; (3) attempts to change should start prior to high school; (4) students' health is one priority area among multiple competing demands, with academic achievement having top priority. With respect to food service, the specific issues raised were: (1) obesity is not a problem at the specific school; school food service is not the cause; (2) the food offer is preparing students for the real world, i.e., providing choices and the need to maintain high participation rates; hence both healthy and unhealthy options are available; (3) à la carte service keeps lunch participation high and prices low but should be used as a supplement, not a replacement for the main meal; (4) vending provides the school with additional revenue; vending is not part of food service and is appropriate if it does not interfere with the lunch program. All of the above issues may inhibit collaborative efforts for health promotion in schools.

For understanding barriers to implementing a quality lunch program and a nutrition education program in the U.S., 55 superintendents, principals, food service directors, nurses, and health educators were interviewed in a qualitative survey (281). They were asked about potential roadblocks in implementing the quality lunch program in their school and resources needed for implementation of the nutrition education program. It was found that successful implementation of the programs requires –apart from collaborative efforts between school administration and staff- the support of parents, the community, and the mass media. An additional survey of students and parents could have provided a more comprehensive understanding of these issues.

As mentioned earlier, French (240) summarized several studies designed to assess the influence of competitive pricing on eating behavior. One of the studies investigated the impact of a 50% price reduction on the consumption of fresh fruit and baby carrots in two secondary school cafeterias. The results indicated that during the price reduction period sales of fresh fruit increased fourfold and sales of baby carrots increased twofold, but after termination of the price reduction sales returned to baseline levels. In another two-year trial, 20 secondary schools were randomly assigned to an environmental intervention or a control group. In the intervention schools, the availability of lower-fat foods was increased and student-based promotions were implemented. In the first year the rate of purchase increase for lower-fat foods was 10% in the intervention schools as opposed to a 2.8%



decrease in the control schools. However, in the second year there was a 33.6% increase in the intervention schools vs. a 22.1% increase in the control schools, thus providing evidence of secular trend.

*Consumer perspectives*

A German study investigated if it is possible for low-income families to implement recommendations for a healthy diet (282). The findings highlighted that promotion of a healthy diet needs to account for social inequalities.

In an Irish study the impact of the eating location on the quality of the diets of 594 children 5-12 years old was investigated (283). Intakes at home were compared with intakes outside the home by using a seven-day weighed food record. The results indicated that the main focus for improving diets of Irish children should be placed on the home environment rather than the food service sector.

## Process quality

A study by Connors and Simpson (284) identified the impact of different menu planning concepts on the nutrient composition of Texas/U.S. school lunches. From 1999 to 2001 data on 120 meals were collected and analyzed. Four concepts were evaluated: Nutrient Standard Menu Planning (NSMP), Assisted Nutrient Standard Menu Planning (ANSMP), and traditional and advanced Food-based Menu Planning. The NSMP and ANSMP seemed to be more successful in reducing the fat content of lunches, but not all schools were in a position to adapt to the computerized analysis required by these menu planning options. Schools currently using the food-based planning concepts should consider the greater health-promoting potential of the enhanced FBMP.

The evaluation of a school catering concept on the basis of “Cook and Chill” was performed in Germany (285). The following aspects were considered via a checklist: quality and quantity of offered foods and drinks, compliance with hygiene requirements, economic sustainability, number of staff education and advanced training courses, and communication with guest and other service activities. The complementary on-site assessment included compliance with hygiene requirements, regeneration of meals, and the service system. For evaluation purposes three criteria were defined: (1) adherence is desirable; (2) fundamental essential questions, i.e., at least 50% have to be answered positively; (3) legal regulation. i.e., 100% of the questions have to be answered positively. In 16 schools the principals, teachers, and kitchen staff were interviewed and an additional school inspection was carried out. The findings suggested that menus could be improved and the hygiene concept was correctly applied; however, execution of the hygiene requirements showed some weaknesses. Altogether, the evaluated “Cook and Chill” based school catering concept seemed feasible and practical to apply.

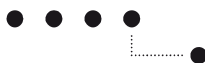
The prevalence of central kitchens that use either “Cook and Chill” or “Cook and Freeze” catering systems in school food service settings was assessed by interviewing (via Computer Assisted Telephone Interviews) a total of 353 food service directors, managers, and supervisors working in different American school districts (286). Most schools had on-site kitchens (45%), followed by those schools having food delivered by a central kitchen to a number of satellite locations with (41%) or without (14%) on-site food preparation. Around four fifth of those school districts reported hot-food preparation using hot-food delivery to satellites and around one fifth of districts specifically referred to the use of “Cook and Chill” or “Cook and Freeze” catering systems.

