



Promotion of food literacy in older adults in the community

Participatory intervention development within the “GUSTO” project

Carola Pentner, Felix Zastrow, Holger Hassel

Abstract

Food literacy (FL) as part of the concept of health literacy (HL) is limited in older people. The project "GUSTO" aimed to promote the health literacy and in particular the food literacy in people aged 65 and older through a participatory intervention. This article presents the development of a group program with groups of seniors working independently. For this purpose, a literature review was conducted on the nutritional situation of older people. The results were compared with a competence scheme for FL and the concept of the "self-perceived food literacy scale". This led to topics for focus group discussions, which were worked on with participants. The answers were summarized and systematically organized. They are content-related and methodological building blocks for intervention development. With the help of a participatory approach, the needs and interests of the target group can be identified and taken into account for the intervention.

Keywords: food literacy, health literacy, participatory intervention development, older adults, nutrition education

Introduction

The average age of the German population has risen significantly in recent years. This is accompanied by an increase in life expectancy [1]. Healthy aging seems to be supported by a pronounced food literacy (FL). FL is considered to be a central area of health literacy (HL) (see [2]). The term FL encompasses the ability to manage everyday eating and nutrition in a self-determined, responsible and enjoyable manner [3]. In this context, two components of nutritional knowledge are differentiated: The factual, i.e. theory-based nutritional knowledge (e.g. knowledge about the ingredients of foods) seems to play a lesser role for healthy nutrition behavior than practical nutrition knowledge (the ability for concrete implementation in everyday life) [4].

According to the model of Vidgen and Gallegos [5], FL addresses the following four basic components:

1. planning and management
2. selection,
3. preparation and
4. eating with pleasure.

In addition to HL, which is limited in 65% of the elderly in Germany [6], FL is also limited in this group of individuals: 42.5% of a total of 402 respondents in the 60–69 age group had only inadequate or problematic FL [7].

To date, there are only a few participatory developed and evaluated municipal offers for this target group to promote HL and FL (e.g. [8, 9]). The project "GUSTO – *Gemeinsam gesund älter werden mit Genuss* [Growing older together in a healthy way with enjoyment]" of the University of Applied Sciences Coburg lasted from May 2019 to March 2022 and was funded under the health initiative *Gesund. Leben. Bayern.* [Healthy.Living.Bavaria.] of the Bavarian State Ministry of Health and Care. It was developed with the aim of promoting HL and in particular FL in older people. Through the participatory form of intervention devel-

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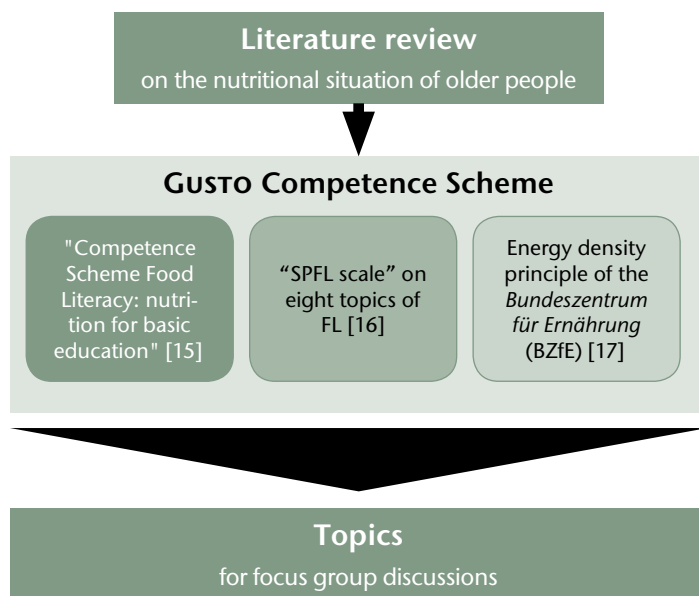


Fig. 1: **Methodological steps of intervention development**
FL = food literacy, SPFL = self-perceived food literacy

opment, concrete needs for support and interests of the elderly with regard to FL and nutritional behavior were analyzed. This was also intended to promote acceptance of the program among the target group. On the basis of the nutritional situation of the target group and the results of the focus group discussions (FGD), a group intervention was developed including a module manual and qualification for peer moderators.

Research Question

How can a municipal intervention for the promotion of FL be developed participatively on the basis of the needs and interests of older people?

