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## GP Practices as a One-Stop Shop: How Do Patients Perceive the Quality of Care? A Cross-Sectional Study in Thirty-Four Countries

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**Objective.** To contribute to the current knowledge on how a broad range of services offered by general practitioners (GPs) may contribute to the patient perceived quality and, hence, the potential benefits of primary care.

**Study Setting.** Between 2011 and 2013, primary care data were collected among GPs and their patients in 31 European countries, plus Australia, Canada, and New Zealand.

In these countries, GPs are the main providers of primary care, mostly specialized in family medicine and working in the ambulatory setting.

**Study Design.** In this cross-sectional study, questionnaires were completed by 7,183 GPs and 61,931 visiting patients. Moreover, 7,270 patients answered questions about what they find important (their values). In the analyses of patient experiences, we adjusted for patients' values in each country to measure patient perceived quality. Perceived quality was measured regarding five areas: accessibility and continuity of care, doctor–patient communication, patient involvement in decision making, and comprehensiveness of care. The range of GP services was measured in relation to four areas: (1) to what extent they are the first contact to the health care system for patients in need of care, (2) their involvement in treatment and follow-up of acute and chronic conditions, in other words treatment of diseases, (3) their involvement in minor technical procedures, and (4) their involvement in preventive treatments.

**Extraction Methods.** Data of the patients were linked to the data of the GPs. Multilevel modeling was used to construct scale scores for the experiences of patients in the five areas of quality and the range of services of GPs. In these four-level models, items were nested within patients, nested in GP practices, nested in countries. The relationship between the range of services and the experiences of patients was analyzed in three-level multilevel models, also taking into account the values of patients.

**Principal Findings.** In countries where GPs offer a broader range of services patients perceive better accessibility, continuity, and comprehensiveness of care, and more involvement in decision making. No associations were found between the range of services and the patient perceived communication with their GP.

The range of GP

services mostly explained the variation between countries in the areas of patient perceived accessibility and continuity of care.

**Conclusions.** This study showed that in countries where GP practices serve as a “one-stop shop,” patients perceive better quality of care, especially in the areas of accessibility and continuity of care. Therefore, primary care in a country is expected to benefit from investments in a broader range of services of GPs or other primary care physicians.

During the past decades, countries have focused on strengthening and maintaining strong primary care worldwide. Policies with this aim are based on the available evidence on the benefits of strong primary care and have been encouraged by international organizations such as the World Health Organization (WHO) (World Health Organization 1978, 2008). Strong primary care is seen as a potential solution to future challenges related to demographic changes and financial constraints (World Health Organization Regional Office for Europe 2013; European Commission Expert Panel on effective ways of investing in Health 2014; World Health Organization 2014; Osborn et al. 2015). For patients, primary care is the first point where they can access the professional health care system. One of the core values of primary care is that it is comprehensive, meaning that a broad range of services is provided to address a large majority of the health care needs of patients (U.S. Institute of Medicine 1994; Starfield, Shi, and Macinko 2005; Haggerty et al. 2007; Kringos et al. 2010). If primary care physicians offer a broad range of services, they can meet the common health needs in their population and refer to other providers when needed (Starfield 1998). This means that there will be a smaller dependency on secondary care. Therefore, a broad range of services can be seen as an indicator of strong primary care

(Wilson et al. 2015). A previous study found that comprehensive primary care is associated with better quality in terms of lower rates of hospitalization for ambulatory care sensitive conditions (Starfield, Shi, and Macinko 2005).

It is, however, not yet known in detail to what extent the range of services provided in primary care relates to the quality as perceived by patients (Grumbach 2015).

It is important to take into account the perceptions of patients (Grol et al. 2000; Bower 2003), as they can provide insight into whether the services delivered are responsive to their needs and expectations. Without taking into account how patients experience care, care delivery too easily becomes provider-centered (Haggerty 2011) Patient perceived quality includes various domains: 1. It is important that patients experience good access to primary care, as it is the first point where patients contact a health care provider and facilitate entry to the rest of the health care system (Starfield, Shi, and Macinko 2005). Accessibility includes topics such as out-of-hours care and waiting times for consultations (Mead and Bower 2000).

