



Improvement in the quality of doctor-patient communication between 1982 and 2001: an observational study on hypertension care as perceived by patients and professionals

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Complete List of Authors:	Butalid, Ligaya; NIVEL, Netherlands Institute for Health Services Research Verhaak, Peter; NIVEL, Netherlands Institute of Health Services Research Tromp, Fred; Radboud University Nijmegen Medical Centre, Department of Primary and Community Care Bensing, Jozien; NIVEL, Netherlands Institute for Health Services Res
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3 **Improvement in the quality of doctor-patient communication between 1982 and 2001: an**
4 **observational study on hypertension care as perceived by patients and professionals**
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9 Ligaya Butalid, Peter FM Verhaak, Fred Tromp, Jozien M Bensing
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11
12 NIVEL, Netherlands Institute for Health Services Research, PO Box 1568, 3500 BN, Utrecht, The
13
14 Netherlands
15

16 Ligaya Butalid, researcher / PhD student
17

18 Peter FM Verhaak, professor
19

20 Jozien M Bensing, professor
21
22

23
24 Radboud University Nijmegen Medical Centre, Department of Primary and Community Care. PO Box
25
26 9101, 6500 HB, Nijmegen, The Netherlands
27

28 Fred Tromp, researcher
29
30

31
32 Correspondence to: Ligaya Butalid, l.butalid@nivel.nl
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3 Abstract
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7 *Background*
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9 The rise of evidence-based medicine may have implications for the doctor-patient interaction. In recent
10 decades, a shift towards a more task-oriented approach in general practice indicates a possible effect
11 of the implementation of clinical guidelines. In this study, we examined whether this shift is
12 accompanied by changes in perceived quality of doctor-patient communication.
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17 *Design*
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19 GP observers and patient observers performed quality assessments of Dutch General Practice
20 consultations on hypertension videotaped in 1982-1984 and 2000-2001. In the first cohort (1982-1984)
21 81 patients were recorded by 23 GPs and in the second cohort (2000-2001) 108 patients were
22 recorded by 108 GPs. The GP observers and patient observers rated the consultations on a scale
23 from 1 to 10 on three quality dimensions: medical technical quality, psychosocial quality and quality of
24 interpersonal behaviour. With multilevel regression analyses, we tested whether a change occurred
25 over time.
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33 *Results*
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35 The findings showed a significant improvement over time on all three dimensions. There was no
36 difference between the quality assessments of GP observers and patient observers. The three
37 different dimensions were moderately to highly correlated and the assessments of GP observers
38 showed less variability in the second cohort.
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43 *Conclusions*
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45 Medical technical quality, psychosocial quality and the quality of interpersonal behaviour in
46 hypertension consultations have improved over time as perceived by general practitioners and
47 patients. The implementation of clinical guidelines does not seem to detract from individual attention
48 for the patient. In addition, professionals are shown to be successfully assisted by clinical guidelines,
49 since less variability was found in their assessments of the more recent consultations. The next step in
50 this line of research is to unravel the factors that determine patients' quality assessments of doctor-
51 patient communication.
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Improvement in quality of doctor-patient communication

Article focus

- Doctor-patient communication in hypertension consultations has become more business-like and task-oriented in the past few decades.
- Shifts in communication styles in general practice may have produced changes in quality assessments of doctor-patient communication by general practitioners and patients.

Key messages

- Quality of care in hypertension consultations as perceived by general practitioners and patients has improved between the early 1980s and twenty years later.
- The increased emphasis on task-oriented care does not necessarily detract from the attention to psychosocial aspects and the doctor-patient relationship.

Strengths and limitations of this study

- Videotaped real-life general practice consultations from two distinct periods were analysed. Thus, the findings refer to actual historical changes in general practice.
- Assessments of the GPs were executed by contemporary peers, while the assessments of patients were performed retrospectively. However, the concurrence of assessments of patient observers and GP observers in their different contexts reinforces our conclusions.

Box 1 Article summary

Introduction

The profession of general practice is evolving and the rise of evidence-based medicine may have implications for doctor-patient interaction [1-6]. Studies have found that doctor-patient communication has become more task-oriented [7]. Non-verbal aspects such as eye contact and body posture have changed in the past few decades [8]. These changes may be related to the implementation of clinical guidelines in general practice, which were first introduced in the Netherlands in 1977 [9]. Today, there are ninety-six different clinical guidelines [10]. The main aim of these clinical guidelines are to standardize and improve the quality of care in general practice. Simultaneously, the curriculum of the professional training has undergone some major revisions focusing on training in communication skills [11,12]. However, there may be some tension between the development of standardized care and individual attention to patients [4,13,14]. In this study, we examined whether the shift towards more standardized and task-oriented care in general practice has produced changes in the quality of doctor-patient communication as assessed by general practitioners and patients.

Quality of doctor-patient communication is a multidimensional concept which includes both medical technical and psychosocial aspects but also involves facets of the interaction. We focused on hypertension in general practice, since this is a common health problem and different dimensions of quality are clearly identifiable when dealing with hypertension care. Hypertension care does not merely depend on the quality of medical technical aspects, but also on psychosocial components [15]. Hypertension is a risk factor for coronary heart disease, and is sensitive to stress and psychological disorders [16]. The quality of the doctor-patient interaction also determines patients' active participation and encourages self-management skills that are necessary when dealing with hypertension [17,18]. Moreover, fostering the doctor-patient relationship is considered an essential and universal value within medical practice [19-21].

General practitioners in the Netherlands were first confronted with the use of clinical guidelines in the 1970s and 1980s. Thirty years later, these clinical guidelines are widely implemented in professionals' daily practice and it is expected that they also serve as a yardstick for general practitioners to measure the quality of the doctor-patient interaction. In contrast, most patients are not fully aware of these developments in general practice. Their perspective is different to that of the professionals, and patients mainly base their quality assessments on experiential knowledge and can

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have different priorities and preferences compared to professionals [22-24]. However, if clinical guidelines have actually improved the quality of the medical interaction, patients should be able to perceive an improvement in doctor-patient communication over time.

Methods

We compared quality assessments of GP observers and patient observers across two time periods. The first cohort consists of consultations videotaped in 1982-1984. The second cohort was videotaped in 2000-2001.

