Disclosure of New Health Problems and Intervention Planning Using a Geriatric Assessment in a Primary Care Setting

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Aim To determine the prevalence of health problems uncovered by a Standardized Assessment for Elderly Patients in a Primary Care Setting (STEP), to explore how often STEP uncovered conditions new to general practitioners (GP) and ascertain how often STEP results led GPs to plan further interventions.

Methods This descriptive, interim analysis was based on the data of 189 elderly patients (median age, 78 years; interquartile range [IQ], 74-81) and their 20 GPs collected in Hannover region, Germany, between June 2008 and April 2009. Study nurses in the practice setting applied the 44-item STEP instrument, based mainly on self-reporting, as well as a standardized patient interview. Subsequently, GPs indicated whether the problems were new to them, and whether they planned further action or health interventions on the basis of the problems identified by STEP.

Results A median of 11 health problems (IQ, 8-14) were uncovered per patient, of which a median of 2 (IQ, 1-4) were new to the GP and interventions were planned for a median of 2 problems (IQ, 0-4). Many of the identified health problems are typical of old age. The following health problems uncovered by STEP were often new to the GPs (percentages differ to numbers due to missing GP ratings): cognitive impairment (33 of 64 affected by this problem, 73%), missing or unknown immunization status (84 of 160, 55%), and recent chest pain (19 of 37, 53%). Alcohol misuse was new in all 4 affected patients (100%) and recent falls were new in 5 of 7 patients (83%). Interventions for affected patients were frequently planned for problems of immunization (for 83 patients of 160 reporting the problem, 57%), current anxiety (4 of 9, 50%), and chest pain (14 of 37, 44%). Moreover, further management was frequently planned for depression (10 of 29, 39%) and cognitive impairment (16 of 64, 38%).

Conclusion Using a geriatric assessment in primary care discloses relevant heath problems and treatment needs that GPs may otherwise overlook.

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Improving the health of elderly patients in primary care is an important objective in the aging societies in most European countries. As the proportion of multimorbid and frail elderly people grows (1), health care providers are looking for new approaches to face this trend. Proactive and anticipatory approaches involving geriatric assessments have been introduced in some European countries. In Denmark, preventive home visits including geriatric assessment have been mandatory since 1996 (2), and the Single Assessment Process was introduced in the UK as part of the National Service Framework for elderly people in 2001 (3). In Germany, some general practitioners (GP) use components of geriatric assessments in a non-standardized way (4). Despite these efforts, health assessment of elderly people in primary care in Germany still remains a "black box" of measurements, procedures, and diagnostic as well as therapeutic interventions.

Moreover, evidence for health effects of the geriatric assessment conducted in outpatient settings is ambiguous (5-7). Unlike previous investigations, which analyzed outcome parameters such as mortality, living at home, hospital admissions, and quality of life (5-7), the main outcome parameter of our study was the patient's perspective. We explored a) how a geriatric assessment and the subsequent consultation affected patient's ratings of the current importance and the severity of their health problems. Severity is defined in our study as the degree of emotional impact and hindrance of daily activities. Another aim of our study was to determine the impact of a geriatric assessment on b) the disclosure of new health problems and c) the treatment management following the assessment.

This study is one of 7 subprojects of the Consortium "Prerequisites of a New Healthcare Model" (PRISCUS) (8), a 3-year project funded by the German Federal Ministry of Education and Research. The consortium combines epidemiology, geriatrics, pharmacology, and health economics to create new approaches for elderly, multimorbid general practice patients. In our subproject, we intend to involve 880 patients and 88 GPs. In this article, we describe the results of an interim analysis one year into the project, which involved 189 patients of the intervention group and their 20 GPs.

For the first time in Germany, we report the proportion of identified health problems that were new to the GPs and the proportion that merited further diagnostic or therapeutic management.

METHODS

All data presented in this article came from a cross-sectional, interim analysis of baseline information collected from patients and physicians in the intervention group between June 2008 and April 2009. The overall study was designed as a controlled, intervention study in primary care settings in Germany.

