

General Practitioners' Judgment of their Elderly Patients' Cognitive Status

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BACKGROUND: General practitioners (GP) play an important role in detecting cognitive impairment among their patients.

OBJECTIVES: To explore factors associated with GPs' judgment of their elderly patients' cognitive status.

DESIGN: Cross-sectional data from an observational cohort study (AgeCoDe study); General practice surgeries in six German metropolitan study centers; home visits by interviewers.

PARTICIPANTS: 138 GPs, 3,181 patients (80.13±3.61 years, 65.23% female).

MEASUREMENTS: General practitioner questionnaire for each patient: familiarity with the patient, patient morbidity, judgment of cognitive status. Home visits by trained interviewers: sociodemographic and clinical data, psychometric test performance. Multivariate regression analysis was used to identify independent associations with the GPs' judgment of "cognitively impaired" vs. "cognitively unimpaired."

RESULTS: Less familiar patients (adjusted odds ratio [aOR] 2.42, 95% CI 1.35–4.32, for poor vs. very high familiarity), less mobile patients (aOR 1.29, 95% CI 1.13–1.46), patients with impaired hearing (aOR 5.46, 95% CI 2.35–12.67 for serious vs. no problems), and patients with greater comorbidity (aOR 1.15, 95% CI 1.08–1.22) were more likely to be rated as "cognitively impaired" by their GPs.

CONCLUSIONS: The associations between GPs' assessments of cognitive impairment and their familiarity with their patients and patients' mobility, hearing, and morbidity provide important insights into how GPs make their judgments.

KEY WORDS: general practice; cognition; dementia; clinical judgment.
J Gen Intern Med

DOI: 10.1007/s11606-009-1118-2

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INTRODUCTION

Cognitive impairment in old age is a major future public health concern¹. General practitioners (GPs) play an essential role in the recognition and management of cognitive impairment². In Germany, they regularly see the majority of the aged population and have a long-lasting relationship with patients and their relatives^{3,4}. Previous studies on GPs' recognition of mild dementia and mild cognitive impairment (MCI) have reported low accuracy^{5,6}. To detect variables that are associated with the GPs' decision of rating a patient as "cognitively impaired" or not, we explored the sample of the German Study on Ageing, Cognition and Dementia in Primary Care Patients (AgeCoDe).

METHODS

Sample

The cohort consists of all patients participating in the AgeCoDe study (N=3,327)—a prospective longitudinal study of the early detection and management of MCI and dementia in General Practice. The details of recruitment have been reported elsewhere⁷. In brief, the patients were recruited from the files of 138 GP surgeries in six metropolitan study centers. Inclusion criteria were age 75 years or older and at least one GP contact within the last 12 months. Exclusion criteria were:

Further members of the AgeCoDe Study Group: Heinz-Harald Abholz, Cadja Bachmann, Michaela Buchwald, Mirjam Colditz, Moritz Daerr, Sandra Eißländer-Gorfer, Sven Heinrich, Frank Jessen, Teresa Kaufeler, Hans-Helmut König, Tobias Luck, Melanie Lupp, Manfred Mayer, Julia Olbrich, Heinz-Peter Romberg, Anja Rudolph, Melanie Sauder, Britta Schuermann, Michael Wagner, Anja Wollny, and Thomas Zimmermann.

Received January 12, 2009

Revised July 8, 2009

Accepted September 2, 2009

not able to give informed consent, non-regular patient of the surgery, contact by home visits only, residence in a nursing home, and terminal illness. A random sample of eligible patients was invited by a letter from their GP to discuss the study. Those with a positive reaction consulted their GP and written, informed consent was obtained. After this consultation an interviewer made the appointment for the interview.

Assessments

General practitioner questionnaire. The GP documented his familiarity with the patient (years of physician-patient relationship and rating of familiarity with the patient (0 = very well, 1 = well, 2 = poor, 3 = very poor)) and the presence or absence of 19 comorbidities. The GP judged the cognitive status of the patient on the Global Deterioration Scale (GDS)⁸ based on the current contact and impression of the patient. The GDS scale comprises seven stages, with stage 1 defined as absence of complaints or objective impairment, stage 2 defined as the presence of subjective cognitive complaints without objective impairment, and stages 3 to 7 as increasing degrees of objective cognitive impairment.