A critical review of plate waste in School Nutrition programs, particularly the U.S. National School Lunch Program, provided information on the level of plate waste in these programs, factors that contributed to plate waste and strategies that may reduce waste (287). Possible strategies for reducing plate waste were summarized, such as rescheduling lunch hours, improving the quality and condition of food, tailoring serving sizes to students’ appetites via self-service, and providing nutrition education.

The effects of changes in nutrition standards on school revenue and lunch participation were retrospectively investigated at a middle school in San Francisco (288). Data from a case study as well as additional district data from the 2002-2003 school year (before implementation of the nutritional changes) were compared with data from the 2003-2004 school year. The results suggested that provision of healthy menu options increased student participation in the federal school lunch program.

## Output / Outcome quality

The following UK study highlights the impact of a “traffic light” nutrition tool in a primary school (n=69; 5-7 years) (289). The tool was developed and was then tested three weeks before and three weeks after nutrition education. Twenty seven core foods were presented pictorially to children and a computer program allowed them to position



each of the 27 foods into one of three green, amber and red colored circles. Knowledge improved significantly after nutrition education. Positive attitude scores and asking behavior for “red” food decreased, but disappointingly this also occurred for the “green” food.

Teenagers’ attitudes towards nutritional labeling and the prompted effects on food choice with respects to school meals were reported from a small-scale survey among 227 adolescents age 11 to 16 years in the UK (290). Their nutritional knowledge towards fat, attitudes to nutritional labeling of school food, and their intended change in eating behavior prompted by nutritional labeling were assessed. The results indicated that the provision of simple nutritional labeling information on school meals in secondary schools cash cafeterias could have a positive influence on adolescent’s choices of fat in offered school food and be a valuable educational resource to help in the long-term aim of reducing fat consumption.

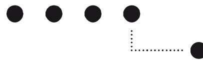
*Menu analysis*

The quality of school lunches was assessed in 20 secondary schools in Baden-Württemberg by using a checklist developed in Germany to evaluate quality standards for school meals (291). Observations of school lunch participants and discussions with the responsible persons, qualitative assessments, and calculation of the nutritional composition of the menus for the previous 20 days indicated that the situation for midday meals was heterogeneous. To some extent, the offered meals clearly deviated from set quality standards. The author concluded that more attention must be paid to quality management and further investigations must assess the practicability of the present quality standards.

Two similar studies were conducted in the UK. One study compared the lunchtime food provided to schoolchildren over a five-day period with the nutritional standards, and examined the influence of children’s food choices on nutrient intakes (n=74; 11-12 yrs). The majority of children did not meet the recommended lunchtime nutrient intakes, especially for micronutrients (292). The other study analyzed the contribution of school meals to daily food consumption and nutrient intakes of 1456 young people aged 4-18 years (293). For this purpose a cross sectional analysis of seven-day weighed inventory food records was carried out. In addition a secondary analysis of the National Diet and Nutrition Survey of Young People from 1997 was carried out and findings about the contribution of school meals and of meal choices compared with the 2004/2005 data collected in English primary and secondary schools. Food consumption data were further compared with the “Balance of Good health” food guide and nutrient intake data was compared to the Caroline Walker Trust (CWT) guidelines. The school meals did not meet the CWT guidelines for healthy eating. The study showed that the implementation of food-based guidelines for school meals in 2001 did not improve the food choices in school meals. Another survey was carried out in 2004 to assess the compliance with UK standards for school meals and to measure food consumption in 79 secondary school children (131). All food and beverage items offered each day were recorded for 5 consecutive lunchtimes, and compliance with the National Nutritional Standards was assessed at the beginning and 10 minutes before the end of service. The individual food choices of 5695 pupils were also recorded. A number of ways that the lunchtime dietary choices of secondary students can be improved were presented. Healthy choices should be provided by manipulating recipes and presenting meals the way that students prefer (e.g., fast-food-style, or vending machine).

A recent study assessed the use of digital photography as a technique to measure what students in two elementary school selected and actually consumed from school cafeteria meals (294). Digital photographs were taken of labeled trays before and after ever lunches served to elementary students over four lunch periods. It was shown that digital photography offers researchers and school food service staff a highly accurate and cost-effective tool for measuring actual consumption of school cafeteria meals. The use of this method is limited to school-served meals. This method was not considered practical for meals brought by students from home because of the difficulty of taking pictures “before” consumption and the lack of standardized serving sizes. Moreover, this method did not allow accurate estimation of condiment use served in individual packets, including ketchup, salad dressing, dipping sauce for chicken nuggets, and spreads for bread/rolls.