In the overall study, participants in the control and intervention groups rate the importance and severity of every health problem uncovered by STEP at baseline and again after 3 months. In the intervention group, patients and GPs receive a list of the health problems detected at baseline; GPs also get information about the importance ratings of the patients. In the intervention group, but not the control group, a consultation to discuss the results is scheduled immediately after the STEP assessment. After the baseline STEP assessment, controls receive care as usual during the follow up period. The aim of the study is to examine whether a geriatric assessment and the subsequent consultation based on the results improves the patient's perspective about relevance and severity of health issues, compared with controls, over the 3-month follow-up. The ethics committee of Hannover Medical School gave its approval to the study, and all participants gave their written consent.

Recruitment of GPs

The intervention group in the PRISCUS study was recruited in Hannover and the surrounding region. In this area, approximately 880 GPs are office-based. We used the register of the regional Association of Statutory Health Insurance Physicians to obtain GPs' contact details. Only a few GPs (n = 8) were selected due to their active involvement as teachers in our institute. First, GPs were invited to participate by letter and, in case of non-response, again by telephone. In the first recruitment drives, we sent letters to 215 GPs. Of these, 28 (13%) consented to participate and 11 (5.1%) declined. After those who failed to respond were contacted by telephone, a further 18 GPs consented. Of all GPs initially willing to participate (46, 21%), 14 withdrew their consent and one dropped out after initially participating. We did not collect data on reasons for declining. In the end, 31 GPs (14%) were included. This interim analysis analyzes the data for the first 20 GPs who were enrolled in the study.

Recruitment of patients

Practice nurses of the participating GP practices recruited consenting patients who fulfilled the following inclusion

criteria: age of 72 years and over, ability to come to the GP's practice, and telephone access at home. Exclusion criteria were a pre-existing diagnosis of severe dementia, current legal guardianship, severely impaired hearing, insufficient German language skills, or concurrent participation in another clinical study. Study nurses from our institute called recruited patients to fix an appointment for patient assessment at their GP's practice.

Patient assessment

We used a slightly modified version of the Standardized Assessment for Elderly Patients in Primary Care (STEP) (9,10). For this study, we divided STEP into 5 domains: physical health, psychological health, functional limitations, social/financial conditions of living, and risk factors. These domains were covered by 44 items and an open-answer question that allowed patients to discuss problems not covered by the predefined items.

After having been trained in an 8-hour curriculum, study nurses from our institute carried out the STEP in the practices. Immediately following STEP assessment, patients were interviewed about their perspective on the importance and the severity of their health problems identified on the STEP survey. Questions about severity were formulated based on the modified patient self-assessment version (11) of the Duke Severity of Illness Checklist (12). Both the STEP assessment and interview took an average of 60 minutes per patient. GPs independently assessed the importance of every health problem with regard to the need for intervention, without knowing the patients' ratings, and indicated whether the problem was new to them. Then GPs received information on patients' importance ratings and a consultation between GPs and patients took place. Afterwards, GPs were asked to indicate whether they planned further management of the health problems identified.

Statistical analysis

Characteristics of the study participants, prevalence of health problems, frequency of problems new to the physician, and frequency of planned health interventions were descriptively presented using absolute frequencies, percentages, and descriptive statistics (median, interquartile range [IQ]). In addition, 95% confidence intervals (CI) were calculated for the prevalence of health problems. Only patients who completed the follow up were included in the interim analysis. Cases were excluded from each individual analysis if at least one of the included variables was missing. Therefore, the number of valid cases varied for the different analyses; percentages of missing information are given. Descriptive analyses were performed using the Statistical Analysis System, version 9.1 (SAS Institute Inc., Cary, NC, USA).

RESULTS

We analyzed data of 189 patients and their 20 GPs (Table 1). The median age of patients was 78 years (IQ, 74-81) and of GPs (12 men, 60%) 46 years (IQ, 43-51).

TABLE 1. Demographic data of participating patients (n = 189)

Characteristic	No. (%) of patients
Sex:	
male	75 (40)
female	114 (60)
Age (years):	
72-79	125 (66)
80+	64 (34)
Educational level:*	
high	64 (34)
low	125 (66)
Health insurance coverage:	
public	177 (94)
private	12 (6)

*High educational level: secondary school and higher. Low educational level: no graduation or elementary school.

Prevalence of all health problems identified by STEP and problems new to the GP

A median of 11 health problems (IQ, 8-14) was found per patient using the 44 itemized health problems in STEP; the number of health problems per patient ranged from 2 to 27. Women reported 12 problems (IQ, 10-15), while men reported 9 problems (IQ, 7-11). In patients older than 80 years, the assessment uncovered 12 problems (IQ, 10-16) and in those aged 72 to 79 years 11 (IQ, 8-13).

