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Nutrition diagnosis according to the German-Nutrition Care Process (G-NCP) model

Challenges for implementation – a case study

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Abstract

Nutrition diagnosis is the second step in the G-NCP model and it is based on the information collected in the assessment. It is carried out systematically in the form of PESR statements that state the nutrition problem (P), etiology (E), signs and symptoms (S) and resources (R). The aim of this study was to investigate and discuss the practical implementation of the guidelines for diagnosis on the basis of a case study. Some challenges arose in formulating the PESR statements: Several aspects of the process of assigning nutrition assessment data using the G-NCP system require a rethink.

Nutrition diagnosis forms the interface between nutrition assessment and intervention, and this requires an awareness of how each of the process steps are woven together. It was found that when implementing process-driven actions according to the G-NCP model, there is some variance in terms of the interpretation of the guidelines of the Manual of the German Association of Dietitians (VDD), and that there is a need for specific training for the users.

Keywords: Nutrition diagnosis, PESR statements, German-Nutrition Care Process (G-NCP), quality assurance in nutrition counselling, behavioral/environmental

Introduction

The "Framework Agreement on Quality Assurance in Nutrition Counselling and Nutrition Education" *(Rahmenvereinbarung zur Qualitätssicherung in der Ernährungsberatung und Ernährungsbildung)* of the German Nutrition Society (DGE) states in particular that in nutrition counselling scientific standards, counselling methodology standards, and process-oriented standards must be observed, and that the counselling process must be documented and evaluated [1]. This is where the models for nutrition counselling come in [2, 3].

For Germany, the German-Nutrition Care Process (G-NCP) (◆ Figure 1) was developed to provide quality assurance and greater transparency in the nutrition counselling and therapy process. The manual [4] published by the German Association of Dietitians (VDD) provides a "guideline for the professional conduct of dietitians". This laid a foundation for establishing standard elements of quality assurance in nutrition counselling[1] – the G-NCP – with the five following process steps:

- nutrition assessment
- nutrition diagnosis
- planning and
- implementation of an intervention
- monitoring and evaluation

The G-NCP follows the four-step NCP from the US [5], but it has five process steps instead of four because the German-Nutrition Care Process describes the planning and implementation of the intervention as two separate process steps [4]. There have already been some relevant publications: a case study from the context of oncology practice [6], and possible nutrition diagnoses for patients with bronchial carcinoma, type 2 diabetes mellitus [7], Crohn's disease [8] and insulinoma [9].

Nutrition diagnosis

Nutrition diagnosis according to G-NCP is done by formulating PESR statements consisting of four components (◆ Overview 1).

[1] For the sake of better readability, this article is limited to the term "nutrition counselling". Process-driven action and G-NCP are of course relevant to both nutrition counselling and nutrition therapy.

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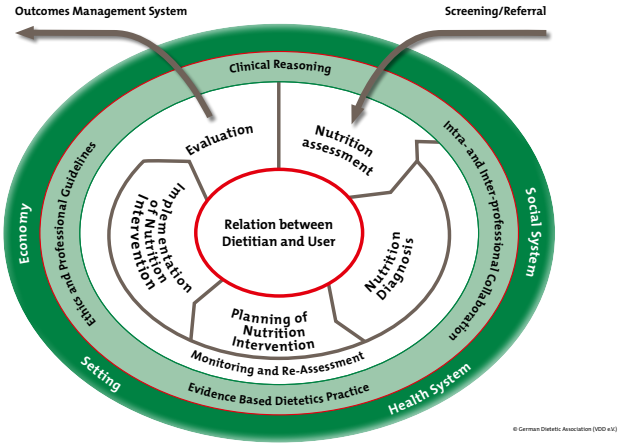

Fig. 1: **The German-Nutrition Care Process-Modell (G-NCP Modell)**

In the G-NCP model, additional information about resources (R) is collected [4], and this information is not part of nutrition diagnosis in the NCP model [2, 5], nor is it part of the "British Model and Process for Nutrition and Dietetic Practice" [3].