2. Continuity in the care delivery, for example, through proper documentation, can help the provider in accumulating knowledge and building a long-standing relationship with patients (Kon 2010; Ekman et al.

2011). Additionally, a doctor who is more aware of the living situation and previous conditions of a patient will be better able to recognize health problems and personal needs (Starfield 2011).

3. To become aware of the needs of patients and to be able to deliver patient-centered care, it is also important that doctors communicate well with their patients (Bensing et al. 2000). Health care providers need to listen carefully to what their patients are saying to become aware of their personal life situation and their conditions (Ekman et al. 2011) and, on the other side, patients need to understand explanations of their provider.

4. Health care providers need to involve patients in decisions about the treatment to ensure that these decisions are in line with their personal preferences and match their lifestyle (Ekman et al. 2011; De Maeseener and Boeckxstaens 2012; Vlek, Driessen, and Hassink 2013).

5. Finally, primary care also needs to be comprehensive as perceived by patients to ensure that their needs for health care are met (Starfield 2011).

Continuity and comprehensiveness are distinguishing characteristics of primary care. Access, communication, and patient involvement are not unique to primary care, but they can be seen as essential features of health care in general and are therefore also taken into account (Starfield 1992; Taira et al.

2001).

We expect that the range of the services delivered by primary care doctors will be related to the patient perceived quality. GPs are the main providers of primary care in the countries we studied. It is hypothesized that patients perceive better quality of care when (1) they can visit their GPs as a first contact to the health care system for a broader range of problems; (2) their GP doctor will treat of a broader range of acute and chronic conditions, for example, depression and Parkinson's disease; (3) their GP offers more minor technical procedures, for example, IUD insertions; and (4) their GP actively offers them more preventive treatments. GPs with a broader range of services will be better able to meet the needs of patients, because they have more services on offer and their practice serves as a "onestop shop" for health care needs of their patients. Their broad involvement is more likely to lead to a long-standing relationship with their patients (Starfield 1998; Kringos et al. 2010), because the patients have a higher possibility to encounter their GP during different stages of their lives. Moreover, patients are more likely to visit GPs for many problems if they know these services are available. Due to a long-standing relationship, GPs can become aware of the importance of the various aspects of patient perceived quality of care. To study our hypothesis, we have formulated the following research question: How Is Patient Perceived Quality of Care Associated with the Range of Services Provided by GPs? This question is answered with data collected among GPs and their patients in 31 European countries, Australia, Canada, and New Zealand. The variety in the range of GP services and in the models of GP practice organization in these countries provide a setting for comprehensive analyses (Schäfer et al. 2011a; Groenewegen 2013). In the large majority of these countries, GPs are medical doctors with a specialized training in family medicine. In the European context, GPs practice almost exclusively in the ambulatory setting (Grumbach 2015). In previous analyses, we found high variations between and within countries with regard to the range of GP services and patient perceived quality of care (Pavlic et al. 2015; Schäfer et al. 2015). This study aims

to contribute to the current knowledge on how a broad range of services offered by GPs may contribute to the patient perceived quality and, hence, the potential benefits of primary care.

## **METHODS**

### **Data Collection**

Data used in this paper are derived from the QUALICOPC study (Quality and Costs of Primary Care in Europe). In this study, cofunded by the European Commission (EC), surveys were held among GPs and their patients in 31 European countries (EU 27—except for France, Iceland, FYR Macedonia, Norway, Switzerland, Turkey) and three non-European countries (Australia, Canada, New Zealand).

In each country, a sample of GPs (target: N = 220GPs; Cyprus, Iceland, Luxembourg, and Malta N = 80 GPs), and patients (target: N = 2,200; Cyprus, Iceland, and Luxembourg N = 800) completed the questionnaires. In most countries, GP samples were national random samples. In countries where no national registers were available, alternative approaches were taken aiming to get a national representative sample (Groenewegen, Greß, and Schäfer 2016). In some countries, larger samples were taken to enable comparisons between regions. Only one GP per practice or health center was eligible to participate. GP questionnaires were self-administered. In nearly all countries, trained fieldworkers were sent to the participating GP practices to collect patient data using paper or electronic questionnaires. The fieldworkers and practice staff were instructed to consecutively invite patients 18 years or older, who had had a face-to-face consultation with the GP, to complete the questionnaire until 10 questionnaires per practice were collected. Nine patients in every practice completed the questions about their experiences in the consultation which had just occurred. One questionnaire included questions about the patient's values regarding primary care. In six countries, local practice staff was instructed to distribute and collect patient surveys on paper according to the study protocol.