Methodology

The nutritional situation of senior citizens in Germany was assessed on the basis of the 12th and 13th Nutrition Reports of the *Deutsche Gesellschaft für Ernährung e. V.* [German Nutrition Society] [10, 11] as well as the nutrition reports 2016, 2017, and 2019 of the German Federal Ministry of Food and Agriculture [12–14]. On this basis, behavioral targets were defined.

To answer the question which knowledge and skills are helpful in promoting the targeted behavioral goals, they were assigned to the individual domains of "Competence Scheme Food Literacy: Nutrition for Basic Education" by Johannsen et al. [15] (example in ♦ Table 1). For content differentiation, the scheme of the "self-perceived food literacy (SPFL) scale" by Poelman et al. [16] was also taken up for the following eight FL topics:

1. healthy comparing
 2. preparing your own food
 3. choosing supplies
 4. planning meals
 5. healthy budgeting
 6. eating together
 7. being able to resist and
 8. snacking smartly
- (translation from [7]).

In addition, the energy density principle of the *Bundeszentrum für Ernährung* (BZfE) [17] was used. From this, topics for FGD were derived (see below). These were carried out to identify resources and barriers in FL as well as to identify the interests of older people in order to develop an intervention that meets the needs of the target group. The individual methodological steps of intervention development are illustrated in ♦ Figure 1.

Six FGDs were implemented in six social institutions in Bavaria, e.g. in multi-generation houses. A total of 10 seniors and 34 female seniors aged 62 to 88 years (mean age: 73.1 ± 6.1 years) participated. They were also important door openers for the acquisition of further seniors for the intervention. A large number of them acted as group leaders during the program (for sociodemographic details: see [2]). The focus groups had a similar average age and included five to nine participants. An FGD lasted an average of 120 minutes.

Learning tasks and methods were simulated and tested for their applicability in the intervention, guided by a trained moderator. After each of these exercises, the feedback of the participants was obtained and recorded according to a predefined scheme. Reactions to the topic, understanding of the exercises, implementation as well as mood of participants were all noted. After the summary and classification of the results using the method of knowledge mapping [18], an overall protocol was created. In addition to the identified resources and barriers of the target group, topics that were favored by the seniors at the FGD were considered for the intervention. Finally, a module manual for the intervention was developed from the results. This serves as a step-by-step guide for peer facilitators on how to facilitate senior groups working independently within the framework of the GUSTO group program.



Action Level	Competence Level	Subdomains	Topics	Understanding/Knowledge	
Household and Family	information and organization	information retrieval	finding, understanding, evaluating and applying information	pp knows reliable sources and specific contact persons for eating/drinking and food	
			identifying reliable sources and critical questioning	pp can read and understand information material and operating instructions for devices	
		supply and labeling	packaging information	pp recognizes food diversity	
				pp can read relevant information (such as ingredients, nutritional and allergen labeling, origin information) on the label	
	preparation	recipes, preparing food	preparation techniques		pp knows different preparation and cooking techniques
					pp can read and write recipes
					pp can read preparation instructions on packages
Individual	health	nutrition according to physiological needs	food pyramid	pp can read and understand food selection models, e.g. the food pyramid	
			meal planning	pp knows his/her personal nutritional needs with regard to intolerances, diseases, etc.	
			portion sizes	pp knows portion sizes and drinking amounts according to needs	
			needs-based nutrition	pp can learn about forms of nutrition such as wholefood, vegetarian, vegan and their influence on health	
			snacks between meals	pp knows health-promoting snacks between meals	
				pp knows high and low energy snacks	
			resilience & resistance	pp knows the connection between stress & eating	
energy density	pp can estimate the amount of calories per meal				

Tab. 1: Excerpt from the GUSTO competence scheme food literacy (adapted from [15–17])
FGD = focus group discussion; pp = participant

Results

Literature review and derived objectives for behavior

The literature review shows that the age group over 65 years is increasingly affected by overweight and obesity, which can be accompanied by secondary diseases and a deficiency of micro-nutrients. On the other hand, with increasing age, quantitative malnutrition is additionally prominent, accompanied by energy deficiency [10, 11].