Formulating PESR statements according to the G-NCP model is a systematic procedure for making a nutrition diagnosis based on the data collected in the nutrition assessment.

The nutrition problem (P)

The nutrition problem "is the core statement of the nutrition diagnosis and describes the exact changes in the nutritional status or the nutritional situation of the user" [4]. Each nutrition problem is addressed by a separate PESR statement [8].

The etiology (E)

The etiology is defined as: "those factors contributing to the existence of, or maintenance of pathophysiological, psychosocial, situational, developmental, cultural, and/or behavioral/environmental problems" [3]. It is crucial that behavioral/environmental factors are integrated into the formulation of PESR statements if they influence nutrition:

- Etiology may include **medical** factors, such as physical resilience, side effects of treatment, or medical status.
- **Psychological** causes are also relevant, for example in the areas of motivation and behavior.
- The nutrition problem may also be attributable to various **values** held by the client. In addition to individual attitudes to nutrition-related issues, political or religious principles may also play an important role.
- The client may also have **knowledge gaps or difficulty assessing** issues regarding nutrition and health.
- Furthermore, the client's **social situation** is an important factor. In addition to their individual personality and their social environment, the question of secure access to food may also be taken into consideration, among other things [4].

Overall, etiology (E) should be accorded special importance because the nutritional intervention that comes later in the process will be geared towards tackling the etiology – and therefore the client's living environment.

Signs and symptoms (S)

Signs and symptoms allow conclusions to be drawn about the nutrition problem. Here, objective data is contrasted with the client's subjective assessments of their state of health: In addition to quantifiable values such as BMI or laboratory parameters, qualitative data (such as data from a subjective assessment of quality of life and wellbeing) can also be considered a sign of a nutrition-related problem [4]. It should be noted that many different items of objective and subjective data are collected in a nutrition assessment, but the distinction between "subjective and objective signs and symptoms" is limited to information that provides evidence of the presence of the specific nutrition problem (P) [8]. According to the manual [4], food consumption must also be categorized under signs and symptoms (S).

Resources (R)

The G-NCP goes further than other models [2, 3] in terms of diagnosis – it also records resources. Resources are defined as "characteristics, forces, possibilities and abilities of the user or their environment [...] which can influence the management of their nutrition problem" [4]. The manual for the G-NCP suggests a distinction be made between beneficial and inhibitory resources [4].

In order to make a nutrition diagnosis, the individual data collected in the nutrition assessment are structured, grouped and considered in the context of the rest of the data. The PESR statements that are formulated on the basis of this data are prioritized for the subsequent planning and implementation of the intervention. Based on this, the nutrition counsellor must continuously make assessments and decisions. The VDD manual states that decisions should not simply be made, but should also be reflected upon and justified (clinical reasoning) [4, 10].

Study question

The G-NCP is based on a theoretical model that is intended to be implemented in practice and used widely. It has been designed as a "field-of-action-specific process model" [8] for professional conduct in nutrition counselling, which means that its applicability in nutrition counselling is of crucial importance.

Overview 1: **The four components of the PESR statement** [4]
P = Problem (nutrition problem)
E = Etiology
S = Signs/symptoms
R = Resources [4]

In order to test its applicability, the G-NCP was examined in the context of a case study [11], and the application of the model was subjected to critical reflection. The focus of this publication is on the case study-based examination of nutrition diagnosis as part of the G-NCP. This process step was selected because a paradigm shift can be observed here: Unlike medical diagnosis, nutrition diagnosis focuses on the client's nutrition in the context of factors that may be influencing nutritional behavior. What is special about nutrition diagnosis according to the G-NCP model is that the client's living environment and resources are directly linked to their nutritional behavior, and this is taken into account when planning the subsequent intervention [4].

