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ORIGINAL COMMUNICATION

Structure and organisation of 47 nutrition support teams in Germany: a prospective investigation in 2000 German hospitals in 1999

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Objective: Evaluation. Contrary to the Anglo-American region, very little is known in Germany on the structure and organisation of nutrition support teams (NST).
Design: Prospective investigation of the structure and organisation of German NST, using standardised interview questionnaires.
Settings: Hospitals with more than 250 beds in Germany.
Subjects: German NST ($n=47$).
Interventions: Face-to-face interview in 1999, using a standardised questionnaire.
Results: From a total of 2000 German hospitals, NST have been established at 47 hospitals (2.3%). Most NST are affiliated to a large university hospital or an academic teaching hospital. In general, the NST are not independently operating units but are affiliated to a special discipline, and were in operation for an average of 8 y. The NST cared for a median of 65 outpatients annually. At the university hospitals in average, 477 in-patients were treated per year, at the teaching hospitals 400 and at all other hospitals 179. The work of the NST centred on enteral nutrition. A total of 47% of the physicians, 19% of the nurses and 19% of the dietitians in the NST held a nutrition-specific additional qualification. A total of 2% of the physicians, 68% of the nurses and 77% of the dietitians are exclusively responsible for the NST. More than 70% of the financing of the personnel was secured through third-party funds.
Conclusion: In Germany, neither uniform nor comprehensive patient care by NST existed in 1999. More than 50% of all NST members do not hold a nutrition-specific additional qualification. Frequently, besides their tasks in the team, the NST staff also carries out other clinical functions. Contrary to the American NST, the German NST are not interdisciplinary operating units but are primarily financed through third-party funds of the industry.
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Introduction

In the Anglo-American countries, the medical nutrition of patients through nutrition teams, the so-called nutrition support teams (NST), have an important role (Payne-James *et al*, 1990; Regenstein, 1991; Hassel *et al*, 1994; Howard, 2001a, b). NSTs in North America and a few in European countries are integrating physicians, dietitians, nurses and pharmacists to an independent and interdisciplinary working unit (Payne-James *et al*, 1990; Howard *et al*, 1997; Jonkers *et al*, 1999; Howard, 2001a, b). NSTs in the Anglo-America region have shown their worth in clinical care as well as within the scope of medical nutrition education, research and in quality management (Payne-James *et al*, 1990; Regenstein, 1991; Hassel *et al*, 1994; Howard, 2001a, b). Individual NSTs have been shown to cover their own operating costs and in many cases have demonstrated savings in therapy costs (Roberts & Levine, 1992; Hassel *et al*, 1994; Ashley and Howard, 2000; Howard, 2001a,b). Although the advantages of NST in various disciplines in-hospital as well as in the out-patient field could be demonstrated for the USA and a few European countries

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(Mughal & Irving, 1986; Brown *et al*, 1987; Payne-James et al, 1990; Howard *et al*, 1991; Cohen, 1993; Elia, 1993; Hassel *et al*, 1994; Sousa, 1994; Howard *et al*, 1997; Ashley & Howard, 2000; Allison, 2001), but very little is known on the structure and function of NST in Germany (Suchner *et al*, 2000). Among others, this must be because of the lack of acceptance of nutritional medicine in Germany (general lack of specialty, or subspecialty or curriculum) and also because of the lack of specifications for a standardisation of clinical nutrition by the patronage organisations, for example, DEGEM (Suchner *et al*, 2000). As a consequence of the little acceptance of clinical nutrition therapy, no clear evolution of a clinically oriented medical nutrition competence becomes apparent in Germany. The model of the American NST can certainly not be easily applied to German hospitals because the German health insurance and social system as well as the hospital financing is totally different in comparison to the USA. However, the structures and organisation forms of these teams show how a successful nutrition therapy can be carried out (Suchner *et al*, 2000). In order to obtain information on the structure and organisation, and thus also on the conditions for a nutrition therapy by NST in Germany, this prospective study was carried out.