Videotaped consultations

Based on the International Classification of Primary Care (ICPC), we selected videotaped consultations with hypertension patients (ICPC-codes K85-K87) from a larger dataset of two cohorts [25,26]. From the first cohort videotaped in 1982-1984 (n=1569) a total of 103 consultations on hypertension were selected. However, due to the deterioration in the technical quality of some videotaped consultations, only 81 consultations were useable for the quality assessments. Of the second dataset from 2000-2001 (n=2794), 108 videotaped consultations on hypertension were selected.

The patients in the selected consultations showed no differences in age and gender between the two study samples. The mean age was 58.5 (sd = 14.80) and 61.4 (sd = 14.66) years, respectively (*n.s.*) and 65% versus 63% of the sample was female (*n.s.*). In both samples the vast majority of the consultations were repeat visits. All physicians in the selected consultations were specialized in general practice and the majority (92% versus 94%) had more than 5 years experience. In the first study sample (1982-1984), all of the physicians (N = 23) were male and in the second study sample (2000-2001), 80 physicians were male and 28 were female (74% versus 26%). In the Netherlands, routine care for hypertension patients is delivered in general practice. The study was carried out in accordance with Dutch privacy legislation. All participating physicians and patients who were videotaped during their consultation gave their informed consent.

Peer assessment by general practitioners (GP observers)

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3 In 1987, twelve GP observers (age 30-70; 4 female and 8 male physicians) were asked to rate the
4 selected consultations from the first cohort (videotaped in 1982-1984). These GP observers had a
5 minimum of five years experience in practice. The procedure in this first cohort of peer assessments
6 has been described previously [15]. In 2002, the second cohort of selected consultations (videotaped
7 in 2000-2001) was individually rated by a new group of twelve GP observers (age 36-62; 6 female and
8 6 male physicians). These GP observers also had a minimum of five years experience in practice.

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15 In both cohorts, each consultation was observed and rated by all twelve GP observers on
16 three dimensions of quality of care. A scale from 1 (very poor) to 10 (excellent) was used. The
17 dimensions assessed by the general practitioners were 1) medical technical quality of care, 2)
18 psychosocial quality of care, and 3) quality of interpersonal behaviour (doctor-patient relationship).
19 The GP observers received a short training program about the rating scale and the different
20 dimensions of quality of care. For the assessments of the medical technical dimension, they were
21 instructed to take into account the clinical guideline for hypertension. The psychosocial dimension
22 referred to the way non-somatic aspects related to the complaint were addressed; and interpersonal
23 quality referred to the interaction between GP and patient. All GP observers signed a statement of
24 confidentiality before starting the assessments.

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37 *Patient assessment by patient observers with hypertension*

38 Patient observers with hypertension rated videotaped consultations of both cohorts individually in the
39 period from April 2010 to July 2010. People were recruited through advertisements on health related
40 internet web pages as well as via flyers placed in health care settings (general practices,
41 pharmacists). Participants who had previously been involved in other health research projects
42 conducted by NIVEL were actively approached by mail. All patient observers met the following criteria:
43 diagnosed with hypertension by a physician, consulted the general practitioner at least once in the
44 past year, not involved in a health care related lawsuit or legal complaint procedure, and being able to
45 understand and speak the Dutch language.

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54 In total, 108 patient observers with hypertension (age 24-80; 73 female and 35 male
55 observers) completed the patient assessments of the videotaped consultations. See Table 1 for
56 background characteristics of the patient observers. Each patient observer observed 8-12
57 consultations (randomly assigned from both cohorts, but with a total duration of approximately 90
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minutes) in order for each consultation in the sample to be rated 5 or 6 times. The patient observers individually rated the same three dimensions of quality of care as the GP observers and received a comparable short training program. For the medical technical dimension, patient observers were instructed to consider the clarity of any (medical) explanations given by the general practitioner, while taking into account their knowledge based on their own experience. For the other two dimensions, they received the same instruction as the GP observers. All patient observers signed a statement of confidentiality before starting the assessments.

[insert Table 1]

Statistical analyses

To account for the multilevel structure of quality assessments nested within videotaped consultations and individual observers, multilevel regression analysis was applied. The categories cohort (0 = 1982-1984 and 1 = 2000-2001) and observer type (0 = patient observers and 1 = GP observers) were coded as dummy variables. First, the associations between the three dimensions of quality of care were examined. Second, it was tested whether a change over time in quality assessments occurred and whether the quality assessments of patient observers and GP observers were comparable.

Results

Associations between the three dimensions of quality of care

The quality assessments correlated positively between the three different dimensions of quality of care for each observation period and for GPs and patients as well (see Table 2). Furthermore, analysis revealed that the overall quality assessments of interpersonal behaviour were higher compared to the medical technical dimension ($T(5258) = 2.79, p < .01$); and the medical technical dimension received higher quality assessments than the psychosocial dimension ($T(5249) = 6.80, p < .001$).

[insert Table 2]

Changes in quality assessments over time

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3 The assessments of the second cohort (2000-2001) were higher compared to the first cohort (1982-
4 1984) for the three dimensions (see Figure 1). The multilevel regression analyses showed significant
5 effects of cohort in all three dimensions: medical technical quality ($B = 0.58, Z = 5.43, p < .001$),
6 psychosocial quality ($B = 0.35, Z = 2.36, p < .05$), and quality of interpersonal behaviour ($B = 0.50, Z =$
7 3.64, $p < .001$).
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18 *Comparing patient observers' and GP observers' assessments*