Methodology

Case study and nutrition assessment

In a case study, a nutrition consultation was designed according to the G-NCP model [4] for a breast cancer patient of 58 years of age – 4.5 years after completion of her treatment (breast cancer survivor, Phase 2 [12]), and was implemented by a nutrition counsellor qualified nutrition scientist ("Oecotrophologe")[2] with a VDD certificate for nutrition counselling) using all five process steps. Information from the nutrition assessment about key categories such as client history, diet history, behavioral/environmental factors, and clinical status were documented in a nutrition assessment sheet. For the client history, sociodemographic data and the medical history were recorded. For the diet history, a 7-day food diary was evaluated with the aid of software (Prodi 6.5 expert), plus the client was asked to provide information about their experience of diets and their eating behavior over lifetime, and their resting energy expenditure (REE) was determined by calculation. For the behavioral/environmental category, the client was asked about nutritional knowledge, nutritional behavior, physical activity, quality of life, willingness to change, and motivation in a targeted manner. For the recording of the clinical status, anthropometric data, the client's body composition (seca mBCA) and their resting energy expenditure (REE) (COSMED Quark RMR) were measured, and metabolic parameters in the blood were also determined.

Nutrition diagnosis: Formulation of the PESR statements

For the nutrition diagnosis, several PESR statements (which were based on the manual [4]) were formulated using the data from the nutrition assessment. The PESR statements were developed using a multi-step process:

1. Data review and creation of hypotheses and PESR statements

In an initial step of action all available documents from the nutrition assessment were reviewed to look for connections between the data – e.g. between BMI and energy intake. Next, the investigation focused on data that was outside the normal range – e.g. a BMI ≥ 25 kg/m². In line with the manual's recommendation, the approach that was taken was to make hypotheses about all relevant data and translate them into PESR statements.

2. Discussion of hypotheses and statements

In a second step, the decisions made were discussed and reflected upon within the project group together with the nutrition consultant in order to ensure that well-founded decisions were reached [4, 10]. The discussion focused on the four key decisions are shown in ◆ Overview 2.

3. Reformulation of the PESR statements

In a third step of action, the PESR statements were reformulated on the basis of the results of the reflections. In this step the data from the nutrition assessment was systematically analyzed with regard to the subsequent PESR components:

- The energy and nutrient intakes calculated on the basis of the 7-day food diary were checked for deviations from the DACH reference values. These deviations were then assessed to check if they constitute a nutrition problem (P) for the client (either an existing problem or a problem that may be "expected in the foreseeable future" [8]).
- The information from the nutrition assessment sheet was checked for possible signs and symptoms (S) which could provide evidence of nutrition problems (P).
- The content of the nutrition assessment was reflected upon with regard to which information provided by the client may allow conclusions to be drawn about behavioral/environmental etiologies (E).
- The content of the nutrition assessment was checked for resources (R) which would either benefit (beneficial: R+) or impede (inhibitory: R-) subsequent behavioral change in the client.

As part of the transition from nutrition diagnosis to planning of the intervention, the nutrition consultant carried out an additional decision-making process to determine which PESR statements were to be prioritized, and thus taken forward into the intervention and evaluation.

Results: Formulation of the PESR statements and challenges in the implementation of the guidelines of the G-NCP model

Two PESR statements were prioritized for the client in this case study (◆ Table 1).

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[2] In Germany there are study programmes in the field of „Oecotrophologie" which differs from both dietetics and nutrition science. „Oecotrophologie" uses an interdisciplinary approach to nutrition and food- as well as household-related issues.