Methods

In 1999, we checked 2000 German hospitals for the existence of NST. The hospitals were divided into three types:

1. University hospital: a hospital with more than 800 beds, a wide spectrum of medical specialities and its main focus on academic education.
2. Teaching hospital: a hospital with more than 800 beds, a wide spectrum of medical specialities and its main focus on patient management.
3. Others: a hospital with less than 800 beds and its main focus on patient management.

The condition for inclusion into the evaluation was that the NST should comprise, at minimum, one physician plus one staff (nurse, dietitian, oecotrophologist, pharmacist). The size of the team was undefined. The managers of the evaluated NST were questioned prospectively in a standardised face-to-face interview. For the evaluation and documentation, an interview questionnaire with standardised questions relating to the structure and organisation of the NST was used. The following topics were investigated:

(a) Structure and work of the team and its financing.
(b) Qualification of team members.

The questions of the interview questionnaire were structured as follows:

(a) Questions related to structure and work of the teams and their financing:

1. Type of hospital, number of beds and which disciplines are present?
2. How many outpatients and hospitalised patients per year?
3. How long does the team exist?
4. Composition of the team?
5. Which disciplines do the team care for?
6. Which tasks does the team perform?
7. When is the team called?
8. Does the team act as consulting or in deciding the therapy?
9. How much time do the team members invest in NST and do they have other tasks independent of NST?
10. How is the financing of the various team members organised?
11. Does NST render services to third parties?

(b) Questions related to the qualification of the team members:

1. What additional qualifications do the various team members hold?
2. How do the team members realise continuing education?
3. Visits to congresses and continuing educations organised by the various umbrella organisations.

The questionnaire was independently evaluated by Ventiv Health Ltd, Lenggries, Germany. Data are reported as total counts (n), mean (x) and percentage (%).

Results

A total of 47 NSTs were found at 2000 German hospitals (2.35%) meeting the requirements of the inclusion criteria. NST that did not meet our requirements were not found. The distribution of the NSTs across Germany showed a clear centring in the agglomeration areas, as well as a North–South and West–East slope. On an average, the NSTs worked for 8 y, where the majority of 17 teams (36%) existed for 5 y.

The staff composition of the NST is shown in Figure 1. A senior physician held the professional management in 33 teams (70%), a chief physician in eight teams (7%), and an assistant physician in six teams (13%).

Most of the time the NSTs were located within internal medicine with a number of 36 (77%), followed by nine surgical teams (19%) and two ENT (4%). Most NSTs (22 teams = 47%) were located at a university hospital with an average number of beds ranged at 1358. A further 14 NSTs (30%) were located in a teaching hospital (median count of beds 1099) and 11 NST (23%) in other hospitals with a median bed count of 736. In all hospitals where NST was evaluated the disciplines surgery, anaesthesiology and internal medicine were present, followed by gynaecology (96%), ENT and radiology (each 91%), urology, oncology, paediatrics (each 81%), neurology (79%), neurosurgery (79%) and