19 The figure shows that the assessments of GP observers were somewhat lower than assessments of
20 patient observers; however, in none of the three dimensions was this difference found to be
21 significant: medical technical quality ($B = -0.36, Z = 1.89, n.s.$), psychosocial quality ($B = -0.19, Z =$
22 0.93, $n.s.$), and quality of interpersonal behaviour ($B = -0.24, Z = 1.55, n.s.$).
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30 When examining the variance of the quality assessments, the standard deviations of the assessments
31 by patient observers and GP observers in the second cohort were smaller than the first cohort on all
32 three dimensions (for patient observers; medical technical quality: $F(478, 528) = 1.18, p < .05$,
33 psychosocial quality: $F(480, 528) = 1.20, p < .05$, quality of interpersonal behaviour: $F(479, 537) =$
34 1.30, $p < .01$ and for GP observers; medical technical quality: $F(327, 1288) = 2.03, p < .001$,
35 psychosocial quality: $F(326, 1288) = 2.71, p < .001$, quality of interpersonal behaviour: $F(327, 1288) =$
36 2.26, $p < .001$). Furthermore, all standard deviations in the assessments of GP observers were smaller
37 compared to the patient observers in the first cohort (medical technical quality: $F(478, 327) = 1.83, p <$
38 $.001$, psychosocial quality: $F(480, 326) = 1.59, p < .001$, quality of interpersonal behaviour: $F(479,$
39 $327) = 1.64, p < .001$) and second cohort (medical technical quality: $F(528, 1288) = 3.14, p < .001$,
40 psychosocial quality: $F(528, 1288) = 3.58, p < .001$, quality of interpersonal behaviour: $F(537, 1288) =$
41 2.85, $p < .001$).
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54 In the model with the assessment of medical technical quality, the intraclass correlation on
55 video level was 14% and on observer level 32%. For psychosocial quality, video level contained 26%
56 and observer level 27% of the variance; for quality of interpersonal behaviour we calculated a variance
57 of 27% on video level and 18% on observer level.
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5 Discussion
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9 Medical technical quality, psychosocial quality and the quality of interpersonal behaviour of
10 hypertension consultations in general practice in the Netherlands have improved between the 1980s
11 and 2000-2001 as perceived by general practitioners and patients. Although the improvement of
12 medical technical quality is in line with our expectations, the improvement of the other two dimensions
13 is remarkable because it contradicts the possible tension between evidence-based medicine and
14 individual attention to the patient [4,13,14]. However, there have been major revisions in the
15 curriculum of the professional training for general practitioners, that could account for the improvement
16 on all three dimensions [11,12]. The three dimensions of quality were moderately to highly correlated,
17 so there was internal consistency in the quality assessments within consultations. The assessments of
18 interpersonal quality were higher than the assessments on the other two dimensions, which supports
19 the central role of the doctor-patient relationship in the medical interaction between general
20 practitioners and their patients. GP and patient observers agreed on the improved quality of the
21 consultations, but GP observers showed less variation in their assessments than patient observers.
22 There was also less variation in the assessments of the second cohort compared to the first cohort,
23 which implies that there is greater consensus on the quality of the more recent consultations.
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41 *Implementation of clinical guidelines in general practice*

42 Our findings indicate that standardized clinical guidelines do not necessarily jeopardize with the
43 individual attention for the patient, since not only medical technical quality, but also psychosocial
44 quality and the quality of interpersonal behaviour improved over time. This contradicts previous
45 findings that patients and doctors shared less concerns and less process-oriented talk (partnership
46 building and directions) in more recent consultations [7]. Apparently, these shifts in communication
47 styles do not necessarily lead to a decline in perceived quality. This seemingly contradictory result
48 needs further examination, for example in qualitative focus groups. In addition, the reduced variability
49 in the quality assessments of general practitioners can be considered as a sign that professionals are
50 successfully assisted by clinical guidelines to assess and safeguard the quality of care. There seem to
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3 be better consensus between general practitioners on what can be considered a 'good' consultation in
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5 respect of the more recent consultations.
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Tailored approach to doctor-patient communication

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10 There was relatively high variance on observer level, indicating large individual differences between
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12 observers; and the variability of the assessments of patient observers was larger than GP observers.
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14 However, this is understandable since patient observers in particular base their ratings on experiential
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16 knowledge that can differ greatly between patients. Therefore, the high variability between patients
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18 calls for a patient-centred and individually tailored approach to doctor-patient communication in
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20 general practice.
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Strengths and limitations of the study

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25 A strong point of the current study is that we examined medical interactions using videotaped real-life
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27 general practice consultations with hypertension patients from two distinct time periods. Thus, the
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29 findings refer to actual historical changes in the perceived quality of doctor-patient communication in
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31 general practice. In addition, the videotaped participants were not aware of the fact that the analyses
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33 would focus on hypertension consultations. Video recording is a valid method to examine doctor-
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35 patient communication: the influence of the video recorder on participants' behaviour is marginal [27].
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37 Moreover, the inclusion of both the professionals' and the patients' perspective enables a
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39 comprehensive view on quality of care. The observers were either experienced GPs or experienced
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41 patients (hypertension patients who visit their general practitioner regularly), so they were well able to
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43 relate to the videotaped consultations. In addition, we matched the medical condition of the patient
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45 observers with the patients in the videotaped consultations. Previous studies show that lay people
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47 (experienced patients) are well able to rate videotaped doctor-patient interactions and have an added
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49 value over ratings given exclusively by professionals or researchers [28-30].
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53 A possible weakness of the study is that the assessments of the professionals were executed
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55 by contemporary peers, while the assessments of patients were performed retrospectively. The GP
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57 observers judged the video-taped consultations in the same time period in which the consultations
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59 took place. Therefore, the context in which the GP observers rated the consultations changed
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between the two cohorts. This enabled examination of the effects of context related changes such as

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4 the implementation of clinical guidelines on the quality assessments. In contrast, the patient observers
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6 judged video-taped consultations that took place approximately 10 or 30 years ago. The context in
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8 which their ratings were conducted did not change between the two cohorts, but was also influenced
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10 by current knowledge and experience. Since it can be argued that expectations of what is considered
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12 a 'good' consultation are also subject to change over time, we cannot automatically assume that
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14 quality assessments would have been identical if patient observers also rated the consultations in the
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16 same time period as the recording of the consultations. However, the concurrence of assessments of
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18 patient observers and GP observers in their different contexts reinforces our conclusions.

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21 This study shows that although there is an increased emphasis on task-oriented care in general
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23 practice, the perceived quality of doctor-patient communication has improved on different dimensions
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25 including psychosocial aspects and the doctor-patient relationship. General practitioners were
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27 supported by clinical guidelines that could explain the improvement over time, but patients likewise
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29 recognized an improvement. The next step in this line of research is to unravel the factors that
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31 determine patients' quality assessments of doctor-patient communication.

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50
51 Competing interest: The authors declare that they have no competing interests.

52
53 Ethical approval: The studies were carried out according to Dutch privacy legislation. The
54
55 privacy regulation was approved by the Dutch Data Protection Authority. According to Dutch
56
57 legislation, approval by a medical ethics committee was not required for these observational studies.