A median of 2 health problems (IQ, 1-4) identified by STEP were new to the GP. In 107 of all 2185 (4.9%) health problems detected, information was missing on whether the problem was new to the GP; the results in this section are based on the remaining 95.1% of the problems.

Health problems were ranked by frequency and the relative frequency, with which they were new to the

GP. This relative frequency was calculated as the number of patients with a problem new to the GP divided by the number of patients in whom this specific problem was uncovered (Tables 2-3).

GPs always knew about the existence of 6 health problems: history of stroke, history of heart attack, abnormal blood glucose levels (in the last 12 months) or known diabetes, thyroid dysfunction, gait problems (based on the

TABLE 2. Ranking, by frequency, of health problems identified using Standardized Assessment for Elderly Patients in a Primary Care Setting (STEP) in the whole patient population (n = 189) and the proportion of problems new to the general practitioner (GP) among the patients reporting the problems

| | | Problems identified by STEP | | |
| | | No. of patients | mean prevalence (95% confidence interval) | No. (%) of patients with problem new to GP* |
Rank	Health problem			
1	Hypertension	163	86 (81-91)	5 (3.2)†
2	Missing or unknown immunization status	160	85 (79-90)	84 (55.0)
3	Hypercholesterolemia	146	77 (71-83)	3 (2.2)
4	Pain (in the last 4 weeks)	141	75 (68-81)	13 (9.2)
5	Problems with medication	133	70 (63-77)	30 (24.0)‡
6	Foot abnormality	116	61 (54-68)	32 (28)
7	Insufficient exercise	81	43 (36-50)	9 (12.0)§
8	Mourning	80	42 (35-50)	27 (35.0)
9	Sleeplessness (in the last 4 weeks)	74	39 (32-47)	26 (35.0)
10	Abnormal clock drawing test	64	34 (27-41)	33 (73.0)‖
11	Problems with hearing	60	32 (25-39)	12 (21.0)
12	Urinary incontinence	58	31 (24-38)	20 (35.0)

*The percentage was calculated as the number of patients with a problem new to the GP divided by the number of patients in whom this specific problem was uncovered. Only the patients with all corresponding values were included.
†After excluding 9 patients with missing data out of 163 patients reporting the problem (5.5%).
‡After excluding 7 of 133 patients (5.3%).
§After excluding 7 of 81 patients (8.6%).
After excluding 19 of 64 patients (30%). For data not marked, fewer than 5% of values were excluded from the calculation.

TABLE 3. Ranking, by frequency, of health problems new to the general practitioner (GP) identified using Standardized Assessment for Elderly Patients in a Primary Care Setting (STEP), and the overall prevalence of these problems in the whole patient population (n = 189)

| | | | Problems identified by STEP | |
| | | No. (%) of patients with problem new to GP* | No. of patients | mean prevalence (95% confidence interval) |
Rank	Health problem			
1	Alcohol misuse	4 (100)	4	2.1 (0.6-5.3)
2	Falls (≥2 in the last 6 mo)	5 (83)†	7	3.7 (1.5-7.5)
3	Abnormal clock drawing test	33 (73)‡	64	34 (27-41)
4	Missing or unknown immunization status	84 (55)	160	85 (79-90)
5	Chest pain (in the last 4 weeks)	19 (53)	37	20 (14-26)
6	Problems with mouth or chewing	17 (46)§	45	24 (18-31)
7	Problems with housing	18 (42)	44	23 (18-30)
8	Claudication (in the last 4 weeks)	9 (39)	23	12 (7.9-18)
9	Fecal incontinence/constipation	15 (37)	41	22 (16-28)
10	Financial problems	4 (36)‖	12	6.3 (3.3-11)

*The percentage was calculated as the number of patients with a problem new to the GP divided by the number of patients in whom this specific problem was uncovered. Only the patients with all corresponding values were included.
†After excluding 1 patient with missing values out of 7 patients reporting the problem (14%).
‡After excluding 19 of 64 patients (30%).
§After excluding 8 of 45 patients (18%).
‖After excluding 1 of 12 patients (8.3%). For data not marked, fewer than 5% of values were excluded from the calculation.