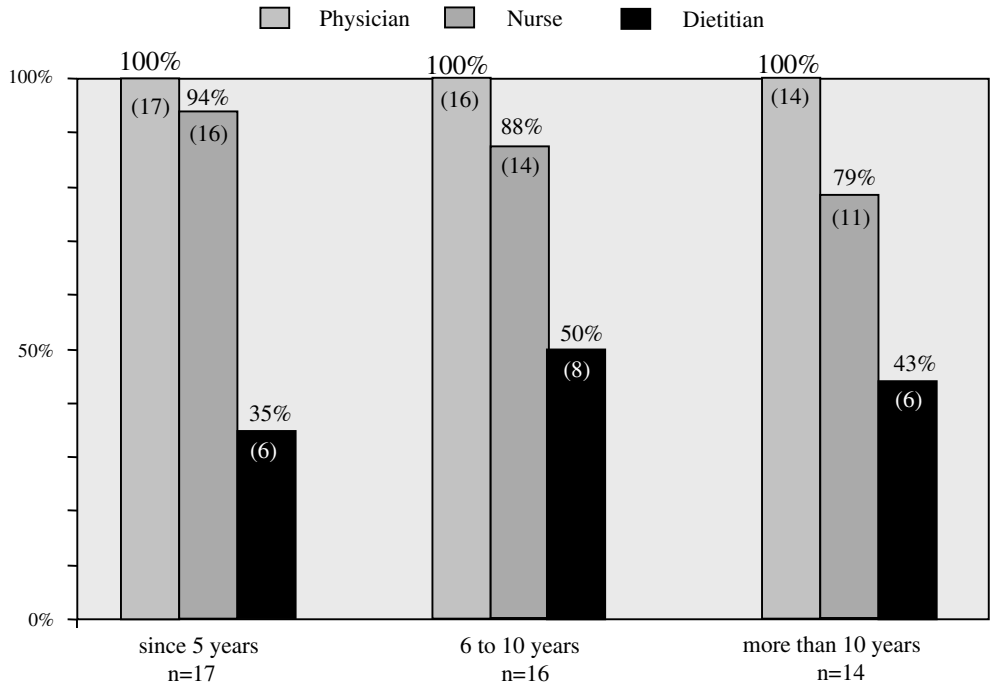


Figure 1 Staff composition of the evaluated 47 NST depending on the type of hospital in %, in brackets absolute number.

oral surgery (62%). The proportion of the psychiatrics, orthopaedics and geriatrics disciplines was rather low.

The NST cared for 167 outpatients per year (median 65) on an average, where most of the teams (43%) cared for up to 100 patients, at the university hospitals an average of 477, at the teaching hospitals 400, and in all other hospitals 179 hospitalised patients per year. With a longer period of existence of the NSTs, the number of the treated hospitalised patients also increased. In all, 14 NSTs (30%) with an existence of more than 10 y treated on an average 520 patients per year, 16 teams (34%) with an existence of 6–10 y treated 346 patients, and 17 NSTs (36%) with an existence of not more than 5 y treated 293 patients.

The specialties where nutrition care was most frequent were surgery and internal medicine, each 97%, followed in decreasing percentage by ICU (74%), ENT (72%), neurology (70%), oncology (64%), radiology (55%), paediatrics (53%), gynaecology (51%), oral surgery (49%), neurosurgery (45%), psychiatry (30%), urology (26%), geriatrics (21%), dermatology (21%) and orthopaedics (13%).

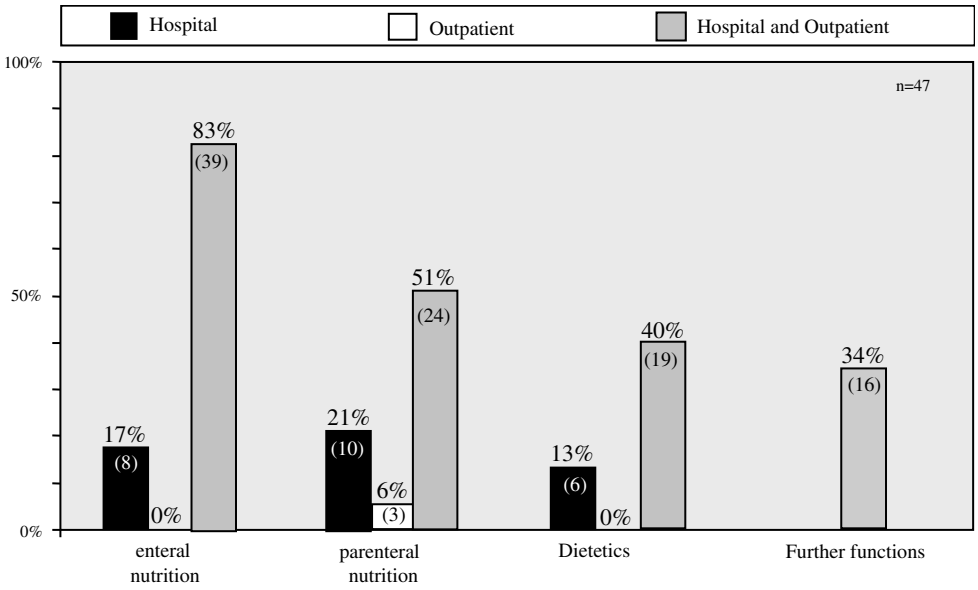
The topic of the NST work was in enteral nutrition (Figure 2). A total of 16 teams must also cover other duties such as, for example, pain therapy (Figure 2). The most frequent treatment diagnoses are shown in Figure 3. Of the teams, 17% decide independently on nutrition therapy, 53% are consulting, and in 30% the competency for decision is unclear. The NST is called in 32% with the admission of patients and in 68% in the case of questions or problems. All NSTs are requested by doctors or staff on the wards and in 74% there exists a combination of third-party request and own initiative of the NST.