In 1992 and 1996 two surveys on nutritional quality of meals offered in French secondary schools showed a decrease in food quality over time (178). The analysis of 2000 meals in 20 educational establishments was compared to nutritional recommendations. Proteins and lipids were consumed in excess, in contrast to carbohydrates and calcium. Energy content rates and iron concentration were similar to lunch recommendations. In the French national food consumption survey “INCA” lunch consumption during one week was assessed for 887 children (3-14 yrs) (181). Socio-demographic and lifestyle factors and attitudes towards food were studied according to the number of school meals they had. Children who had at least four school meals were older, resided more frequently in Western France, and were more often from households reporting higher incomes. A second study analyzed school meals consumed by children younger than 11 years (182). School meals were rich



in fat and sodium but still contained more dietary fiber, calcium, vitamins C and E, retinol, and ß-carotene than lunches consumed outside the school. Greater food diversity was observed in school meals. Fish, green vegetables, and fruits, but also cake and pastries, sauces and dressing, were more frequently reported in school lunches than in lunches taken elsewhere.

In Germany a study explored the actual nutrition situation in day-care-centers for 4- to 6-year old children (295). Standardized interviews were carried out with the management of day-care centers, and parents (n = 4082, response rate 49%) completed a self-administered questionnaire. Three-day recalls of the contents of the children's lunchboxes were also included and the menus for 4 weeks were analyzed. Often the recommendations for an optimized mixed/balanced diet were not realized. Meat dishes were offered frequently, salt-water fish however irregularly, and fresh fruits and vegetables were included rarely on the menus. In general the authors concluded that the food offered in German day-care-centers should be improved with respect to a balanced energy and nutrient profile.

*Students, parents or teachers perspective*

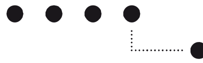
A study examined the satisfaction of high school students in Korea with different types of food-service management programs (296). Two thousand fifty students were enrolled in 30 high schools. Data regarding the following aspects were collected: food (taste, appearance, nutritional balance, quality of ingredients, temperature, amount), menu (variety, seasonal items, regular alternation, price), hygiene (food, utensil, table & chair, dining area, tray staff), service (courtesy of staff, communication with staff, prompt service, atmosphere of the dining area, providing menu information), as well as food service operation management (internally managed food service, contracted-delivery food service, contract conventional food service). It was shown that high school students` satisfaction with food service quality was influenced by the food service management type. Students who were served by contract-conventional management conferred a statistically significant higher performance score to all of the performance attributes than the students served by other types of food service management.

Also a U.S. survey explored students satisfaction with high school food service (n=1823; 13-19 years) (297). Questions concerned food variety, food quality, food service staff, aesthetics of the serving and dining area, and demographics. The variables that were most highly correlated with overall satisfaction were the variety of food offered, food flavor, attractiveness of food on the serving line, courteousness of the staff -smiling and greeting students-, quality of food choices, existence of choices allowing students to meet cultural and ethnic preferences, and quality of ingredients. Food variety was the overall best predictor of satisfaction. Another U.S. survey investigated whether an increased number of fruit and vegetable menu choices at school lunch increased middle school students' (n=934; grades 6-8) overall opinions of school lunches (298). Research questions included what factors are used by students in deciding what to eat at school, and which factors affect students' overall opinions of school lunches. The five most important factors regarding what to eat at school were: food taste and appeal, hunger, healthiness of food, and the amount of food.

Twenty one focus group discussions (n=141; 12-19 yrs) were conducted in the U.S. to assess adolescents' perceptions about factors influencing their food choices and eating behavior (299). The following factors influencing food choice were identified: hunger and food cravings, appeal of food, time considerations of adolescents and parents, convenience of food, food availability, parental influence on eating behaviors (including the culture or religion of the family), benefits of food (including health), situation-specific factors, mood, body image, habits, costs, media, and vegetarian beliefs. Major barriers to eating more fruits, vegetables, and dairy products on the one hand, and to eating less high fat foods on the other, were also identified. The main barriers were the lack of a sense of urgency about health in relation to other concerns, and taste preferences for other foods. Improvement of suggestions for helping adolescents eat a more healthful diet included the following aspects: make healthful food taste and look better; limit the availability of unhealthy options; make healthy food more available and convenient; teach children good eating habits at an early age; and change social norms to make it "cool" to eat healthfully.