TABLE 4. Ranking, by frequency, of health problems for which interventions were planned by general practitioners identified using Standardized Assessment for Elderly Patients in a Primary Care Setting (STEP), and the prevalence of those problems among the entire patient population (n = 189)

		Intervention planned by general practitioner in No. (%) of patients reporting problem*	Problems identified by STEP	
Rank	Health problem		No. of patients	mean prevalence (95%confidence interval)
1	Missing or unknown immunization status	83 (57)†	160	85 (79-90)
2	Anxiety (in the last 2 weeks)	4 (50)‡	9	4.8 (2.2-8.8)
3	Chest pain (in the last 4 weeks)	14 (44)§	37	20 (14-26)
4	Claudication (in the last 4 weeks)	9 (41)	23	12 (7.9-18)
5	Depression (in the last 4 weeks)	10 (39)‖	29	15 (11-21)
6	Abnormal clock drawing test	16 (38)¶	64	34 (27-41)
7	Urinary incontinence	19 (35)**	58	31 (24-38)
8	Breathlessness (in the last 4 weeks)	13 (33)††	43	23 (17-29)
9	Thyroid dysfunction (in the last 5 y)	13 (31)‡‡	49	26 (20-33)
10	Smoking	3 (27)	11	5.8 (2.9-10)

*Numbers were determined after excluding patients for whom corresponding values were missing.
†After excluding 15 patients with missing values out of 160 patients reporting the problem (9.4%).
‡After excluding 1 of 9 patients (11%).
§After excluding 5 of 37 patients (14%).
‖After excluding 3 of 29 patients (10%).
¶After excluding 22 of 64 patients (34%).
**After excluding 3 of 58 patients (5.2%).
††After excluding 4 of 43 patients (9.3%).
‡‡After excluding 7 of 49 patients (14%). For data not marked, fewer than 5% of values were excluded from the calculation.

timed "up and go" test), and being an informal caregiver to a family member ("patient is caregiver").

Planning of health interventions by GPs

The results in this section include 88% of the planned interventions reported by GPs, since data were missing for 12% of the interventions. GPs planned diagnostic or therapeutic procedures for a median of 2 problems per patient (IQ, 0-4; range, 0-13). Interventions were most frequently planned for missing or unknown immunization status (in 83 of 160 [57%] patients reporting the problem) and very often for 3 problems of psychological/mental health: anxiety (in the last 2 weeks), 4 of 9 patients (50%); cognitive impairment (based on the clock drawing test [13]), 16 of 64 patients (38%); and depression (in the last 4 weeks), 10 of 29 patients (39%) (Table 4). For the 2 health problems most frequently new to GPs (alcohol misuse and more than 2 falls in the last 6 months), interventions were planned for only 1 of 4 patients (25%) reporting alcohol misuse and only 1 of 7 (25%) reporting falls.

DISCUSSION

Our interim analysis suggested that the STEP instrument was useful to detect relevant health problems in old age and identify previously overlooked treatment needs. It also provided insight into the prevalence and management of multimorbidity among elderly patients in a primary care setting in Germany. As STEP was developed within a European concerted action, it has been already applied in other countries. The findings of our current project illustrate that its use in Germany is feasible and beneficial, and we have no reason to doubt that it would also work in the health care settings of other countries.

The most prevalent health problems uncovered by STEP were hypertension, missing or unknown immunization status, high blood cholesterol/known hypercholesterolemia, pain (in the last 4 weeks), and problems with medication. Lack of immunization is often reported among the elderly: although a representative telephone survey in Germany indicated that influenza immunization increased with age; only 44% of the persons above 59 years were vaccinated (14). Regional data from Lower Saxony showed similar results (15), while investigations in two European countries indicated that relatively few elderly were immunized against certain diseases. Piccoliori et al found that 35.7% of people aged 70 years and older in South Tyrol, Italy, had not received influenza vaccination (16). In 2004, Mann et al found that 82.3% of patients in Austria aged 75 and older had received their last pneumococcal immuni-

zation more than 3 years ago (17). However, the high proportion of patients with a missing or unknown immunization status in our interim analysis may also be due to the fact that the four types of immunization (influenza, pneumococcal, tetanus, diphtheria) were considered in aggregate; thus, if only one immunization status was negative or unknown, the overall status was assigned the same result.