In 64% of all cases, the team managers had founded the NST themselves. In all, 47% of the physicians, 19% of the nurses and 19% of the dietitians in the NST held a nutrition-specific additional qualification. The following media were used for continuing education: professional journals (94%), congresses (79%) and specialised books (77%). A total of 2% of all physicians, 68% of the nurses and 77% of the dietitians were exclusively responsible for the NST.

The working time spent by the team manager for the NST is listed in Figure 4. The financing of the NST physicians was made at 87% by the hospitals, at 4% through third-party funds and at 9% by a mixed financing. The majority of the nurses (54%) were paid via third-party funding, at 29% by the hospital and at 17% via mixed financing. The majority of the dietitians were paid by the hospital (55%) and at 20% via third-party funding and at 25% via mixed financing. The financing of the nutritionists depended on the sources of third-party funding to an even higher extent (63%). The pharmacists in the NST were always financed by the hospitals. A total of 40% of all NST had the chance to charge services rendered to third parties (GP, nursing home, etc). Two teams carried out an internal quality control.

Discussion

This study presents the first attempt at a description of the qualitative and quantitative situation of the NST in



Further functions (n=16):

Pain Therapy	(2)
Diebetic mangement	(2)
Obesity management	(2)
Homecare	(2)
Parenteral medicament application	(2)

Figure 2 Percental distribution of tasks of the NST in outpatient and in-patient environment.