Data collection took place between October 2011 and December 2013.

In total, 61,931 patients completed a questionnaire on their experiences and 7,270 patients on their values. The GP questionnaire was completed by 7,183 GPs (database version 4.3, February 2016). Ethical approval was acquired in accordance with the legal requirements in each country. The surveys were carried out anonymously. More details about the study protocol have been published elsewhere (Schäfer et al. 2011b, 2013; Groenewegen, Greß, and Schäfer 2016).

### **Patient Perceived Quality**

To measure patient perceived quality, we adjusted for what patients find important in each country in the analyses of patient experiences. This approach was based on the QUOTE instrument and Consumer Quality index (Sixma et al. 2000; Delnoij, Rademakers, and Groenewegen 2010).

The Patient Experiences questionnaire contained questions about five domains of patient perceived quality of care: accessibility of care (5 questions), continuity of care (3 questions), doctor–patient communication (3 questions), patient involvement in decision making (1 question), and comprehensiveness of care (2 questions). Patients responded whether they agreed with each statement with “yes” or “no,” for

example, whether GPs had the medical records at hand during the consultation. Scales were constructed for the components with multiple items using latent multilevel variable analyses in a four-level model. In the model, an additional level is added for the items of which the scale is composed, resulting in a model in which items are nested within patients, nested within GPs, nested within countries. To calculate an average scale value, a weighted item average was used for each item. This was done by using the item weights for the fixed effects. Also, the item variance was taken into account (Raudenbush and Sampson 1999).

This approach of scale construction accounts for differences in the number of respondents on which the scale is based, individual differences in response to certain items, and for dependency among the items that measure the latent variable (Raudenbush and Sampson 1999). As an example, the mathematical expression for the construction of the scale “Continuity of care,” which is constructed from three items, is as follows:

#### [FORMULA 1]

In the expression, four levels are defined the countries (i), the GP practices (j), the patients (k), the items (l). The second line of the mathematical expression shows that the first item is omitted from the equation, as it is the reference category. The items received a weight of  $(0 \text{ or } 1) - 1/3$ , in which 3 represents the number of items. Items 1, 2, and 3 are coded as dichotomous variables to estimate the item variances. The  $e$  represents the item variances.

The item variance is an indication for the measurement error. The third line represents the variances at the three levels:  $f$  indicates the country variance,  $v$  the GP practice variance, and  $u$  the patient variance.

For further calculations, the scale values for the patient experiences are coded into a range from 0 to 100. More details on the content of each scale and reliability scores can be found in Appendix SA2.

In the final model (see “Statistical Analyses”), we adjusted for the values of the patients (what they find important) in each country. The information on what patients find important was derived from the Patient Values questionnaire in which patients were asked to rate the importance of the same items as the Patient Experiences questionnaire from 4 (high) to 1 (low) (Schäfer et al.

2015). Country-level scales for each domain of patient perceived quality were constructed using latent multilevel regression analyses. In the models, we adjusted for the age, gender, level of household income, ethnicity, level of education of the patients.

#### **Range of Services**

The questionnaires measured GPs’ range of services related to four components: problems for which GPs provide first contact care, treatment of diseases, provision of minor technical procedures, and preventive activities.

For first contact care, minor technical procedures, and treatment of diseases, a number of topics were presented and GPs were asked to fill in their involvement on a four-point scale ranging from “never” (1 point) to “almost always or always” (4 points) (Boerma, Van der Zee, and Fleming 1997; Schäfer et al. 2013). For example, GPs stated to what extent they are involved in the management and follow-up of patients with depression and whether a woman aged 18 asking for oral contraception would contact them as the first health care provider (Schäfer et al.