Patient interviews. Data were collected during home visits by trained interviewers. The main instrument was the SIDAM (Structured Interview for the Diagnosis of Dementia of the Alzheimer Type, Multi-Infarct Dementia, and Dementias of other Aetiology according to DSM-IV and ICD-10)⁹. Further measures were instrumental activities of daily living¹⁰ (IADL, score 0–8), geriatric depression scale¹¹ (score 0–15), subjective cognitive complaints^{12,13} (score 0–12), mobility (index consisting of items on gait and transportation issues; score 0–7), number of drugs regularly taken, educational level,¹⁴ hearing and vision (no problems, mild, serious, or extreme problems), and living with others vs. living alone.

Statistical Analysis

We performed an adjusted multivariable logistic regression analysis with the GPs' GDS rating as dichotomized dependent variable (GDS \leq 2 "cognitively unimpaired" vs. GDS \geq 3 "cognitively impaired"). All variables mentioned in the above assessment section (sum of comorbidities as one variable) plus patients' sex and age were included as independent variables in the analysis. To adjust for the influence of objective cognitive performance, the SISCO score⁹ (cognitive test part of the SIDAM; score 0–55) was included in the analysis. Independent (predictor) variables were included in the final model if their significance level was $P < 0.01$ in the initial model. Analyses were performed using SPSS, version 16 (SPSS Inc., Chicago, IL, USA).

Ethical Approval

The ethics committees of the participating centers approved the study. Written, informed consent was obtained from all GPs and patients.

RESULTS

Sample Characteristics

The 138 GPs (19–29 per center) recruited a total of 3,327 patients. Seventy-four percent of the GPs were male with a mean age of 50.9 ± 6.5 years and 14.9 ± 6.7 mean years in practice. On average, each GP included 24.1 ± 11.7 patients. The present analysis includes complete data from 3,181 non-demented patients. Patients' characteristics are shown in Table 1.

Regression Analysis

The resulting regression model explains 13.9% of the variance (Nagelkerkes R^2), is appropriate according to the Hosmer-Lemeshow test (χ^2 (8)=5.60; $P=0.69$), and incorporates five variables with $P < 0.01$ (Table 2). The patients' age, educational level, and sex are not significantly related to the GPs' ratings and are not included in the final model.

Less familiarity with the patient is associated with a higher probability of being rated as "cognitively impaired" by the GPs, whereas well-known patients are proportionally less frequently rated as "impaired." More comorbidities, a higher degree of problems with mobility, and serious hearing problems also result in "cognitively impaired" ratings by the GPs. The SISCO taken from the interview as a parameter of objective cognitive performance is associated with the GPs' judgment. The higher the SISCO the less frequently a person is judged to be impaired. Patients' subjective memory complaints assessed in the interview are not significantly associated with the GPs' judgment.

DISCUSSION

Previous studies focused on the concordance between GPs' judgment of patients' cognition and function and objective

Table 1. Characteristics of the Patients in the Sample (N=3,181)

Age (yr) [mean \pm SD]	80.1 \pm 3.6
Gender [% women]	65
Information from the interview:	
Number of drugs taken [mean \pm SD]	4.6 \pm 2.9
Cognitive test performance [mean SISCO \pm SD]	47.9 \pm 4.9
Mild cognitive impairment ¹⁵ [% with MCI]*	16
Geriatric depression scale [mean \pm SD]	2.3 \pm 2.3
Educational level [% with low/mediate/high level]	62 / 27 / 11
Living situation [% living alone]	50
Vision [% with problems]	14
Hearing [% with problems]	31
Mobility score [mean \pm SD]	0.5 \pm 0.9
Subjective cognitive complaints score [mean \pm SD]	2.0 \pm 2.1
Instrumental activities of daily living score [mean \pm SD]	7.3 \pm 1.2
Information from the GP:	
Familiarity with the patient [% of patients rated as "very well known"]	44
Duration of the GP-patient relationship [years, mean \pm SD]	11.6 \pm 7.3
Number of comorbidities [mean \pm SD]	3.2 \pm 2.0
Cognitive status [% rated as "cognitively impaired" by their GP]	7.4

* 3,112 patients with complete data for MCI operationalization

Table 2. Significant Predictors of GPs' Judgment of a Patient Being "Cognitively Impaired"^a

Predictor	Adjusted odds ratio	95% CI	P value
Familiarity with patient (4 categories)			0.001
high vs. very high	1.54	1.14–2.09	0.005
poor vs. very high	2.42	1.35–4.32	0.003
very poor vs. very high	6.56	1.64–26.22	0.008
Number of comorbidities	1.15	1.08–1.22	<0.001
Hearing (3 categories ^b)			<0.001
mild vs. no problems	1.21	0.90–1.63	0.213
serious vs. no problems	5.46	2.35–12.67	<0.001
Mobility (range 0–7)	1.29	1.13–1.46	<0.001
SISCO (range 0–55)	0.91	0.89–0.94	<0.001