	PESR statement 1	PESR statement 2
P = Problem (nutritional problem)	**energy intake too high:** 2302 kcal/day (115% of the D-A-CH reference value)	**fat intake too high:** 87 g/day (134% of the D-A-CH reference value) **cholesterol intake:** 430 mg/day (143% of the D-A-CH reference value)
E = Etiology	**value held:** large portion sizes as a sign of appreciation **social situation:** frequent role as a host for 5 or more guests, with a focus on meals taken together	**value held:** caring for the family synonymous with hearty cooking **knowledge deficit/difficulty assessing nutritional issues:** client does *not* consider her own diet to be "high in fat" **social situation:** parents and relatives often consume meat and meat products → early and lasting taste preferences for meat and meat products
S = Signs/ Symptoms	**overweight:** BMI 26.5 kg/m², **current body weight:** 72.5 kg **fat mass FM:** 31.5 kg, 43 % of the body weight **resting energy expenditure (REE):** 1338 kcal/24h **7-day food diary:** frequent consumption of energy-dense foods [per week]: 1392 mL of fruit juices, 700 mL of other drinks containing sugar, 860 g of cake/baked goods, 159 g of fats/oils, 860 g of meat, 270 g of meat products **physical activities:** walking, cycling for 0–4 hrs/week; irregularly the comparison of physical activities with the 7-day food diary reveals a positive energy balance	**increased LDL cholesterol level in the plasma:** 172 mg/dL **increased total cholesterol level in the plasma:** 247 mg/dL **7-day food diary:** frequent consumption of foods high in fat and cholesterol [per week]: 159 g of fats/oils, 860 g of meat, 270 g of meat products
R = Resources	R+: • pleasure in exercise • highly motivated to change diet and lifestyle	R+: • positive experiences with dietary changes • highly motivated to change diet and lifestyle
	R-: • sporting activity depends on season • consumption of energy-dense food and drinks as a reward after sporting activities	R-: • taking care of the family as the role of the woman • social occasions with high meat consumption, lack of awareness of the high fat content of foods consumed

Tab. 1: **PESR statements on the client's energy and fat intake based on the manual [4]**

In order to create the PESR statements, a four-step procedure was developed. In this procedure, the available data from the nutrition assessment must be analyzed with a view to categorization in the categories P, E, S, and R from the very beginning. This approach is intended to ensure that the PESR system is given greater weight. The following challenges arose in the four stages:

1. Categorization of nutrition assessment data

Allocation of foods to PESR statements

The PESR statements formulated in the initial step of action (before reflecting the statements with the project group) highlighted excessive consumption of meat and meat products according to the food diary as the "*etiology*" ("E") of an elevated fat intake as a nutrition problem (P). However, after reflection within the project group conspicuous intake levels (i. e. of meat) were categorized as "*signs and symptoms*" (S) (◆ Table 1). A rethink was required in order to categorize this information about food *not* as a problem (P) or an etiology (E), but as signs and symptoms (S).

Allocation of taste preferences to PESR statements

The client reported in the nutrition assessment that meat and meat products "just taste good". When preparing the PESR statements, it was not clear where and how these taste preferences should be categorized.

Distinguishing between inhibitory resources (R-) and etiology (E)

In this case study, it became clear that the consumption of meat and meat products was not purely a taste preference, but that the client was also socialized (E) in such a way that her perception was that a "good" wife and mother "is providing for her family well" when providing hearty cooking (R-). While processing the case study, the question arose of how far this sense of responsibility on the part of the client represented an inhibitory resource (R-) or a component of the etiology (E) in the sense of the values held by the client (◆ Table 1).

Overview 2: **Case-specific assessment and decision processes in the course of the nutrition diagnosis**

Categorization of nutrition assessment data
- Under which categories should the concrete information from the nutrition assessment be classified? Under P, E, S or R?
- Which information should be included in each category – i.e. which information is required in each of the categories P, E, S and R?

G-NCP guidelines for the implementation of the nutrition diagnosis
- What is the logic of the VDD manual [4] and why does it use this logic?
- How should nutrition diagnosis be carried out in accordance with these guidelines?
- When is an approach considered "correct" – i.e. under what circumstances can the requirements be considered to be met?

Discrepancies between the provisional PESR statements *in the case study* and the guidelines in the manual
- What is the logic behind the project group's draft PESR statements and what are the underlying considerations?
- Where and to what extent do the draft statements differ from the guidelines in the VDD manual?
- Where do the draft PESR statements need to be revised?

How the process steps are woven together
- To what extent does the nutrition diagnosis depend on the nutrition assessment?
- What effect does the nutrition diagnosis have on the subsequent planning and implementation of the intervention and of the monitoring and evaluation?