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59 Contribution: LB coordinated the patient observers' assessments, formulated the study
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questions, discussed core ideas, analysed the data, and wrote the paper. PV designed the original

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3 study, discussed core ideas, and edited the paper. FT coordinated the second cohort GP observers'
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5 assessments, and commented on the paper. JB coordinated the first cohort GP observers'
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7 assessments, designed the original study, discussed core ideas, and edited the paper.
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9 Data sharing statement: Consent for data sharing was not obtained from study participants,
10
11 but the presented data are anonymised and there is no risk of identification. Access to the dataset is
12
13 available from the corresponding author (l.butalid@nivel.nl) in STATA format for academic
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15 researchers interested in undertaking a formally agreed collaborative research project.
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Improvement in quality of doctor-patient communication

Table 1 Background characteristics of the patient observers

Background characteristics	Patient observers with hypertension (N = 108)
Gender	
Female	73 (68%)
Male	35 (32%)
Age	
< 40	2 (2%)
40 – 49	12 (11%)
50 – 59	46 (43%)
60 – 69	39 (36%)
70 – 79	9 (8%)
Education level	
Primary education	2 (2%)
Secondary education	59 (66%)
Third-level education	47 (31%)
Employment	
Retired	35 (32%)
Employed	31 (29%)
Self-employed	5 (5%)
Other (student, housewife, job seeker)	37 (34%)
Native background	
Dutch	96 (89%)
First generation migrant	6 (5.5%)
Second generation migrant	6 (5.5%)
Health	
Using medication for hypertension	81 (75%)
Co morbidity other chronic disease	50 (46%)
Health care use	
Contact with GP in last two months	76 (70%)
Contact with medical specialist in past year	72 (67%)

Table 2 Associations (*Pearson's r*) between the three dimensions of quality of care

			Medical technical	Psychosocial	Interpersonal
Cohort 1982-1984	All quality assessments	Medical technical	-		
		Psychosocial	.66	-	
		Interpersonal	.63	.80	-
	Assessments of GP observers	Medical technical	-		
		Psychosocial	.54	-	
		Interpersonal	.51	.79	-
Assessments of patient observers	Medical technical	-			
	Psychosocial	.70	-		
	Interpersonal	.68	.77	-	
Cohort 2000-2001	All quality assessments	Medical technical	-		
		Psychosocial	.58	-	
		Interpersonal	.64	.76	-
	Assessments of GP observers	Medical technical	-		
		Psychosocial	.55	-	
		Interpersonal	.56	.77	-
Assessments of patient observers	Medical technical	-			
	Psychosocial	.62	-		
	Interpersonal	.71	.76	-	

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[see Powerpoint document]

Figure 1 Means (and 95% CI) of assessments of medical technical quality, psychosocial quality and quality of interpersonal behaviour

For peer review only

STROBE 2007 (v4) checklist of items to be included in reports of *cross-sectional studies*

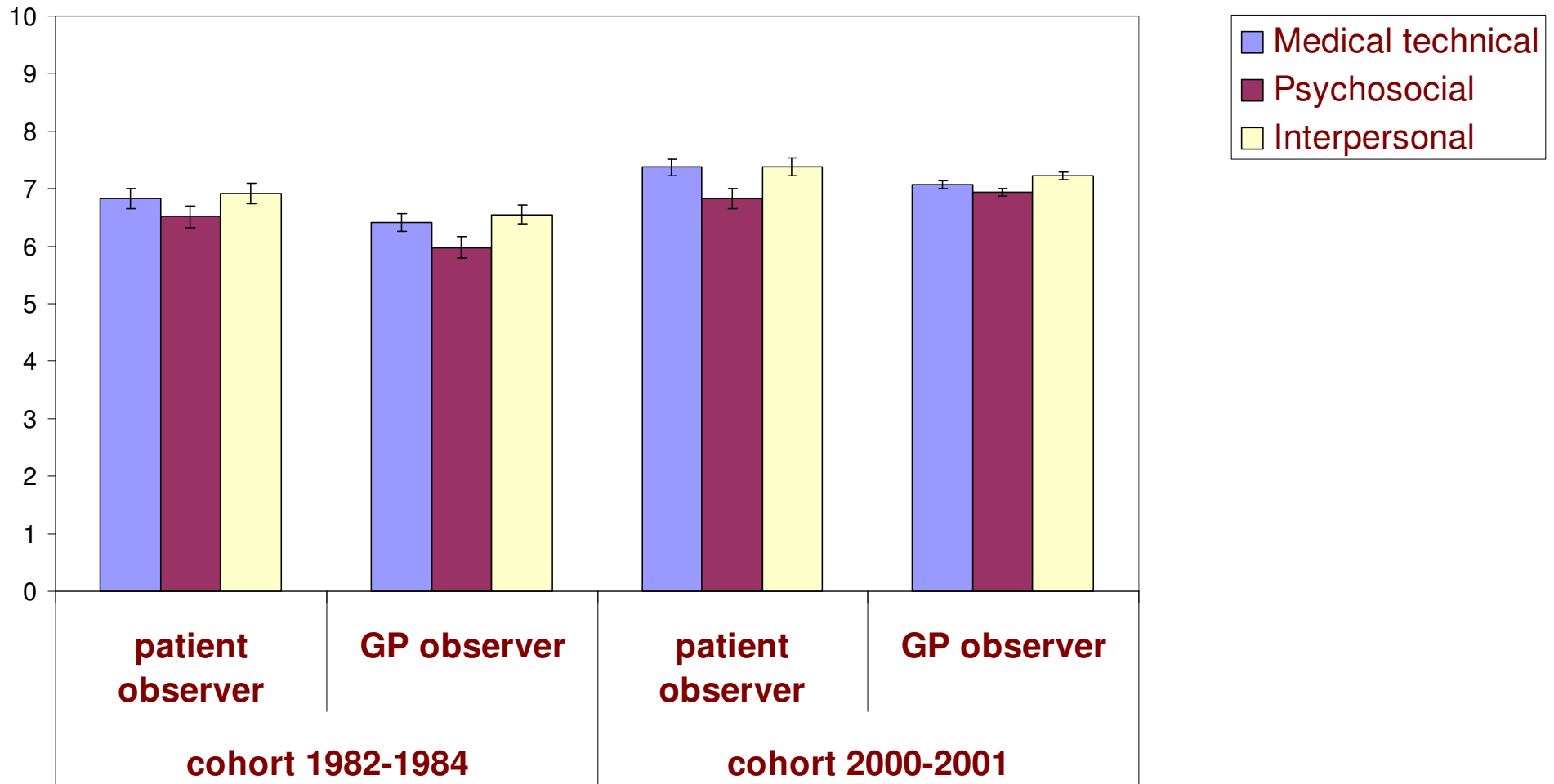
Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4,5
Objectives	3	State specific objectives, including any pre-specified hypotheses	4,5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5-7
Participants	6	Give the eligibility criteria, and the sources and methods of selection of participants	5,6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5-7
Bias	9	Describe any efforts to address potential sources of bias	5-7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	7
		(b) Describe any methods used to examine subgroups and interactions	7
		(c) Explain how missing data were addressed	7
		(d) If applicable, describe analytical methods taking account of sampling strategy	n/a
		(e) Describe any sensitivity analyses	7
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a