The prevalence of hypertension (86%) and elevated blood cholesterol/known hypercholesterolemia (77%) in our study was higher than that described by a German health insurance company (18). In that report, hypertension was diagnosed in more than 60% and high blood lipids in 45% of patients aged 65-80 years. A reason for this might be the high median age of patients recruited in our study. The number of chronic conditions increases with patient age (1).

In addition to hypertension and hypercholesterolemia, many of the health problems most frequently identified in the STEP instrument occur commonly among the elderly, namely problems with medication, foot abnormalities, cognitive impairment (based on the clock drawing test), problems with hearing, and urinary incontinence. Our results indicate that the STEP instrument draws needed attention to problems typical of old age.

Five of the 44 health problems covered by STEP were new to the GPs in more than 50% of the patients reporting them: alcohol misuse, recent repeated falls, cognitive impairment (based on the clock drawing test), missing or unknown immunization status, and recent chest pain. Alcohol misuse and cognitive impairment (ranked first and third of 44 in frequency of occurrence), as well as fecal incontinence/constipation and financial problems (ranked ninth and tenth of 44), are topics that patients may hesitate to bring up themselves due to feelings of shame (19). Therefore, they are rarely addressed during the consultation. Since physicians also tend to neglect these topics, the assessment seems to be a useful tool to initiate communication about these subjects.

Surprisingly, physicians were often unaware of recent chest pain. As we did not scrutinize the nature of the pain or the underlying problem, we could not differentiate between pain due to coronary heart disease or pain due to some other problem. In any case, chest pain can imply serious underlying disease and is certainly worth examining in further investigations. Two problems typically associated with aging were found among the 10 health

problems most frequently new to the GPs: problems with mouth/chewing and problems with housing. Obviously, these problems, though relevant for patients and associated with their general health, are often not in a focus for physicians (20-22), possibly because they think that housing is a matter for family or social services and mouth problems a matter for dentists. Nevertheless, many health problems were well-known to GPs. In more than 90% of cases, they were aware of problems that involved clinical measurements (pulse abnormality, hypertension) or laboratory values (blood cholesterol level, blood glucose level, thyroid hormone levels).

GPs planned further management most often for immunization, anxiety, or chest pain. The high proportion of interventions for immunization reflects the usefulness of STEP as a reminder instrument; it may also reflect the fact that immunizations are relatively inexpensive, simple, and widely recognized as beneficial. GPs apparently also considered psychological health problems and cognitive impairment to require diagnostic or therapeutic procedures. The high frequency of planned interventions for these health problems indicates that the GPs in our study were prepared to deal with psychological problems of their elderly patients.

A study conducted in Italy also examined whether GPs planned further interventions after using a geriatric assessment (16). However, the authors of that study explored intervention planning and accomplishment solely for newly identified health problems. Our approach was broader because it assumed that well-known problems would benefit from a "reminder" within a health system often dominated by the "tyranny of the urgent" (23), and that new interventions for old problems could still be initiated after an assessment.

Due to the interim nature of our analysis, we can only describe the data of a partial sample, and the results must be interpreted with caution. Analyses were flawed by the relatively high number of missing ratings due to inconsistent data and one physician's misunderstanding of procedure. Most missing values occurred for the problem of cognitive impairment. Here, quality checks revealed that study nurses often misinterpreted the clock drawing test. In these cases, cognitive impairment was only diagnosed later and could not be included in GPs rating. Moreover, selection bias is possible in our study, since participating GPs may be more interested than the average GP in the health of the elderly, and thus cooperated more readily. Patient recruitment may also show selection bias, as only patients willing

to be interviewed during the follow-up period consented. Moreover, we are aware that in some fields of the assessment, taboo subjects, or socially acceptable answers may have influenced patients' responses.

Our results show that a geriatric assessment uncovered important health problems in elderly patients. The data also indicate how well-informed the physicians were about various domains of health problems in their patients, and for which domains they perceived a need for action. The final analysis of the complete data should lead to a deeper knowledge of patients' and physicians' perspectives of health problems. We expect it to reveal which factors influence physicians' management, and whether a geriatric assessment improves patients' (subjective) health. In this way, we hope to gain insights into the handling of multimorbidity among the elderly.

Acknowledgments

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