Separation of related data in PESR statements

In the case study, increased cholesterol intake from food is associated with increased LDL and total cholesterol levels in the plasma. However, in the PESR statements, there is a separation – cholesterol from food is categorized under the nutrition problem (P), but the increased LDL and total cholesterol values in the plasma are categorized under signs and symptoms (S) (◆ Table 1).

2. Guidelines for the implementation of the nutrition diagnosis

Precision in the presentation of the nutrition problem (P)

The approach taken was that recommended by the manual – viewing the problem as, for instance, "too high intake of the corresponding nutrient" [4] (◆ Table 1). In addition, the estimation of "too high" in the PESR statements was *quantified*, i.e. the energy and nutrient intake was compared to the DACH reference values and thus listed as a nutrition problem (P).

Depiction of the living environment in the PESR statements

It should be emphasized that two of the four components of the PESR statements – etiology (E) and resources (R) – refer to qualitative information provided by the client regarding her living environment. For example, in this case study, it was found that the client had a high level of motivation to change behavior (R+) and took much pleasure in physical activity (R+) Another example is that the positive energy balance can be attributed to the consumption of energy-dense food and drink as a "reward" (R-), the role of hostess that the client often adopts (E), and the values held by the client, which lead her to make large portion sizes as a way of expressing how highly she values other people (E) (◆ Table 1).

3. Discrepancies between the preliminary PESR statements and the manual's guidelines

Etiology (E) and nutrition problem (P)

In the case study, it was found that adopting the G-NCP perspective on etiology (E) represented a challenge. Initially, the etiologies (E) of nutrition problems (P) were searched for at the nutritional level, e.g. in the elevated consumption of meat and meat products. After another examination of the manual guidelines, the nutritional level was abandoned and the etiologies (E) were determined to be exclusively within the behavioral/environmental category: taste preferences influenced by the social environment, knowledge deficits/difficulty assessing nutritional issues, and values held by the client in terms of etiologies (E) for the elevated fat intake (P) (◆ Table 1).

Resources (R) as an equal component of the PESR statements

While working on the case study, a rethink was required in order to not only understand nutrition diagnosis as an interplay of problems, causes, and symptoms, but also integrate the client's resources as a new and equally valid aspect. However, the categories nutrition problem (P), etiology (E) as well as signs and symptoms (S) are more detailed in comparison to resources (R) in the present study because special attention was paid to these categories for the nutrition assessment and nutrition diagnosis.

4. Interplays and logical thought processes

Connections between the various PESR statements

When carrying out the case study, it became clear that the various PESR statements have to be either

separated or recombined depending on the process step. During the *nutrition diagnosis*, two separate PESR statements were formulated (◆ Table 1). For *planning and implementation* of the intervention, the two statements each had to be considered in connection with the other in order to identify interactions. An intervention based on increased vegetable intake (and therefore increased dietary fiber intake) was planned because this *one* intervention could address *two* PESR statements. At the level of etiology (E), the assessment of the energy and fat content of the previous diet should be addressed (Statement 2) on the one hand, and on the other hand, alternative recipes should be recommended and these recipes should be in harmony with the client's prior socialization (Statement 2) and the portion sizes they are accustomed to (Statement 1), but should contain a higher proportion of vegetables.

How the scope and quality of nutrition assessment data affects nutrition diagnosis

Working with the G-NCP requires an awareness of how the process steps are woven together and of the importance of the relationship between consultant and client. Therefore, the accuracy of the nutrition diagnosis depends on the quantity and quality of the data from the prior nutrition assessment. If the client had not participated actively and extensively in the nutrition assessment, the PESR statements would have been less precise, both in the quantitative sense and in the qualitative sense. The client in this case study made the effort to keep a complete 7-day food diary and brought recent laboratory values with her to the nutrition assessment. From this data the nutrition problem derived of an increased fat and cholesterol intake (P) which have an impact on the lipid profile in the blood (S) (table 1). In addition, the client spoke openly about her eating behavior over lifetime and personal situation and it became evident that the consumption of meat and meat products was attributed to taste preferences, knowledge gaps, difficulties assessing issues regarding nutrition and health as well as values held by the client. Based on this information, it was possible to draw up PESR statements and identify approaches that could be taken for the later planning and implementation of the intervention.