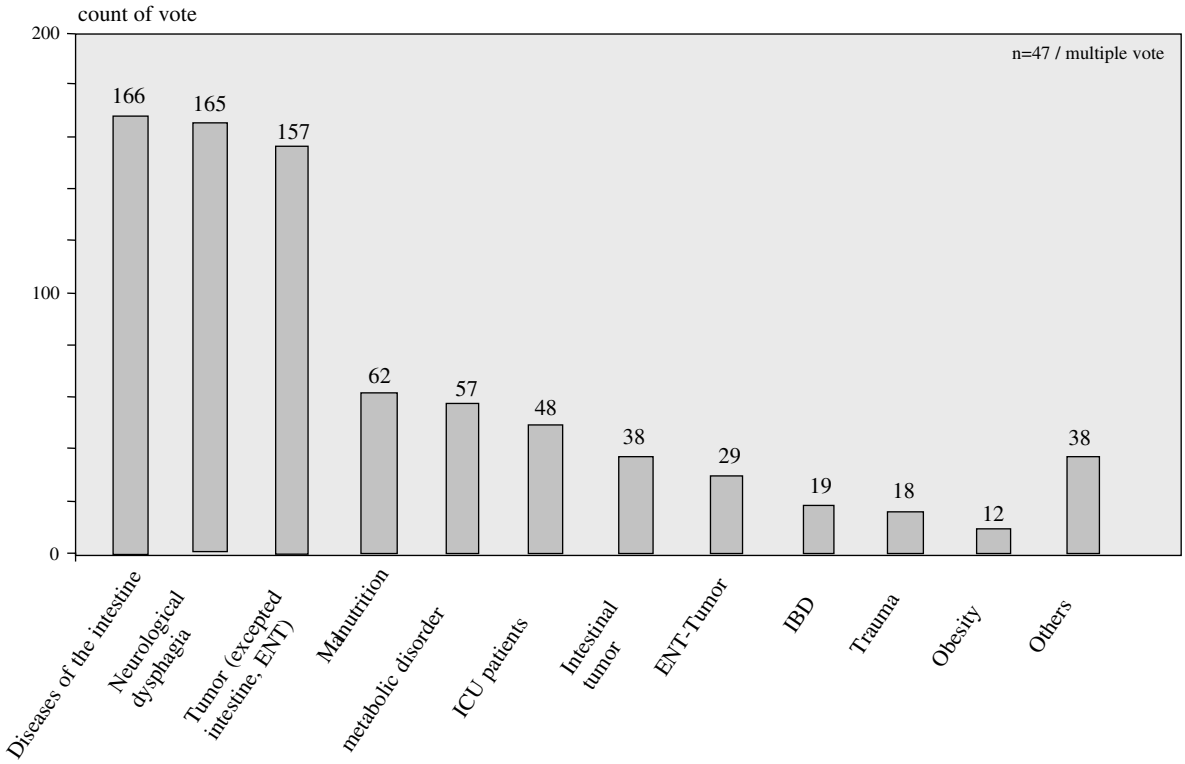


Figure 3 The most frequently mentioned treatment diagnoses of the NST and the associated average consultations per year.

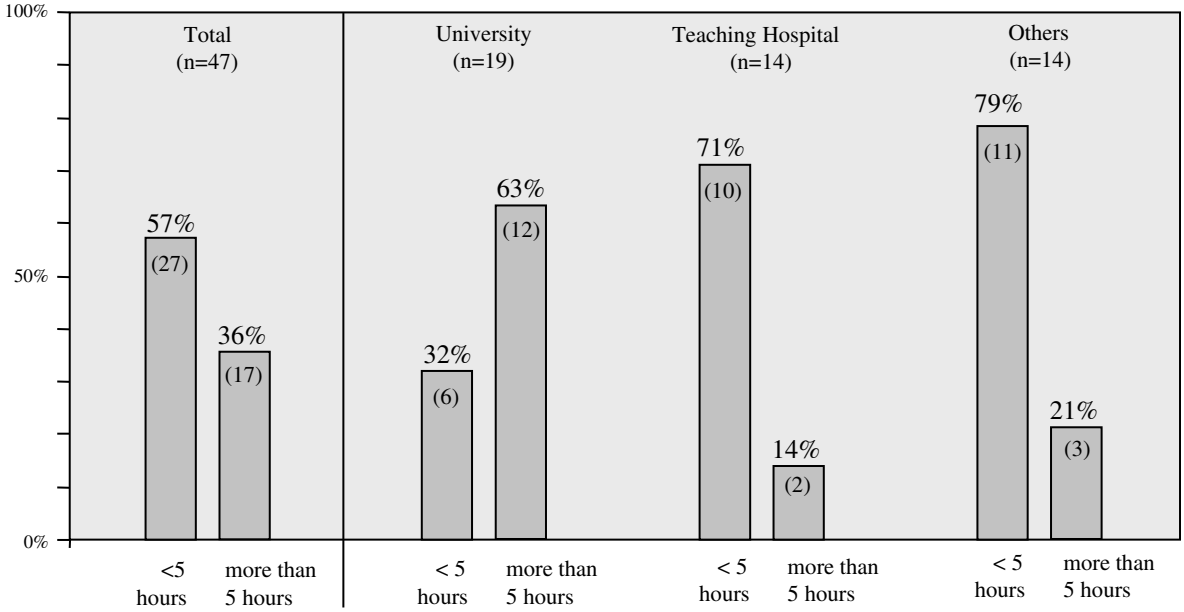


Figure 4 Count of the hours per week served for the NST of the team managers broken down according to hospital type.