The majority of seniors up to 74 years of age consume an excessive amount of saturated fatty acids and cholesterol compared to the recommendations, whereas carbohydrate intake is below the guideline value [19, 20]. Widely prevalent among the very old and older adults is an insufficient protein intake [21–23]. In addition, the elderly are more likely to have a reduced thirst sensation and an insufficient drinking quantity [24, 25].



Evaluating/Deciding	Applying/Acting	FGD
pp can assess the quality of information sources (and consulting services)	pp can obtain information on nutritional issues from a reliable place for information	query: "How do you get an expert opinion?" Procedure and identification of sources
pp can critically question the statements of media and experts	pp can distinguish qualified from unqualified information pp can use information and counseling services according to the situation	
pp is able to make purchasing decisions: quality-conscious and criteria-driven (e.g. organic, regional, convenience)	pp can compare offers in terms of size, quantity, weight, price and quality	identify code on eggs; after a tasting: compare packages and find solutions
pp can use labeling to identify suitable products himself/herself (e.g. in case of allergies or intolerances)	pp can use labeling to make a conscious purchasing decision	
	pp can obtain information about loose, unpackaged food (e.g. by asking in the bakery, at the market, in a snack bar)	
pp can make decisions for and against preparation and cooking techniques	pp is able to properly prepare varied meals pp can cook basic dishes without recipe	query: "Which oil is used for what purpose?"
pp can compare homemade and convenience products according to criteria	pp can decide in favor of or against convenience products	topic query
	pp can utilize left-over food pp can convert quantities in recipes according to the number of persons	
pp can assign foods to food groups	pp can evaluate food with the help of the food pyramid	Assignment of foods to food groups
pp can make the connection between nutrition and personal health	pp can implement knowledge about a personal health-promoting nutrition	
pp can estimate own portion sizes	pp can keep a food diary	
pp can read and evaluate nutrition recommendations	pp can implement knowledge about a personal health-promoting nutrition	
pp can distinguish differences of various snacks	pp can provide health-promoting snacks between meals	query: "What is a suitable snack and when?"
pp can distinguish high and low energy snacks	pp can choose low energy snacks	
pp can identify stressful situations and choose a balanced meal	pp can eat balanced even in stressful and unusual situations pp is able to resist "tasty", high-energy snacks	
pp can evaluate the energy density of food	pp can modify meals/dishes	making decisions based on energy density cards

From the three central nutrition-related problem areas of older people – overweight, unbalanced diet and insufficient hydration – three objectives for behavior were derived (participants can inform themselves, prepare food in different ways and eat a balanced diet) and were assigned to the individual skills in the GUSTO competence scheme (according to [15–17]) (■■■ examples in ♦ Table 1).

Topics of the FGDs

Topics for the FGD were derived from these identified competences with need of support. In each case, two of the six FGDs carried out dealt with the main topics of "needs-based nutrition", "information and organization", and "preparation and purchasing". The first topic area included the topics "current nutritional situation of seniors", "planning" and "snacks";



Aim	Exercise	Method
getting to know one another	presentation with food cards	getting to know each other
FGD 1 and 2: needs-based nutrition		
have the target group analyze their current nutritional situation from an own point of view	visualized protocol according to the food pyramid	flipchart with predefined questions
determining knowledge and application of portion sizes	meal planning	food pyramid
determining what the target group snacks	snacks	visualizing plenary contributions on the flipchart using a timeline with three dishes
FGD 3 and 4: information and organization		
identifying knowledge on the use of oils; identifying search strategies and selection criteria for qualified information	obtaining information	in smaller groups: exchanging ideas on the use of different oils and on how to obtain information
checking understandability of information when purchasing foods	food purchasing	in small groups: evaluating packaging information of cheese according to the following criteria: fat content, country of origin and incomprehensible information
FGD 5 and 6: preparation and purchasing		
identifying the target group's preparation techniques and knowledge about the methods' advantages and disadvantages	preparation techniques	case study; exchanging ideas on preparing meat, fish and vegetables (in groups of two); evaluation in terms of health
choosing the dish lowest in energy content from different dishes	choosing dishes	choosing according to food cards on energy density
target group's ability to combine or add foods to a set menu	combining foods	carrying out a movement exercise with food cards
identifying the target group's knowledge resp. ability to obtain information on the labeling of chicken eggs	food labeling	exchanging ideas in groups of two on labeling of chicken eggs and on food packaging
enquiring favorite nutrition topics and methods	inquiring interests using overarching topics	visualizing plenary contributions on the flipchart (dot voting)

Tab. 2: Procedure and contents of the FGP
FGD = focus group discussions

in the second, the topic of "obtaining information" was dealt with; the third area of focus dealt with the topics "food labeling" and "preparation techniques". The procedure and contents of the FGD are shown in ♦ Table 2.