		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5,6, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	n/a
Outcome data	15*	Report numbers of outcome events or summary measures	7,8
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	8, Figure 1
		(b) Report category boundaries when continuous variables were categorized	8, Figure 1
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	7,8, Table 2
Discussion			
Key results	18	Summarise key results with reference to study objectives	9
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	10,11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10,11
Generalisability	21	Discuss the generalisability (external validity) of the study results	10,11
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	11

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

Quality assessments of doctor-patient communication





**Changes in the quality of doctor-patient communication
between 1982 and 2001: an observational study on
hypertension care as perceived by patients and general
practitioners**

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3 **Changes in the quality of doctor-patient communication between 1982 and 2001: an**
4 **observational study on hypertension care as perceived by patients and general practitioners**
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9 Ligaya Butalid, Peter FM Verhaak, Fred Tromp, Jozien M Bensing
10

11
12 NIVEL, Netherlands Institute for Health Services Research, PO Box 1568, 3500 BN, Utrecht, The
13
14 Netherlands
15

16 Ligaya Butalid, researcher / PhD student
17

18 Peter FM Verhaak, professor
19

20 Jozien M Bensing, professor
21
22

23
24 Radboud University Nijmegen Medical Centre, Department of Primary and Community Care. PO Box
25
26 9101, 6500 HB, Nijmegen, The Netherlands
27

28 Fred Tromp, researcher
29
30

31
32 Correspondence to: Ligaya Butalid, l.butalid@nivel.nl
33
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52 Word count:
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54 Main text: **3101** words
55

56 Abstract: 286 words
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1
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3 Abstract
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7 *Background*
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9 The rise of evidence-based medicine may have implications for the doctor-patient interaction. In recent
10 decades, a shift towards a more task-oriented approach in general practice indicates a development
11 towards a more standardized health care. In this study, we examined whether this shift is
12 accompanied by changes in perceived quality of doctor-patient communication.
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16
17 *Design*
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19 GP observers and patient observers performed quality assessments of Dutch General Practice
20 consultations on hypertension videotaped in 1982-1984 and 2000-2001. In the first cohort (1982-1984)
21 81 patients were recorded by 23 GPs and in the second cohort (2000-2001) 108 patients were
22 recorded by 108 GPs. The GP observers and patient observers rated the consultations on a scale
23 from 1 to 10 on three quality dimensions: medical technical quality, psychosocial quality and quality of
24 interpersonal behaviour. With multilevel regression analyses, we tested whether a change occurred
25 over time.
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33 *Results*
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35 The findings showed a significant improvement over time on all three dimensions. There was no
36 difference between the quality assessments of GP observers and patient observers. The three
37 different dimensions were moderately to highly correlated and the assessments of GP observers
38 showed less variability in the second cohort.
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43 *Conclusions*
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45 Hypertension consultations in general practice in the Netherlands received higher quality assessments
46 by general practitioners and patients on medical technical quality, psychosocial quality and the quality
47 of interpersonal behaviour in 2000-2001 as compared to the 1980s. The shift towards a more task-
48 oriented approach in hypertension consultations does not seem to detract from individual attention for
49 the patient. In addition, there is less variation between general practitioners in the quality assessments
50 of more recent consultations. The next step in this line of research is to unravel the factors that
51 determine patients' quality assessments of doctor-patient communication.
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Changes in quality of doctor-patient communication

Article focus

- Doctor-patient communication in hypertension consultations has become more business-like and task-oriented in the past few decades.
- Shifts in communication styles in general practice may have produced changes in quality assessments of doctor-patient communication by general practitioners and patients.

Key messages

- Compared to twenty years earlier (1982-1984), hypertension consultations recorded in 2000-2001 received higher quality assessments by GP observers as well as patient observers on three distinct quality dimensions: medical technical quality, psychosocial quality and the quality of interpersonal behaviour.
- There was less variation between general practitioners in the quality assessments of more recent consultations.

*Strengths and limitations of this study**Strengths:*

- Videotaped real-life general practice consultations from two distinct periods were analysed, which means that the findings refer to actual behaviour in general practice.
- The quality assessments were made according to the same protocol in both periods.

Limitations:

- Assessments of the GPs were executed by contemporary peers, while the assessments of patients were performed retrospectively. However, the concurrence of assessments of patient observers and GP observers in their different contexts reinforces our conclusions.
- The generalizability of the findings is restricted to hypertension consultations, which involve a high proportion of repeat visits.

Box 1 Article summary

Introduction

The profession of general practice is evolving and the rise of evidence-based medicine may have implications for doctor-patient interaction [1-6]. Studies have found that doctor-patient communication has become more task-oriented [7]. Non-verbal aspects such as eye contact and body posture have changed in the past few decades [8]. It has been suggested that these changes may be related to a development towards a more standardized health care, based on protocols and guidelines [7,9,10]. Simultaneously, the curriculum of the professional training has undergone some major revisions focusing on training in communication skills [11,12]. However, there may be some tension between the development of standardized care and individual attention to patients [4,13,14]. In this study, we examined whether the shift towards more standardized and task-oriented care in general practice has produced changes in the quality of doctor-patient communication as assessed by general practitioners and patients.