2016b). Regarding preventive activities, GPs answered a set of questions related to their systematic involvement in blood pressure and cholesterol measurement and health education (Yes/No). Again, scale scores for the range of services in the four areas were calculated using latent multilevel variable analyses. The complete overview

of questions used to measure the range of GP services can be found in Appendix SA3.

### **Statistical Analyses**

To analyze the relationship between the range of services and the patient experiences, regression coefficients were calculated through multilevel linear regression models. For the analyses of patient involvement, logistic regression was used. In the multilevel models, patients (lowest level) are nested within GP practices within countries (highest level). We extracted three consequent models for each dependent variable: (1) an empty model; (2) a model in which we adjusted for the GP's age and gender, and the age, gender, household income, ethnicity, and education of the patients; (3) a model that adds the range of services of the GPs. Intraclass correlations (ICCs) for the different models were calculated. Only patients of whom the GP has completed a questionnaire were included (60,762 patients). Reductions in variance are calculated by comparing the models including the service components to the models including background variables. This is an indicator for the extent to which the service components attribute to variation at the different levels.

## **RESULTS**

The average response rate of the patients was 74.1 percent (range: 54.5–87.6 percent). The average response rate of GPs was 38 percent, varying from less than 10 percent in Austria and Sweden and more than 70 percent in Greece and Spain. Previous publications provided descriptive overviews of the variation between countries in the range of services (Schäfer et al. 2016b) and the patient experiences and values (Schäfer et al. 2015). Appendix SA4 provides an overview of the values of the background characteristics by country.

The patient perceived quality shows high variation at the country level with ICCs from 10 percent for perceived involvement to 45 percent for perceived comprehensiveness. At the GP practice level, ICCs range from 16 percent for involvement to 55 percent for perceived access (see Table 1). Table 2 shows that patients perceive better access when their GP offers a broader range of services in the areas of first contact care, treatment of diseases, and technical procedures. Patient experiences on continuity of care are more positive if their GP offers a broader range of services in the areas of first contact

### **[TABLE 1]**

care and treatment of diseases. Patients experience more involvement in decision making and more comprehensive care when their GP is more involved in first contact care and prevention. No associations between the range of GP services and the patient perceived communication were found. In summary, all components of the range of GP services are positively related to patient perceived quality of care. The range of GP services mostly reduces the variance at country level of patient perceived

accessibility and continuity and to a lesser extent the country-level variance of patient perceived involvement and

**[TABLE 2]**

comprehensiveness. The reductions in variances at the GP practice and patient level vary between 0 and 12.4 percent. Detailed figures of the analyses are provided in Appendices SA5 to SA9.

## **DISCUSSION AND CONCLUSION**

### **Main Findings**

In this study, we evaluated whether the range of GP services are associated with patient perceived quality of primary care. We aim to contribute to the current knowledge on the potential benefits of primary care. The hypothesis that patients perceive better quality of care when their GP offers a broader range of services could be confirmed. The variation between countries in accessibility and continuity of care, and to a lesser extent the comprehensiveness of care and patient involvement in decision making, could be explained in part by the range of GP services. This means that in some of the studied countries, patients perceive better quality of care, as the GPs in these countries offer a broader range of services. While higher involvement of GPs in first contact care is related to most of the quality areas studied, a broader range of services in terms of minor technical procedures were only found to be related to the perceived accessibility. Moreover, variation in the perceived communication could not be explained by the range of GP services. The communication with GPs is generally perceived as good in the countries included in this study (Schäfer et al. 2015).

### **Relation of Findings to Previous Studies**

Previously, international studies have mainly focused on the relationship between the organization of the GP practice and experiences of patients (e.g., Wensing et al. [2008]). To our knowledge, few studies have been performed on the relationship between the range of services offered within primary care and the evaluations of patients. A study performed in Canada found an increase in patient reported continuity when GPs performed more medical procedures (Haggerty et al. 2008). As it is not clear what kind of medical procedures were analyzed, we do not know how these results exactly relate to our findings. Moreover, previous studies have looked at associations between the range of services provided within primary care and other outcome measures.