Germany. The low number of existing NSTs is remarkable. In 1999, NSTs existed only in 2.4% of all hospitals with the number of beds exceeding 250. These figures are clearly contrasted by countries where a clinical nutrition therapy is already established (Mughal & Irving, 1986; Brown *et al*, 1987; Payne-James *et al*, 1990; Howard *et al*, 1991; Cohen, 1993; Hassel *et al*, 1994; Sousa, 1994; Elia, 1993). The spatial distribution of the NST in Germany showed a clear West–East slope. In the former GDR, nutrition medicine was not a research topic so that only some young teams could be established after the German reunification. Considering the structure and the size of the hospitals, it becomes apparent that primarily university hospitals and academic teaching hospitals with a high number of beds and a wide spectrum of specialities have NST teams in existence for a longer time. The size of the hospital and the time of existence of an NST seems to have a direct influence on the consultation frequency of the teams. If you correlate the age of the NST with the number of treated patients per year, a much higher consultation frequency becomes apparent for the older NST. Especially in ambulatory enteral nutrition therapy, the teams existing for a longer time are far more active. For the establishment of an NST the absolute number of disciplines has probably a rather secondary role, but disciplines with a high requirement for nutrition-therapeutical interventions, for example, surgery, internal medicine, ENT, neurology, must be present in the hospital. The most frequent treatment diagnoses (Figure 3) can usually also be allocated to the mentioned disciplines and these indicate already the topics of the work of the NST (diseases of the upper gastrointestinal tract, neurological dysphagia, tumour diseases). An intensive interdisciplinary work will certainly be aggravated by a fixed affiliation to a certain discipline (Howard, 2001a,b).

A truly independent NST without any affiliation to a discipline has, however, not yet been founded (Suchner *et al*, 2000). Future strategies must lead to a clear and permanent anchoring of the clinical nutrition therapy in the health-care system. Generally, the NSTs are only called when problems have occurred with an already initiated nutrition therapy or the nutrition therapy of cachectic patients should be started. A systematic screening of all patients admitted to the hospital still remains desirable. The education of ward and medical staff to detect malnutrition should become a part of the work of the NST in the future. Nutrition visits on the wards, which are established in the USA, are not made in Germany (Brown *et al*, 1987; Regenstein, 1991; Roberts & Levine, 1992).

The primarily third-party financing of the nursing staff on the NST can be seen as an indication of the lack of attention that the clinical nutrition therapy receives in German health care. Furthermore, third-party financing is always associated with the risk of depending on the interest of third parties. With a general acceptance of the clinical nutrition therapy, the cost absorbing party and hospital operating institution will also provide the funds for the financing of qualified staff. This lack of acceptance is reflected in the distribution of the workload of the medical staff.

Only 2% of all physicians working in an NST were exclusively responsible for this. The majority of the NST physicians are primarily included in the clinical routine in the hospital. This expresses itself in the fact that more than half (57%) of all physicians can spend only up to 5 h per week for NST work. Comparing the hospitals, it becomes apparent that the medical staff of university teams can clearly invest more time into the NST than the physicians at a smaller primary care hospital. This speaks against the

general acceptance of nutrition medicine as a component of the structure of primary care (Howard, 2001a,b). Only a few NST members hold a specific additional qualification in the field of nutrition medicine. This is probably because of the lack of a faculty curriculum and approval of the qualification in nutrition medicine by the Ärztekammer (Health Board). A European solution would be desirable to enforce standards in nutrition therapy, the faculty and certified continuing education in nutrition therapy (Jonkers *et al*, 1999). Only two NSTs have monitored the success of their work by an internal quality control. Despite a lack in infrastructure and moderate acceptance of their work, the currently existing NSTs in Germany have conducted a great deal of pioneer work in the field of clinical nutrition medicine. Especially at the large university hospitals teams have been established that are in existence longer. However, when making a critical comparison to the NSTs in the USA or Scandinavia, their work is not yet standardised and well established to be able to compete. The following points can be summarised from our survey:

1. The medical staff of the NST are primarily included into the scope of work of the discipline and do not primarily work within the team.
2. The majority of the financing of staff costs is by third-party funds.

In recapitulation and in comparison to the NSTs in North-America, the UK or Scandinavia, the following items are desirable for further establishing NSTs and thus nutrition medicine in Germany:

- Establishing of independently operating NSTs.
- Full financing of staff costs by the hospital operating party.
- Full-time employment of all members of the NST.
- Homogeneous establishing of NST throughout Germany.
- The facultative and standardised qualification and continuing education for physicians, nursing staff, dietitians and pharmacists.
- A Diagnosis-Related-Group (DRG) relevant quality control.

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