Quality of doctor-patient communication is a multidimensional concept which includes both medical technical and psychosocial aspects but also involves facets of the interaction. We focused on hypertension in general practice, since this is a common health problem and these three dimensions of quality are clearly identifiable when dealing with hypertension care. Hypertension care does not merely depend on the quality of medical technical aspects, but also on psychosocial components [15]. Hypertension is a risk factor for coronary heart disease, and is sensitive to stress and psychological disorders [16]. The quality of the doctor-patient interaction also determines patients' active participation and encourages self-management skills that are necessary when dealing with hypertension [17,18]. Moreover, fostering the doctor-patient relationship is considered an essential and universal value within medical practice [19-21].

Since clinical guidelines are widely implemented in professionals' daily practice, it is expected that they may serve as a yardstick for general practitioners to measure the quality of the doctor-patient interaction. In contrast, most patients are not fully aware of these developments in general practice. Their perspective is different to that of the professionals, and patients mainly base their quality assessments on experiential knowledge and can have different priorities and preferences compared to professionals [22-24]. However, if the quality of the medical interaction has actually changed, patients should be able to perceive this change in doctor-patient communication over time.

Changes in quality of doctor-patient communication

Methods

We compared quality assessments of GP observers and patient observers across two time periods. The first cohort consists of consultations videotaped in 1982-1984. The second cohort was videotaped in 2000-2001.

Videotaped consultations

Based on the International Classification of Primary Care (ICPC), we selected videotaped consultations with hypertension patients (ICPC-codes K85-K87) from a larger dataset of two cohorts of random general practice consultations. The first cohort consisted of all hypertension consultations, selected from a random sample of 1569 videotaped consultation in 1982-1984 (n=103) [7,25-27]. However, due to the deterioration in the technical quality of some videotaped consultations, only 81 consultations (recorded by 23 GPs) were useable for the quality assessments. The second dataset was recorded in 2000-2001 (n=2794) and consisted also from a random sample of general practice consultations [7,28]. From this dataset, we selected **every first** hypertension consultation from each of the 108 participating GPs (n=108).

The patients in the selected consultations showed no differences in age and gender between the two study samples. The mean age was 58.5 (sd = 14.80) and 61.4 (sd = 14.66) years, respectively (*n.s.*) and 65% versus 63% of the sample was female (*n.s.*). In both samples the vast majority of the consultations were repeat visits. All physicians in the selected consultations were specialized in general practice and the majority (92% versus 94%) had more than 5 years experience. In the first study sample (1982-1984), all of the physicians (N = 23) were male and in the second study sample (2000-2001), 80 physicians were male and 28 were female (74% versus 26%). In the Netherlands, routine care for hypertension patients is delivered in general practice. The study was carried out in accordance with Dutch privacy legislation. All participating physicians and patients who were videotaped during their consultation gave their informed consent.

Quality assessment by general practitioners (GP observers)

Changes in quality of doctor-patient communication

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3 In 1987, twelve GP observers (age 30-70; 4 female and 8 male physicians) were asked to rate the
4 selected consultations from the first cohort (videotaped in 1982-1984). These GP observers had a
5 minimum of five years experience in practice. The procedure in this first cohort of peer assessments
6 has been described previously [15]. In 2002, the second cohort of selected consultations (videotaped
7 in 2000-2001) was individually rated by a new group of twelve GP observers (age 36-62; 6 female and
8 6 male physicians). These GP observers also had a minimum of five years experience in practice.
9 Both groups of GP observers were drawn from the Dutch National Register of General Practitioners
10 and recruited by mail or telephone. None of the GP observers were in any way involved in the
11 collected videotaped consultations.
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21 In both cohorts, each consultation was observed and rated by all twelve GP observers on
22 three dimensions of quality of care. A scale from 1 (very poor) to 10 (excellent) was used. The
23 dimensions assessed by the general practitioners were 1) medical technical quality of care, 2)
24 psychosocial quality of care, and 3) quality of interpersonal behaviour (doctor-patient relationship).
25 The GP observers received a short training program about the rating scale and the different
26 dimensions of quality of care. For the assessments of the medical technical dimension, they were
27 instructed to take into account the then current best practice for hypertension [29,30]. The
28 psychosocial dimension referred to the way non-somatic aspects related to the complaint were
29 addressed, such as stress-related factors in the origin of hypertension and the psychosocial problems
30 caused by hypertension or its treatment; and interpersonal quality referred exclusively to the way in
31 which the GP succeeded to build an open en secure relationship with the patient. All GP observers
32 signed a statement of confidentiality before starting the assessments.
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Quality assessment by patient observers with hypertension

61 Patient observers with hypertension rated videotaped consultations of both cohorts individually in the
62 period from April 2010 to July 2010. People were recruited through advertisements on health related
63 internet web pages as well as via flyers placed in health care settings (general practices,
64 pharmacists). Participants who had previously been involved in other health research projects
65 conducted by NIVEL were actively approached by mail. All patient observers met the following criteria:
66 diagnosed with hypertension by a physician, consulted the general practitioner at least once in the
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Changes in quality of doctor-patient communication

past year, not involved in a health care related lawsuit or legal complaint procedure, and being able to understand and speak the Dutch language.

In total, 108 patient observers with hypertension (age 24-80; 73 female and 35 male observers) completed the patient assessments of the videotaped consultations. See Table 1 for background characteristics of the patient observers. Each patient observer observed 8-12 consultations (randomly assigned from both cohorts, but with a total duration of approximately 90 minutes) in order for each consultation in the sample to be rated 5 or 6 times. The patient observers individually rated the same three dimensions of quality of care as the GP observers and received a comparable short training program. For the medical technical dimension, patient observers were instructed to consider the clarity of any medical explanations given by the general practitioner. For the other two dimensions, they received the same instruction as the GP observers. We noticed that patients could easily relate to these aspects of hypertension care and were therefore capable to distinguish all three dimensions based on their experiential knowledge. All patient observers signed a statement of confidentiality before starting the assessments.

[insert Table 1]

Statistical analyses

To account for the multilevel structure of quality assessments nested within videotaped consultations and individual observers, multilevel regression analysis was applied. The categories cohort (0 = 1982-1984 and 1 = 2000-2001) and observer type (0 = patient observers and 1 = GP observers) were coded as dummy variables. First, the associations between the three dimensions of quality of care were examined. Second, it was tested whether a change over time in quality assessments occurred and whether the quality assessments of patient observers and GP observers were comparable.