^aLogistic regression model adjusted for all the variables listed in Table 1. The patients' age, educational level, and gender are not included in the final model

^bNo patients were judged to have "extreme problems" with hearing, so this category was not included

GP = general practitioner; CI = confidence interval; SISCO = cognitive test part of the Structured Interview for the Diagnosis of Dementia of the Alzheimer Type, Multi-Infarct Dementia, and Dementias of other Etiology according to DSM-IV and ICD-10 (SIDAM)

measures, as diagnostic "gold standards"^{16,17}. In contrast, the present study identified factors associated with the GP's subjective impression of a patient being cognitively impaired or not. The GPs' judgment was significantly associated with objective cognitive test performance as assessed by patient interviews. Lower SISCO scores increased the chance of being judged as impaired, which indicates that the GPs' assessment is related to an objective measure of cognitive status.

The GPs' judgment of "cognitive impairment" was independently associated with serious hearing problems, worse mobility, and higher morbidity. It is possible that GPs use a rule of thumb and deliberately take into account these somatic factors when judging cognition to enhance their diagnostic accuracy. Another way to interpret these associations is offered by two types of observation bias. As a kind of halo effect, the predominantly perceived attributes (physical ability/disability, i.e., hearing, mobility, morbidity) might affect judgment in terms of "outshining" another attribute (cognition). Second, an illusory correlation might have an impact on the judgment as GPs might overestimate the relationship between somatic and cognitive status.

Highly familiar patients are less frequently rated as "cognitively impaired" by their GPs. This is an interesting finding, suggesting various hypotheses that require further investigation. It is possible that GPs simply judge their familiar patients more accurately, i.e., they better recognize the absence of cognitive impairment. Alternatively, GPs might apply different decision processes for more or less familiar patients. GPs might be emotionally more involved when judging well-known patients, triggering more lenient judgments. Aldrich¹⁸ discusses that one drawback of good patient knowledge might be a biased medical judgment due to an "overidentification" with the patient. GPs probably remember more experiences with highly familiar patients. This could focus their judgment on a robust general impression of the patient being "cognitively healthy" based on precedent information. Especially in very familiar patients, GPs might insist on easily accessible information, such as previous experiences with the patient, rejecting or avoiding new or inconsistent data. This coincides with

Weyrauch¹⁹ who reports that "one disadvantage of using personal knowledge [...] is that the physician could close himself to other possibilities [...]" and "might make assumptions based on prior assessments, experiences, and expectations; that is, on his personal knowledge of the patient" (p. 253).

There are several limitations to our study. First, we do not compare the GPs' judgment with an objective diagnostic interview. The purpose of our study was to examine the clinical judgment rather than any agreement with an operationalization of a diagnostic construct, such as MCI. Therefore, the present analyses offer no results regarding the correctness of the GPs' judgment. We cannot differentiate whether the GPs use the significant variables to form their judgment or whether their judgment is biased by these variables. Furthermore, our baseline sample consists of non-demented elderly patients. We cannot make conclusions about GPs' judgments on their patients' dementia status. GPs revert to many aspects of their patients, from which only a fraction has been covered in our study. In particular, variables on the complex patient-doctor relationship could not be measured in detail²⁰. Due to the recruitment strategy and our exclusion criteria the analyzed sample has to be regarded as healthier and fitter than the general population.

In summary, we could identify four factors associated with the GPs' judgment of a patient as being cognitively impaired or not—independent from objective test performance: familiarity with the patient, comorbidity, problems with hearing, and mobility. This provides an insight into how GPs judge their patients' cognitive status. We cannot evaluate the definite reasons why these variables are associated with the GPs' judgment. In further analyses of our baseline and follow-up data, we will compare the GP judgment with a diagnostic "gold standard" (MCI, dementia) and assess the predictors of agreement. This will add further insight.

Acknowledgements: The authors thank all participating patients and their general practitioners for their good collaboration.