In a UK study 188 school children aged 14-15 years were presented photographs of dishes. They were asked to select the photographs showing the meal they would be most likely to choose and the meal perceived to be the healthiest. They also gave reasons for their choices. The nutritional implications of their food choices was based on preferences rather than perceived healthiness. The most important factors influencing their choices were taste and convenience (300).

In Germany Peischl (301) explored the objective and subjective facts influencing the satisfaction of students, teachers, and parents regarding the catering system at their school. The basic information on the present catering systems was determined by problem-centered interviews with the headmaster/-mistress or the head of the cafeteria. In addition a group interview was conducted with three representatives of students, teachers, and



parents. The results suggested that, independent of the particular catering system, a good relationship between students, teachers, and parents is fundamental. It creates a familial atmosphere which makes the students feel comfortable. Freshly prepared food was preferred but it had to be appropriate for children. Long queuing lines for meal delivery and high meal prices had a negative effect on the satisfaction of the persons involved. Another German study used observations as well as questionnaires to collect data from students and supervisors regarding school lunch atmosphere (302). The following factors were shown to be related with “atmosphere”: taste, smell, visual appearance of the meal, hygiene, interior design including color, light, noise, odor, temperature, time and distractions, and social components.

A representative study conducted in Germany used standardized personal interviews with 539 students in all-day schools. Data on meal offers, perspectives concerning the meals, and use of the food service were collected. In general the student’s meal assessments were good; however, meal frequency decreased with increasing age (303).

Research activities in the U.S. assessed opinions and beliefs of parents and teachers of middle school students regarding the school food environment (304). Teachers (n=490) and parents (n=350) were questioned via mail about adolescents’ eating practices, food choices at school, and school-related food policies and practices. The findings suggested that parents and teachers were concerned about nutritional health of the students and the “state of health” of the school food environment.

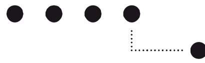
*Service provider perspective*

A U.S. study assessed job satisfaction levels and perception of service quality of university food service employees and determined whether there was a relationship between satisfaction levels and service quality perceptions (305). Data from 76 full-time food service staff were collected by a questionnaire comprising three parts: a job satisfaction survey, demographic information, and service quality-related factors. The results suggested that the employees’ education level had a considerable impact on the perceived importance of service quality. The nature of the work also had a significant impact on the perception of service quality, although overall job satisfaction did not appear to affect service quality perception. The authors concluded that the management must create a climate for service in order for staff employees to deliver effective services, and the employees must be provided with the knowledge and techniques that will assist them in providing quality services.
Another U.S. survey assessed perceptions and behaviors of 235 high school food service staff members about their contacts with students during school lunchtime (306). In addition, food service staff-student observations were recorded using a checklist. The specific aims included assessing employees’ perceptions about their interactions with students and their influence on students’ food choices. The results showed that most food service employees believe that schools have a responsibility to provide healthful foods to students. The majority of employees indicated that they were comfortable giving recommendations to students regarding foods on offer. However, only about one fourth of employees believed their suggestions had an influence on students’ choices. Observations of staff-student interactions showed that the staff rarely made suggestions to students regarding food purchase choices.

Data about school caterers’ attitudes towards providing healthier menus (n=152) were collected in the UK via questionnaire (307). Attitudes were analyzed using the “Theory of Reasoned Action”. The most important predictor of intention-to-provide more healthy menus was what the caterers believed others would want them to do, especially parents. Caterers were also positive about their role in providing a healthy diet. They thought that they could influence pupils’ choices to some extent.

A U.S. study published in 2006 was designed to identify factors that predict the offering and sale of competitive foods, as well as factors that predict average daily participation in school lunch (308). Two hundred twenty eight food service directors participated. Data were collected on background information about the school and the school food service program; sales of food through vending machines; advertising of foods in the school and on the school campus; sales of à la carte food items; sales of food through student stores and through clubs; school policies related to the sale of competitive foods and demographic information. The results indicated that the percentage of students eligible for free or reduced-price meals and timing of lunch were significant predictors of à la carte sales. Enrollment for school lunch was negatively associated with the number of vending machines per student and was inversely related to average daily participation in school lunch.

The “California High School Fast Food Survey” assessed the prevalence of fast food offers on California high school campuses, student’s access to healthy food at school, the types of fast food being sold on California high school campuses, the factors that influence such sales, and the economic and policy issues associated with them (309). The study included a literature review, a self-administered survey to 323 district-level food service directors with a high school in their district, and a follow-up telephone interview with 50 food service directors.