Results

Associations between the three dimensions of quality of care

The quality assessments correlated positively between the three different dimensions of quality of care for each observation period and for GPs and patients as well (see Table 2). Furthermore, analysis

Changes in quality of doctor-patient communication

revealed that the overall quality assessments of interpersonal behaviour were higher compared to the medical technical dimension ($T(5258) = 2.79, p < .01$); and the medical technical dimension received higher quality assessments than the psychosocial dimension ($T(5249) = 6.80, p < .001$).

[insert Table 2]

Changes in quality assessments over time

The assessments of the second cohort (2000-2001) were higher compared to the first cohort (1982-1984) for the three dimensions (see Figure 1). The multilevel regression analyses showed significant effects of cohort in all three dimensions: medical technical quality ($B = 0.58, Z = 5.43, p < .001$), psychosocial quality ($B = 0.35, Z = 2.36, p < .05$), and quality of interpersonal behaviour ($B = 0.50, Z = 3.64, p < .001$).

[insert Figure 1]

Comparing patient observers' and GP observers' assessments

The figure shows that the assessments of GP observers were somewhat lower than assessments of patient observers; however, in none of the three dimensions was this difference found to be significant: medical technical quality ($B = -0.36, Z = 1.89, n.s.$), psychosocial quality ($B = -0.19, Z = 0.93, n.s.$), and quality of interpersonal behaviour ($B = -0.24, Z = 1.55, n.s.$).

When examining the variance of the quality assessments, the standard deviations of the assessments by patient observers and GP observers in the second cohort were smaller than the first cohort on all three dimensions (for patient observers; medical technical quality: $F(478, 528) = 1.18, p < .05$, psychosocial quality: $F(480, 528) = 1.20, p < .05$, quality of interpersonal behaviour: $F(479, 537) = 1.30, p < .01$ and for GP observers; medical technical quality: $F(327, 1288) = 2.03, p < .001$, psychosocial quality: $F(326, 1288) = 2.71, p < .001$, quality of interpersonal behaviour: $F(327, 1288) = 2.26, p < .001$). Furthermore, all standard deviations in the assessments of GP observers were smaller compared to the patient observers in the first cohort (medical technical quality: $F(478, 327) = 1.83, p < .001$, psychosocial quality: $F(480, 326) = 1.59, p < .001$, quality of interpersonal behaviour: $F(479,$

Changes in quality of doctor-patient communication

327) = 1.64, $p < .001$) and second cohort (medical technical quality: $F(528, 1288) = 3.14, p < .001$, psychosocial quality: $F(528, 1288) = 3.58, p < .001$, quality of interpersonal behaviour: $F(537, 1288) = 2.85, p < .001$).

In the model with the assessment of medical technical quality, the intraclass correlation on video level was 14% and on observer level 32%. For psychosocial quality, video level contained 26% and observer level 27% of the variance; for quality of interpersonal behaviour we calculated a variance of 27% on video level and 18% on observer level.

Discussion

Hypertension consultations in general practice in the Netherlands received higher quality assessments by general practitioners and patients on medical technical quality, psychosocial quality and the quality of interpersonal behaviour in 2000-2001 as compared to the 1980s. The three dimensions of quality were moderately to highly correlated, so there was internal consistency in the quality assessments within consultations. The assessments of interpersonal quality were higher than the assessments on the other two dimensions, which supports the central role of the doctor-patient relationship in the medical interaction between general practitioners and their patients. GP and patient observers agreed on the improved quality of the consultations, but GP observers showed less variation in their assessments than patient observers. There was also less variation in the assessments of the second cohort compared to the first cohort, which implies that there is greater consensus on the quality of the more recent consultations.

Standardized care in general practice

Our findings indicate that in this particular sample of videotaped hypertension visits, the shift towards a more task-oriented communication style [7] did not jeopardize the individual attention for the patient, since not only medical technical quality, but also psychosocial quality and the quality of interpersonal behaviour received higher quality assessments over time. These results are remarkable because patients and doctors shared less concerns and less process-oriented talk (partnership building and directions) in more recent consultations [7]. Apparently, these shifts in communication styles do not necessarily lead to a decline in perceived quality of GPs' communication. While this probably could be

Changes in quality of doctor-patient communication

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3 expected from the GP observers (the quality measures were highly interrelated, suggesting a certain
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5 'Halo-effect'), we had expected that patients would prefer the older videotapes in which the GP was
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7 less instrumental. Several studies demonstrate the importance patients attach to GPs' affective
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9 communication [31,32]. This seemingly contradictory result needs further examination, for example in
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11 qualitative focus groups. Another important finding is the smaller variability in the quality assessments
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13 of general practitioners in the latter cohort, which can be considered as a sign that professionals are
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15 successfully assisted by clinical guidelines to assess the quality of care. There seems to be better
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17 consensus between general practitioners on what can be considered a 'good' consultation in respect
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19 of the more recent consultations.
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Tailored approach to doctor-patient communication

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24 In contrast with the GP observer assessments, there was a relatively high variance on the patient
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26 observer level, indicating large individual differences between patient observers.
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29 However, this is understandable since patient observers in particular base their ratings on experiential
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31 knowledge that can differ greatly between patients. Moreover, several studies show that patient
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33 preferences vary widely [33,34]. Therefore, the high variability between patients calls for a patient-
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35 centred and individually tailored approach to doctor-patient communication in general practice.
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Strengths and limitations of the study

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40 A strong point of the current study is that we examined medical interactions using videotaped real-life
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42 general practice consultations with hypertension patients from two distinct time periods. Thus, the
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44 findings refer to actual behaviour, as perceived by uninvolved observers. In addition, the videotaped
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46 participants were not aware of the fact that the analyses would focus on hypertension consultations.
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48 Video recording is a valid method to examine doctor-patient communication: the influence of the video
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50 recorder on participants' behaviour is marginal [35]. Moreover, the inclusion of both the professionals'
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52 and the patients' perspective enables a comprehensive view on quality of care. The observers were
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54 either experienced GPs or experienced patients (hypertension patients who visit their general
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56 practitioner regularly), so they were well able to relate to the videotaped consultations. In addition, we
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58 matched the medical condition of the patient observers with the patients in the videotaped
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60 consultations. Previous studies show that lay people (experienced patients) are well able to rate

Changes in quality of doctor-patient communication

videotaped doctor-patient interactions and have an added value over ratings given exclusively by professionals or researchers [34,36,37].