GPs who recruited patients into the study are listed below:

Hamburg: Gundula Bormann, Winfried Bouché, Doris Fischer-Radzi, Michael Funke, Heike Gatermann, Wolfgang Herzog, Petra Hütter, Stefanie Kavka-Ziegenhagen, Günther Klötzl, Bernd-Uwe Krug, Dietrich Lau, Ursula Linn, Andrea Moritz, Karl-Christian Münter, Detlef Niemann, Klaus Richard-Klein, Walter Schreiber, Ursula Schröder-Höck, Gerhard Schulze, Klaus Stelter, Carl-Otto Stolzenbach, Ljudmila Titova, Klaus Weidner, Otto-Peter Witt, Eckehard Zeigert;

Mannheim: Gerhard Arnold, Veit-Harold Bauer, Werner Besnier, Hanna Böttcher-Schmidt, Hartmut Grella, Gernot Kunzendorf, Ingrid Ludwig, Manfred Mayer, Hubert Mühlig, Arnt Müller, Adolf Noky, Helmut Perleberg, Carsten Rieder, Michael Rosen, Georg Scheer, Michael Schilp, Matthias Schneider, Jürgen Wachter, Brigitte Weingärtner, Hans-Georg Willhauck;

Bonn: Jörg Eimers-Kleene, Klaus Fischer, Maria Goebel-Schlatholt, Peter Gülle, Wolf-Dietrich Honig, Hans Jürgen Kaschell, Hanna Liese, Manfred Marx, Eberhard Prechtel, Heinz-Peter Romberg, Heribert Schützendorf, Annemarie Straimer, Martin Tschoke, Karl-Michael Werner;

Halstenbek: Herrmut Mayen;

Königswinter: Theodor Alfén;

Bad Honnef: Klaus Weckbecker;

Niederkassel: Inge Bürfent;

Alfter-Oedekoven: Johann von Aswege;

Erfstadt-Liblar: Arndt Uhlenbrock;

Windeck-Herchen: Wolf-Rüdiger Weisbach;

Leipzig: Martina Amm, Heinz-Michael Assmann, Horst Bauer, Barbara Bräutigam, Jochen Ebert, Angelika Gabriel, Eva Hager,

Gunter Kässner, Ina Lipp, Thomas Lipp, Ute Mühlmann, Gabi Müller, Thomas Paschke, Gabriele Rauchmaul, Ina Schmalbruch, Holger Schmidt, Hans-Christian Taut, Ute Voß, Bettina Winkler, Sabine Ziebold;

München: Eugen Allwein, Guntram Bloß, Peter Dick, Johann Eiber, Lutz-Ingo Fischer, Peter Friedrich, Helga Herbst, Andreas Hofmann, Günther Holthausen, Karl-Friedrich Holtz, Ulf Kahmann, Elke Kirchner, Hans Georg Kirchner, Luitpold Knauer, Andreas Koepfel, Heinz Koschine, Walter Krebs, Franz Kreuzer, Karl Ludwig Maier, Christoph Mohr, Elmar Schmid, Gabriel Schmidt, Johann Thaller; Haar: Richard Ellersdorfer, Michael Speth;

Düsseldorf: Angela Ackermann, Pauline Berger, Florinela Cupsa, Barbara Damanakis, Klaus-Wolfgang Ebeling, Tim Oliver Flettner, Michael Frenkel, Friederike Ganßauge, Kurt Gillhausen, Hans-Christian Heede, Uwe Hellmessen, Benjamin Hodgson, Bernhard Hoff, Helga Hümmerich, Boguslaw-Marian Korman, Dieter Lüttringhaus, Dirk Matzies, Vladimir Miasnikov, Wolfgang Josef Peters, Bügitt Richter-Polynice, Gerhard Erich Richard Schiller, Ulrich Schott, Andre Schumacher, Harald Siegmund, Winfried Thraen, Roland Matthias Unkelbach, Clemens Wirtz.

Conflict of Interest: All authors declare that the answer to all questions on the competing interest form is "No" and therefore have nothing to declare.

Funding: The German Study on Ageing, Cognition and Dementia in Primary Care Patients (AgeCoDe) is part of the German Competence Network Dementia (KND) and the German Competence Network Degenerative Dementias (KNDD) and was funded by the German Federal Ministry of Education and Research (grants KND: 01GI0102, 01GI0420, 01GI0422, 01GI0423, 01GI0429, 01GI0431, 01GI0433, 01GI0434; KNDD: 01GI0710, 01GI0711, 01GI0712, 01GI0713, 01GI0714, 01GI0715, 01GI0716).

Authorship Statement: HK, MP, ME, HvB, and WM contributed to study conception and design; all authors contributed to recruitment of GPs and patients, data acquisition, analysis and interpretation; BW organized data management and assured data quality; BW and MP performed the biostatistical analyses based on the discussions of all authors; MP, ME, and HK drafted the article; AF and AW critically discussed all versions of the manuscript; all authors revised and finally approved the version to be published.

Sponsor's Role: Funding had no influence on design, methods, subject recruitment, data collection, analysis, or preparation of the paper.

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