Discussion

The results of this case study show that applying the model for the first time is challenging and it raises some questions.

Ambiguities and areas requiring further development

How do nutrition diagnoses come about?

In any kind of diagnosis, the focus is on forming hypotheses regarding the disease and possible solutions (diagnostic reasoning) [4]. This is because establishing a diagnosis (*diágnōsis* = differentiating assessment, insight [13]) always involves a decision-making and assessment process. For the preparation of the nutrition diagnosis there are guidelines for an "action algorithm for diagnostic reasoning" [4], according to which the assumptions and decisions previously made are to be reflected upon repeatedly. This approach, which is strongly focused on reflection, highlights the importance of making well-founded decisions in nutrition counselling (clinical reasoning) [4, 10]. In practice, however, the authors recommend standardized, step-by-step instructions for the preparation of nutrition diagnoses. Having such clear instructions is important, for example, in order to prevent the situation that statements are formulated for only some PESR categories due to lack of time because the consulting practice considers certain PESR components "more important" than other, "secondary" components. The consequence of this incorrect approach would be incomplete PESR standards that do not meet the quality standards being aimed for.

What exactly is a nutrition problem (P) and how precisely should it be presented?

The nutrition problem is defined as "the core statement of the nutrition diagnosis and describes the exact changes in the nutritional status or the nutritional situation of the user" [4].

1: It remains to be seen how the terms "nutritional status" and "nutritional situation" should be understood and defined in the G-NCP manual.
2: If the nutrition problem (P) is quantitatively understood as an energy and nutrient deficiency, as in this case study, it remains to be seen how the nutrition problem (P) should be formulated when it refers to food components that are not defined as nutrients (e.g. purines, gluten). A scientific consensus needs to be established regarding this.
3: It is also the case that if the nutrition problem (P) is *not* quantified, but rather described as a "too high" or "too low" intake of food components, the frame of reference for this assessment, and therefore also the quality, informative value, and comparability of the PESR statements remain unclear. The PESR statements should be able to provide conclusive information on their own, without the need to refer back to the nutrition assessment data. It is therefore proposed that the standard values or reference values used are explicitly mentioned again in the PESR statements.

What is the etiology (E) of a nutrition problem (P)?

Under the PESR system, foods should not be considered etiologies (E). If the nutrition problem (P) is interpreted as a quantifiable nutrient or energy deficiency, as is the case in this case study, this leads to difficulties in formulating the nutrition problem (P) at the nutrient or energy level while at the same time stating that the etiology (E) of

this is not the client's food selection, but rather her living environment.
According to this approach, making changes to food selection should not be considered the solution to a nutrition problem (P), and it should not be directly concluded that food selection is the cause. Rather, sociocultural causes and other causes should be seen as the framework in which food selection can be understood and discussed. Particular attention must be paid to this.

Where should foods be categorized in the PESR statements?

Classifying foods consumed under signs and symptoms (S) raises questions because "food diaries are considered to be evidence documents; however, because they are based on the subjective information provided by the user, the information collected from them is evaluated as belonging to the category of subjective signs" [4]. For example, is it that the problem of increased fat intake (P) manifests itself in the signs and symptom (S) of increased meat consumption? Or is it that the consumption of meat is actually the "cause" or "source" of the amount of fat consumed (P), but it cannot be considered the etiology (E) according to the logic of the manual? This separation of food from etiology (E) separates the living environment from food and strengthens the importance of the living environment. However, a different way of thinking is required for this.

What evidential value should foods be considered to have as signs and symptoms?