A possible weakness of the study is that the assessments of the professionals were executed by contemporary peers, while the assessments of patients were performed retrospectively. The GP observers judged the video-taped consultations in the same time period in which the consultations took place. Therefore, the context in which the GP observers rated the consultations changed between the two cohorts. Although identical instructions to the two groups of GP observers was guaranteed because one of the authors (JB) was involved in both previous studies [7,15], we can not avoid a time and context related effect of the GP assessments. In contrast, the patient observers judged video-taped consultations that took place approximately 10 or 30 years ago. The context in which their ratings were conducted did not change between the two cohorts, but was also influenced by current knowledge and experience. Since it can be argued that expectations of what is considered a 'good' consultation are also subject to change over time, we cannot automatically assume that quality assessments would have been identical if patient observers also rated the consultations in the same time period as the recording of the consultations. However, the concurrence of assessments of patient observers and GP observers in their different contexts reinforces our conclusions. Another possible weakness is that the majority of consultations were hypertension repeat visits. A concern with hypertension repeat visits may be that these visits do not sufficiently address psychosocial care due to time constraints or the nature of the problem. However, attention to psychosocial aspects does not have to be time intensive [38]. In addition, the fact that patients are already familiar with the GP in repeat visits could also stimulate patients to voice their concerns. Nevertheless, we need to be cautious with the generalization of our findings.

This study shows that although there is an increased emphasis on task-oriented care in general practice, there is a higher perceived quality of doctor-patient communication in more recent consultations on different dimensions; not only on the medical technical care, but also on the psychosocial aspects and the doctor-patient relationship. The next step in this line of research is to unravel the factors that determine patients' quality assessments of doctor-patient communication.

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Changes in quality of doctor-patient communication

1
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4
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8

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11 The previous studies in which the recording of the consultations were performed were financed by the
12
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14
15 Development (ZonMw) and the research fund of the Innovation Fund of Health Insurers (RVVZ).
16

17 Competing interest: The authors declare that they have no competing interests.
18

19 Ethical approval: The studies were carried out according to Dutch privacy legislation. The
20
21 privacy regulation was approved by the Dutch Data Protection Authority. According to Dutch
22
23 legislation, approval by a medical ethics committee was not required for these observational studies.
24

25 Contribution: LB coordinated the patient observers' assessments, formulated the study
26
27 questions, discussed core ideas, analysed the data, and wrote the paper. PV designed the original
28
29 study, discussed core ideas, and edited the paper. FT coordinated the second cohort GP observers'
30
31 assessments, and commented on the paper. JB coordinated the first cohort GP observers'
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33 assessments, designed the original study, discussed core ideas, and edited the paper. All authors
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35 approved the final submitted version of the manuscript.
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37 Data sharing statement: Consent for data sharing was not obtained from study participants,
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39 but the presented data are anonymised and there is no risk of identification. Access to the dataset is
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41 available from the corresponding author (l.butalid@nivel.nl) in STATA format for academic
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43 researchers interested in undertaking a formally agreed collaborative research project.
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Changes in quality of doctor-patient communication

Table 1 Background characteristics of the patient observers

Background characteristics	Patient observers with hypertension (N = 108)
Gender	
Female	73 (68%)
Male	35 (32%)
Age	
< 40	2 (2%)
40 – 49	12 (11%)
50 – 59	46 (43%)
60 – 69	39 (36%)
70 – 79	9 (8%)
Education level	
Primary education	2 (2%)
Secondary education	59 (66%)
Third-level education	47 (31%)
Employment	
Retired	35 (32%)
Employed	31 (29%)
Self-employed	5 (5%)
Other (student, housewife, job seeker)	37 (34%)
Native background	
Dutch	96 (89%)
First generation migrant	6 (5.5%)
Second generation migrant	6 (5.5%)
Health	
Using medication for hypertension	81 (75%)
Co morbidity other chronic disease	50 (46%)
Health care use	
Contact with GP in last two months	76 (70%)
Contact with medical specialist in past year	72 (67%)

Table 2 Associations (*Pearson's r*) between the three dimensions of quality of care

			Medical technical	Psychosocial	Interpersonal
Cohort 1982-1984	All quality assessments	Medical technical	-		
		Psychosocial	.66	-	
		Interpersonal	.63	.80	-
	Assessments of GP observers	Medical technical	-		
		Psychosocial	.54	-	
		Interpersonal	.51	.79	-
	Assessments of patient observers	Medical technical	-		
		Psychosocial	.70	-	
		Interpersonal	.68	.77	-
Cohort 2000-2001	All quality assessments	Medical technical	-		
		Psychosocial	.58	-	
		Interpersonal	.64	.76	-
	Assessments of GP observers	Medical technical	-		
		Psychosocial	.55	-	
		Interpersonal	.56	.77	-
	Assessments of patient observers	Medical technical	-		
		Psychosocial	.62	-	
		Interpersonal	.71	.76	-

Changes in quality of doctor-patient communication

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6 Figure 1 Means (and 95% CI) of assessments of medical technical quality, psychosocial quality
7 and quality of interpersonal behaviour
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Means (and 95% CI) of assessments of medical technical quality, psychosocial quality and quality of interpersonal behaviour
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STROBE 2007 (v4) checklist of items to be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4,5
Objectives	3	State specific objectives, including any pre-specified hypotheses	4,5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5-7
Participants	6	Give the eligibility criteria, and the sources and methods of selection of participants	5,6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5-7
Bias	9	Describe any efforts to address potential sources of bias	5-7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	7
		(b) Describe any methods used to examine subgroups and interactions	7
		(c) Explain how missing data were addressed	7
		(d) If applicable, describe analytical methods taking account of sampling strategy	n/a
		(e) Describe any sensitivity analyses	7
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a

		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5,6, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	n/a
Outcome data	15*	Report numbers of outcome events or summary measures	7,8
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	8, Figure 1
		(b) Report category boundaries when continuous variables were categorized	8, Figure 1
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	7,8, Table 2
Discussion			
Key results	18	Summarise key results with reference to study objectives	9
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	10,11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10,11
Generalisability	21	Discuss the generalisability (external validity) of the study results	10,11
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	11

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.