The results indicated that over the last decade, fast foods have become a staple on high school campuses. In this context food service directors are hard-pressed to strike a balance between providing adolescents with healthy food choices, satisfying their customers, and running a financially stable business.

*Health promotion program – student's perspectives*

A study in Australia aimed at determining the efficacy of a breakfast promotion intervention based on the "Health Promoting Schools" process; 792 students (11-12 ys) in 13 schools participated (310). The intervention schools formed working groups and discussed their specific breakfast issues, and then developed, implemented, and evaluated their action plans. A survey was employed to describe breakfast eating habits and students' knowledge at baseline and at follow-up. The use of the Health Promoting Schools approach to address the quality of breakfast consumption by upper primary school children was recommended as an effective methodology.

Through the establishment of School Nutrition Action groups which give students more control over food provision in their school, corresponding changes in the food choices of adolescents at schools in the UK was investigated (311). Twelve schools participated in implementing School Nutrition Action Groups (n=1630) and additional data from 12 control schools (n=702) were collected. The results demonstrated a statistically significant increase in the sales of main meals and snack meals in the intervention schools compared to the control schools. The authors suggested that the School Nutrition Action Groups may be an effective and relevant way of changing students' food choices in school. They allow students to define what they want to be changed in their school and to determine their own solutions.

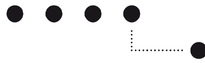
An environmental intervention intended to increase fruit consumption among elementary school children participating in the U.S. National School Lunch Program has also been reported (312). In a pilot study, the influence of a verbal prompt on school lunch fruit consumption was investigated. Children's fruit consumption was measured in two schools through direct observations. In the intervention school cafeteria workers provided a verbal prompt "Would you like fruit or juice with your lunch?" as the children stood in line in front of the fruit serving options. The results showed that nearly 70% of the children in the intervention school ate a fruit serving at lunch, while in the control school fewer than 40% did so.

Changes in the nutrient content of school lunches were assessed in the "Coordinated Approach to Child Health (CATCH) - Eat Smart" food service intervention in the U.S. (313). Three times, in fall 1991, spring 1993, and spring 1994, school menu recipes in 56 intervention schools and vendor product information from intervention and 40 control schools were collected on five consecutive days to analyze the nutrient content of the school menus offered. The CATCH - Eat Smart intervention successfully lowered the total fat and saturated fat contents of the school lunches offered, while maintaining the recommended amounts of calories and essential nutrients.

Data from the U.S. TEENS school-based intervention study in Minneapolis (1998-2000) were analyzed to examine the impact of increased availability of fruits, vegetables and lower fat foods in homes and schools (314). Students from eight intervention and eight control schools participated. In addition, the researchers conducted parent surveys and described the school food environments. The intervention included classroom-based curricula, family newsletters, and changes in the school food environment that included more healthy food choices. The results demonstrated that, compared to the control schools, the intervention schools offered and sold a higher proportion of healthier foods à la carte, but no effects were seen on fruit and vegetable consumption. The authors concluded that the training of food service staff, including issues such us how to identify healthier à la carte items and how to place and promote items on the à la carte menu, was needed.

One objective of the "European Pro Children Study" was to evaluate the effects of a specific intervention on schoolchildren's fruit and vegetable intakes after one and two years of follow-up (315). The intervention combined a fruit and vegetable curriculum with efforts to improve fruit and vegetable availability at schools and at home. Positive intervention effects on fruit and vegetable intake resulted both at schools and outside the schools. The authors concluded that the Pro Children intervention might be a promising means to especially promote European schoolchildren's fruit intakes. Other strategies that have an impact on vegetable intake are still needed.

A study in the Netherlands assessed the behavioral effects of a school-based healthful diet promotion intervention implemented in lower vocational schools (316). The method was described as a cluster-randomized pre-test-post-test experimental design. Ten experimental schools with 13 teachers, 37 classes, and 879 students, and eight control schools with 10 teachers, 31 classes, and 734 students participated. The overall aim of the program was to increase the consumption of fruit and fruit juice, to decrease the consumption of high-fat snacks, and to increase breakfast frequency and quality. The program consisted of eight school lessons lasting 50 minutes each using a combination of materials, e.g. postcards and posters, a "survival kit" (a lunchbox with three healthful food items and a flyer), a magazine, a video, a website, a take-home bag with newsletter and food items for the parents, taste-testing of various products, and a manual to instruct the teacher in providing the different lessons.