Results of the FGDs

The evaluation of the FGDs shows a heterogeneous picture within the groups, e.g. a large part of the participants cooks regularly themselves. In questions about different preparation techniques, it became clear that the knowledge was partly little, partly strongly pronounced. The tastings were, with a few exceptions, well accepted by the participants, but the evaluation was difficult in different ways depending on the food: for example, the evaluation of the fat content based on the taste of cheese was often incorrect. The food pyramid was unknown to some participants, so that its meaning was partly misinterpreted. With regard to the obtainment of qualified information, there were great uncertainties. In some cases, only unqualified sources (e.g., information material and magazines with product advertising, TV reports) or no

possibilities at all for obtaining information could be named. During the discussion rounds, however, it turned out that the interest of the participants in this area is very high. The participants were also unsure about reading and evaluating packaging information. Not all participants were able to compare products in terms of fat content, find out the country of origin, or determine the meaning of packaging information. When comparing low and high energy dishes based on pictures, almost all participants were correct. Furthermore, they had little trouble putting together a dish from food cards and independently added ingredients. The following methods were implemented and evaluated according to instructions evaluated: group work and discussion, research tasks, movement as well as tasting exercises. The participants showed a special interest in the topics of nutritional trends, sustainability, shelf life, additives, and the health benefits of whole grain products and spices. Furthermore,



the participants also expressed the wish that the food pyramid, different preparation techniques and tastings should be included in the intervention. Other priorities for the intervention that emerged based on the FGD, are shown in ♦ Overview 1.

Overview 1: Other topics for intervention

- meal planning
- obtaining information
- supply and labeling
- storage/stockpiling
- origin of food
- dining culture and meals

Discussion

Based on the results, content, thematic priorities (♦ Overview 1) and working methods can be derived. The FGDs have shown that older people find it particularly difficult to obtain, check and implement qualified information on nutrition in everyday life. For this reason, topics such as information obtainment and the identification of reliable sources should a focus of the intervention. Among other things, the following central contents can be highlighted: making decisions on the basis of packaging information and the ability to use different preparation techniques.

The needs and interests of the seniors identified in the FGD were recorded for the intervention in the form of a module manual and qualification of the peer moderation. The division of the intervention into a content-related and a practical, project-related part aims both at expanding the knowledge of the seniors and at supporting the examination of nutrition in practice. Thus, the first part of the module manual covers six key topics on balanced nutrition. In the second intervention phase, project work was integrated to take into account interests, but also the different level of information and the heterogeneous FL level of the group members (learning from each other). The senior groups themselves choose two of the five project outlines "cookbook", "guidebook", "spices and herbs", "regional and organic" and "experimental kitchen". In this phase, the participants are instructed to generate topics independently and to implement them in a results-oriented manner. Through this, the desire of the participants to work on tasks independently can be taken into account to a greater extent than is the case in classical educational programs.

The participants can partake in the projects in a task-related manner and according to their interests and abilities. The structure of the projects ensures that the competences to be promoted in all groups are taken into account equally in all groups. The social encounters and activities (e.g. getting to know regional cultivation or regional processing companies, cooking together in a training kitchen) serve as an important motor for reflecting and, if necessary, to change them.

Limitations

Due to the wide range of topics, not all of the FL topics are included in the intervention. The selection was based on the interests and needs of the target group. For example, some sub-domains such as "kitchen aids and appliances", "eating at the workplace" or "delivery service" are not addressed.

Outlook

For the independent implementation of the group meetings, the group leaders had been trained with appropriate working materials for their role as group leaders.

The 52-week intervention, with a total of 24 group meetings, was assessed by means of questionnaire with regard to FL, HL and dietary behavior using a quasi-experimental design at two measurement points (first results: [2], further project information: [26]).

Compliance with Ethical Guidelines

The ethics committee of the Coburg University of Applied Sciences and Arts has examined the project in accordance with the ethical guidelines and declared it to be ethically unobjectionable. A declaration of consent has been obtained from all study participants.

Conflict of Interest

The authors declare no conflict of interest.



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