The evidential value of signs and symptoms (S) can go in one of two different directions:
If the food diary is regarded as an "*evidence document*" [4] that proves that according to the "subjective descriptions of the user", the user "*truly*" did consume too much fat, for example (P), then foods can be regarded as subjective signs (S). However, if the aim is to investigate the extent to which the nutrition problem (P) is already demonstrably influencing the client's *state of health* through the occurrence of signs and symptoms (S), then the focus is on objective, measurable signs – e.g. BMI, laboratory parameters, resting energy expenditure (REE) – and subjectively described symptoms – abdominal pain, nausea, etc.
This shows a dual perspective: signs and symptoms (S) as *evidence* of a nutrition problem (P) on the one hand, and signs and symptoms (S) as a *consequence* of an existing nutrition problem (P) on the other hand. It remains to be seen how effectively this dual perspective will work in practice.

How do inhibitory resources (R-) differ from etiology (E)?

The manual recommends the collection of information on both beneficial (R+) and inhibitory (R-) resources [4], however, later publications limit themselves to beneficial resources [6, 8]. Further explanatory definitions are required here for working with the G-NCP, especially since the term "resources" tends to be understood as exclusively positive not only in the context of health promotion, but also in general parlance, thus meaning that resources are seen as something to be strengthened [15]. Limiting information gathering to the beneficial resources could resolve the aforementioned overlaps between the inhibitory resources (R-) and the etiology (E), but it would also mean that the guidelines would need to be revised.

Education and training requirements

How are related data separated in the PESR statements?

The challenge for the user lies in dividing dietary relationships into four different categories and to viewing them as PESR statements.
Thus, not only are cholesterol from food (P) and cholesterol values in the plasma (S) kept separate – cholesterol from food (P) and the associated foods (S) are also kept separate (provided that consumed foods have been correctly identified).
This separation of nutrition problems (P) and signs and symptoms (S) creates a systematic approach, but it requires a different way of thinking and practice in order to enable correct differentiation.

How large a role does the living environment play in the PESR statements?

Process-driven work in nutrition counselling requires a special sensitivity to the living environment. This is because eating and drinking are not limited to nutritional physiology, but are also influenced by historical developments, current social norms and paradigms, family relationships, socioeconomic limitations, perceived self-efficacy, and other factors [16]. Therefore, nutritional science encompasses not just the biological aspect, but also the social and ecological aspects, and it should be understood and practiced accordingly [17]. As this case study also showed, the nutritional behavior of clients cannot be understood in isolation from the values they hold, their living environment, and their personal history.
Thus, the importance of taking the person's living environment into account in etiology (E) in the PESR statements is derived from both the everyday practical perspective and the professional theoretical perspective. However, there is still a need for further research into which indicators should be recorded in order to define the person's living environment, and there is a need for research into which tools should be used for this. Appropriate training courses must be developed based on this research.

Where should taste preferences to be categorized?

On the one hand, the taste preferences may be determined by hormonal, pharmacological, or pathophysiological factors [17]. On the other hand, taste preferences must be understood in the context of socialization. Social groups such as the family of origin and, in the case of young people, the

peer group, have as much influence as the media, and care institutions/ educational institutions [18]. Furthermore, in addition to the person's age, their social situation, e.g. (food) poverty, gender, and gender roles, as well as stays in health and care institutions, are of key importance when it comes to taste [18]. In the present case, the family of origin had a strong preference for meat and meat products. Values held by the client may also influence the client's taste preferences, as the client associated hearty cooking with taking care of her family (♦ Table 1). One logical conclusion that can be drawn here is that in the case of taste preferences in the nutrition assessment, it must be precisely determined whether these preferences are based on family, cultural or other influencing factors. Another is that as a consequence of this, taste cannot be categorized under a certain PESR category per se, but rather the most appropriate category will depend on the constellation of signs and symptoms (S) (e.g. in the case of disease-related changes) and etiology (E) (in the case of references to the living environment). This example shows that in addition to training, the exchange of ideas between professionals is also crucial in order to keep approaches and results comparable overall in the context of PESR statements and the G-NCP model.

What does it mean to view resources (R) as part of the PESR statement?

In this case study, in both the nutrition assessment and nutrition diagnosis, when adapting to working according to the G-NCP model, there was a tendency to take resources into account with regard to the subsequent intervention, but not regard them as being an equally valid component of nutrition diagnosis. This perspective leaves some potential untapped because "the inclusion of resources gives us reason to expect that the user (or their environment) will play a more active role in the planning and implementation of nutritional intervention" [4]. The authors' view is that G-NCP training courses should raise awareness of this new perspective.