Students completed a baseline questionnaire in the classroom and a post-test questionnaire three months later. The expected effects on all outcome indicators were not found, but the total pattern of results indicated that this intervention showed an additional value/promise over existing curricula. To improve effectiveness and prevent negative effects, the authors suggested that some parts of the program should be revised. Additional research is needed on the long-term effects of such programs.

Another small intervention study carried out in the U.S. examined whether a simple intervention -providing a low-fat snack to elementary school children between dismissal from school and consumption of the evening meal-would affect the children's 24-hour energy and fat intakes (317). Moreover, the study aim was to determine whether the snack affected the dietary intakes of sodium, calcium, and iron. Twenty eight males and 39 females aged 11-12 yrs participated. Normal *ad libitum* snacking patterns were observed for one month before and after the intervention period. During the intervention period participants received an 8 oz portion of a low-fat, fortified ice cream. Energy and nutrient contents of diets were measured by a previously validated, modified 24-hour recall method once per week during each 4-week period. The low-fat snack improved the nutritional quality of the afternoon snack composition. The percentages of total energy and protein increased and percent fat intake at snack time decreased.

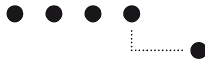
The primary purpose of a case study carried out in Edinburgh/UK was to investigate the success of a healthy eating program (318). The program integrated healthier meals into the mainstream food service, reduced the amount of fast-food served, and encouraged the children to drink (more) water throughout the day. The primary methodology for this study involved a case study carried out within one primary school, where the school meals were prepared on an in-house basis. The recipes of served meals were nutritionally analyzed, semi-structured interviews with food service staff were conducted, and a small observational study of the food choices of individual students was made. The results identified successful ways in which healthy eating might be promoted within schools. The authors concluded that staff enthusiasm, parental involvement, and the involvement of the children themselves were likely to be keys to success.

Another intervention study conducted in Maine/U.S. employed a prospective quasi-experimental nonrandomized design to analyze how to make healthier snacks and beverages in vending machines and à la carte programs in main public high schools available (319). Four intervention schools (309 students) and three control schools (272 students) participated. The baseline nutrient contents and sales of all competitive foods and beverages were assessed to develop the guidelines for changes in the four intervention schools. Student volunteers at all seven schools were measured for height, weight, diet quality, and physical activity level to assess the impact of changes to the nutrition environments. Baseline data were collected in the 2004spring semester. Nutrition changes began to be implemented in the 2004 fall semester. Follow-up nutrition assessments and student data collection were carried out in the 2005 spring semester. It was found that healthy changes in vending machines were more easily achieved than those made in the à la carte programs. Technical assistance and ongoing support were essential for successful implementation of this intervention.

*Health promotion program – service provider perspectives*

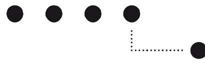
The "Peterborough Schools Nutrition Project" is a multiple intervention program in the UK with the objective of improving school-based eating in secondary schools (n=680/697/1292 in three secondary schools) (320). School Food Groups were set up in two intervention schools and all catering interventions were auctioned via School Food Groups. A School Food Group consisting of staff, caterers and health professionals, provided a forum for initiating positive changes in the food provision and eating environment within the school. The areas targeted were the establishment of communication networks, pupils' involvement, food availability and the eating environment. The following monitoring methods and frequency assessment over two years (six terms) were implemented: collection of food production sheets with numbers of food portions produced from each head cook (one eight-week monitoring period per term and per school), and observation of frequency of food categories consumed by individual students at lunchtimes. Overall, there were no statistically significant changes in school-based eating at the end of the study. Nevertheless, some positive changes were made, but were not sustained, emphasizing how difficult it is to obtain sustained dietary changes in the eating habits of secondary school children.

Factors influencing the implementation of the CATCH - Eat Smart School Nutrition Program in Texas were investigated by sending a mail survey to school food service personnel (n=85) (321). The main issues investigated were demographics, attitudes, beliefs and self-efficacy, the number of CATCH training sessions attended during the past 2 years, and perceived barriers to implementation. Implementation of the CATCH Eat Smart School Nutrition Program was further evaluated via a checklist that assessed participants' adherence to 16 CATCH - Eat Smart guidelines. The following factors were significantly associated with the percentage of implemented CATCH



- Eat smart guidelines: usefulness of CATCH in meeting requirements for coordinated school health programs; school food service personnel's satisfaction with food prepared according to the CATCH - Eat Smart guidelines; usefulness of CATCH in facilitating interschool communication about children's health; and perceived student satisfaction with the food made using the CATCH - Eat Smart guidelines. Brown et al. (322) analyzed the net benefits and the cost-effectiveness of the CATCH intervention program using two standard economic measures. Cost-effectiveness ratios from a societal perspective were estimated, revealing the intervention costs per quality-adjusted life years saved. The net benefit of CATCH was estimated as well by comparing the present value of averted future costs to the cost of the CATCH intervention. CATCH was shown to be both cost-effective and to provide a net benefit.