How do we proceed with the various PESR statements ?

When using the model, nutrition assessment data is explicitly grouped into separate PESR statements. These are only linked to each other again when the intervention is planned, with the result that an intervention may include several PESR statements. However, when the success of an intervention is being assessed in the fifth process step – monitoring and evaluation – it is crucial to consider both the individual PESR statements and the individual categories separately. For example, in this case study, the effect was that meat consumption (S) remained high, but blood values for LDL cholesterol and total cholesterol (S) decreased because much more dietary fiber was being consumed (S) and physical activity (S) was increased on a seasonal basis. Awareness (E) of the fact that the previous diet was high in fat was achieved, but the existing taste preferences for meat and meat products (E) will work against the long-term implementation of the proposed alternative recipes. Precisely formulating the PESR statements in the nutrition diagnosis makes the final process step of monitoring and evaluation easier, but it requires critical reflection throughout the process.

What are the effects of the scope and quality of nutrition assessment data on nutrition diagnosis?

Anything that was not asked about, or that was only inadequately asked about in the nutrition assessment will result in a deficit affecting all subsequent process steps. For this reason, methodological knowledge of how to conduct conversations is particularly important, e.g. "narrative conversation strategies that encourage the user to talk about his or her diet or nutritional habits" [8]. Training and further education should therefore be a priority, especially since at least two out of the four PESR categories – etiology and resources – refer to the person's living environment.

How important is the relationship between the consultant and the client when making a nutrition diagnosis?

In the G-NCP, nutrition assessment, nutrition diagnosis and planning and implementation of the intervention are closely related. The intervention is intended to improve or solve the nutrition problem (P) by working on the etiology (E) [4]. Ensuring that the intervention fits the individual client as well as possible requires a comprehensive nutrition assessment to be done in advance. As for the nutrition consultant, it is crucial that they have an understanding of the client's living environment and personal history [19], of their motivations and goals, and of any diverging attitudes or behaviors that may be present [20].
However, the quality and quantity of nutrition assessment data equally depends on the client's participation and their willingness to share information. This means that participation is of great importance for process-driven action, not only once the subsequent implementation stage of the intervention is reached, but right at the very first process step.

Conclusions

The focus of the PESR statements proposed in the manual for the G-NCP model [4] as a method of nutrition diagnosis is on making well-founded decisions and using well-founded assessment processes. Behavioral/environmental aspects play an important role in nutrition diagnosis and must therefore play a correspondingly important role in the practice of nutrition counselling. This case study raises a number of questions that need to be clarified if the new type of nutrition diagnosis is to become established in practice. A scientific discourse is also required to ensure the development of and consensus around definitions.
The G-NCP model with the PESR statement offers nutrition consultants and nutrition therapists a methodologi-

cal framework for independent work with clients, but the process model requires specific professional competences and methodological skills for which training and education are necessary, as the case study shows.

Focusing on nutrition problems and corresponding nutrition diagnoses as distinct from medical diagnoses strengthens the profession's perspective on health and illness, but it requires a special sensitivity to the similarities and differences in the technical language present in each profession when cooperating across professions (e.g: nutrition diagnosis, medical diagnosis, nursing diagnosis). Promoting the skill of preparing nutrition diagnoses in nutrition counselling and nutrition therapy enables a more intensive professionalization of the profession overall, thus also increasing its profile. PESR statements help to make professional conduct more transparent and easier for third parties to understand and are important particularly against the background of a focus on quality, and especially with regard to cost-effectiveness. The proposed standardized method of creating PESR statements focuses on the client's living environment and offers a way to increase the effectiveness of nutrition counselling for the client. This is an important question for health services research, which is a field that "is interested in the effectiveness of treatments under everyday conditions" and also asks "how care can be improved in concrete terms" [21].

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Conflict of Interest
The authors declare no conflict of interest.

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