This comprehensive overview of research activities in communal catering underscores the fact that successful implementation of health-promoting food services requires substantial cooperation among all the concerned parties and stakeholders. The absence of specific institutional food policies and insufficiently trained staff were identified as important barriers with respect to the implementation of nutritional quality standards in communal catering settings. The roles nutritional/dietetic professionals can play in this regard were demonstrated. The economic and ecological sustainability of quality standard implementation remains however an issue requiring further investigation.



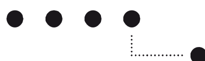
# 5 Discussion

Evaluating the data presented in the previous chapters on quality standards and their implementation in communal catering as well as on international research activities in this field, it is clear that communal catering in Switzerland is less developed than in other countries in several respects.

Although the current Swiss food and nutrition policy (3) does not consider communal catering as a specific area of action, the recently launched “National Program on Nutrition and Physical Activity 2008-2012” (108) now offers the opportunity for coordinated health-promoting activities. As shown in chapter 4.4 on Swiss communal catering, many institutions in this quite heterogeneous sector are already engaging in healthy food provision for their customers. They mostly refer to the food guide pyramid of the Swiss Society for Nutrition (SSN) as a tool for planning a balanced diet. However, the underlying implementation of the SSN food guide pyramid in communal catering practice is not always obvious. In this regard the development of unique nutritional quality standards, based on the SSN food guide pyramid, will put the existing approaches on a common evidence-based and practice-oriented basis. Such nutritional quality standards should definitely build the core of healthy catering. However, they must be put in a broader context of health promotion. The international research review (see chapter 4.5) showed many other important factors that need to be considered when defining quality standards in health-promoting communal catering. Specifically, the most important factors are: offering a wide variety of foods to choose from, the meal’s sensory attributes (in particular temperature, texture and taste), and the social interaction with the catering staff. In addition, preliminary studies indicated that a comfortable environment and atmosphere are becoming increasingly important factors and should be further investigated for their health-promoting influence on communal catering. In care catering, considering hospitals and homes, especially the food service style (e.g. trolley system, hotel style room service, etc.) is becoming a more and more relevant quality criterion. Furthermore, quality management in communal catering and in health promotion is always also related to factors of ecological, social, and economic sustainability.

Overall, many of the identified national and international activities in communal catering and the related research are focused on education catering, but there are still specific activities such as catering for the youngest age group (preschool-age toddlers and children) that need to be investigated more extensively. The national prevention program Suisse Balance (www.suissebalance.ch) -which so far exclusively supports nutrition and physical activity projects and activities in children and adolescents- provides an already rich data source. However, health-promoting activities in business and care catering should be considered in an equal manner and more specific research is needed in these catering categories. As a matter of principle, Switzerland is internationally recognized for its work on quality in health promotion. The quality criteria “quint-essenz” by Health Promotion Switzerland (91) thus offer a good basis for evaluating health-promoting nutritional activities/measures or projects in all three communal catering categories.

A look across different countries showed that due to their cultural, political, or economic differences national quality standards for communal catering cannot always be directly applied. However, reported experiences with non-compulsory and compulsory food-based and/or nutrient-based standards in communal catering provide valuable insights into what may or may not work well. One of the most important lessons to learn may be to run a step-wise “Good Practice” approach together with the field and stakeholders, developing, testing, and finally introducing health-promoting quality criteria.



# 6 Conclusion - Outlook

The establishment of quality standards in Swiss communal catering will be based on a comprehensive approach which takes into account basic strategies and action areas for health promotion. The corresponding practical quality standard system will consider requirements and expectations of key players (supplier, caterer, customers) and stakeholders across communal catering categories and public health.

Based on the present report and a workshop with the project's Advisory Board, the following four quality standard topics were identified:

1. *Nutrition management*: range of foods and beverages offered and their properties
2. *Relationship management*: living environment (infrastructure and design) and social interaction factors
3. *Interface management*: management of potential conflicts of interest
4. *Health promotion practice*: principles of health equity, empowerment, setting approach and participation (cross-sectional quality standard)

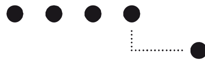
Figure 17 gives a preliminary idea of the criteria grid to be developed. It summarizes the stated standards and related criteria and indicators. It was recognized that the aspects of economics and ecological sustainability concern all quality standards and have to be considered across all quality dimensions, as indicated in the grid.

| STANDARD (Dimensions) | TOPICS | INPUT/STRUCTURE | PROCESS | OUTPUT (Result) | OUTCOME (Impact) |
|---|---|---|---|---|---|
| 4 Health promotion practice | 1 Nutrition management | Criteria 1 to X | Criteria 1 to X | Criteria 1 to X | Indicators:<br>• Changes in biomedical parameters<br>• Changes in health determinants: life style and living environment<br>• Changes in individual characteristics, skills, social norms, practices etc.<br>• Perception of requirement fulfillment (survey) |
| | 2 Relationship management: | Indicators a-z | Indicators a-z | Indicators a-z | |
| | 3 Interface management | ECONOMICS criterion<br>SUSTAINABILITY criterion | | | |
| | | Indicators a-z | Indicators a-z | Indicators a-z | Criteria:<br>1 Health outcomes<br>2 Intermediate health outcomes<br>3 Health promotion outcomes<br>4 Satisfaction |

Figure 17 Suggested criteria grid by quality dimensions

Taking into account experiences from other countries, we suggest implementing the new standards step-by-step as follows.

1. The communal catering sector (including customers) has to get accustomed to the proposed standards and be convinced to actively participate in the presented "Good Practice" approach. Continual quality improvement in health-promoting communal catering can begin only after steadily increasing participation in the planned surveys.
2. The overall support by other interested parties (stakeholders) is crucial for the success of the "Good Practice" strategy. Specific expectations and attitudes towards eventual national implementation of the suggested quality standards will be investigated in focus groups and individual interviews.

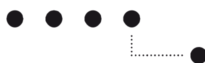


3. The feedback from the field combined with further research and development activities will allow customizing the quality standards to actual needs. Issues to be explored in greater detail are for example:
   - high priority nutritional issues on the public health agenda, such as the population's salt consumption from different sources (also communal catering);
   - economic and pricing issues (cost-effectiveness; cost-benefit) that arise with implementation of new quality standards;
   - basic facts, such as a lack of catering structures in the educational system across Switzerland.

A compulsory or (partial) optional implementation of the standards in order to allow for the anticipated health outcomes can only be rationally discussed and agreed upon when the outlined stepwise process has been run through and evaluated. With regard to implementation control, existing and widely accepted cantonal control structures in communal catering should be taken into consideration. Furthermore, the issue of a quality award (certification or accordance of a hallmark) should be coordinated nationally to avoid an uncontrolled growth of labels attributed across the sector.

Overall, the introduction of comprehensive and complex standards triggers the need for (continuous) professional training and support services. This requires the development and implementation of practical training programs, related materials and structures, as well as the availability of qualified nutritional instructors and consultants. This implies availability of sufficient financial but also skilled human resources.

In the long-term an ongoing systematic assessment of the communal catering sector in Switzerland should be established in order to monitor the successful implementation of applied quality standards. Such a monitoring system can capitalize on the instruments developed in the present research project.



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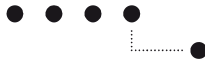

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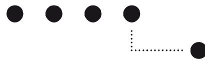

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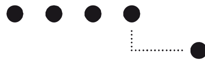


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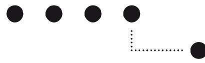


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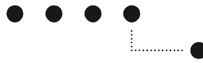

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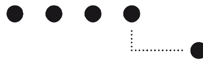

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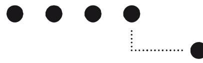


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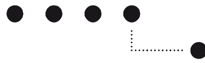


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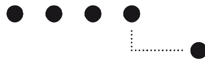


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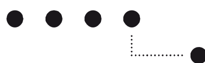

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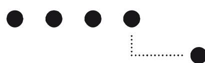

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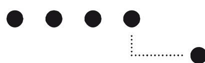

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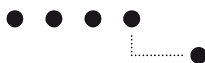


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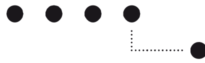

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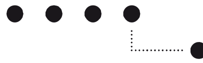

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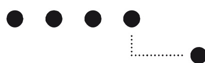

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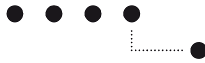

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