A broad range of services offered within primary care is found to be associated with better outcomes in terms of improved health (Starfield, Shi, and Macinko 2005; Sans-Corrales et al. 2006; Wilhelmsson and Lindberg 2007; Kringos et al. 2013), lower hospital admission rates (Starfield, Shi, and Macinko 2005; Kringos et al. 2013; Bazemore et al. 2016), but also to higher rates of hospital admissions for uncontrolled diabetes (Van Loenen et al. 2016) and reduced disparities in health (Starfield 2006). Our study adds to the current knowledge by showing that the range of services provided within primary care is positively associated with patient perceived quality of care.

### **Strengths and Limitations**

A strength of this study is that it contains detailed analyses based on actual patient experiences, measured directly after consultations, from a large number of patients within many countries. A study conducted in General Practice in the UK showed that measures of patient experience show a modest, but positive relation to other clinical outcomes (Llanwarne et al. 2013). Moreover, this data could be linked to the data of the GP they just visited due to the recruitment strategy. This allowed for analysis in a multilevel model in which we could distinguish between variation at the country, GP practice, and patient levels.

The study also has limitations. The study only evaluated primary care through data collected among GPs and their patients. In some countries, there are also other providers of primary care who are not included in this study.

Additionally, the figures on the range of services are based on estimates of GPs on the extent to which their patients consult them for certain health issues. In previous analyses, we found high country-level ICCs at the country level for all service components, ranging from 31 percent for preventive services to 69 percent for technical procedures (Schäfer et al. 2016c). The high agreement within countries may point to a widespread perception of responsibilities and likely also service provision. We can reasonably expect that GPs can provide a correct estimation, but it can be that there are cases of over- or underestimations (Schäfer et al. 2016a). Next, for certain complex chronic diseases, such as rheumatoid arthritis, the involvement of GPs may concern comanagement rather than having the sole responsibility. Also, we expect that GPs do not treat an acute myocardial infarction, other than acute treatment before hospital admission. However, we did not measure the level of involvement of other providers through the questionnaire. For follow-up studies, it may be beneficial to also measure whether there are differences in the extent to which other providers are involved and whether this is also related to the patient perceived quality of care.

Furthermore, this paper focuses on the access as experienced by patients who actually visited a GP practice. This means that patients who do not have access to a GP practice did not participate in this study. Consequently, the positive association between the range of services and accessibility may be overestimated.

Finally, this study focuses on quantitative data on the experiences of patients with their GP. To improve the practice of clinicians, we also need narrative feedback on why patients experience lower quality of primary care (Schlesinger, Grob, and Shaller 2015).

### **Relevance to the USA and Other Countries**

The findings of this study are also relevant for other countries, including the United States. This study shows that GPs with a broader range of services are better able to meet the needs of patients regarding quality of care. In the United States, recent efforts have been taken to strengthen primary care through the comprehensive primary care (CPC) initiative. One of the aims of the second track of this initiative is to increase the comprehensiveness of care delivered (Centers for Medicare & Medicaid Services 2016). Findings of this study suggest that such efforts may have beneficial consequences in terms of patient perceived quality of care. Moreover, previous analysis based on the QUALICOPC dataset showed that patients who perceive better accessibility and continuity of care less often visit the emergency room (ER) (van den Berg, van Loenen, and Westert 2016). These findings may be



particularly relevant to the United States, where the ER use has remained steadily at 20 percent during the past decade and shows high differences between groups of patients (National Center for Health Statistics 2015; Gindi, Black, and Cohen 2016). The patient perceived quality of care, as analyzed in this study, relates to both primary care specific aspects, being continuity and comprehensiveness, and the general health system goals, being access and involvement in decision making. All these aspects are important in the treatment of patients with complex care needs. In the United States, primary care increasingly needs to deal with such patients. Meanwhile, primary care physicians in the United States expressed their concerns about how well prepared their practices are to manage the care of patients with complex needs (Osborn et al. 2015).

For similar reasons, the findings of this study are not only relevant for the United States, but also for the countries studied and for other countries aiming at strengthening primary care through expanding the comprehensiveness of the services. Finally, researchers in other countries can use this study as an example on how to investigate the relationship between elements of the process quality of care and patient perceived quality in a multilevel setting.

### **Implications for Practice and Research**

There are various ways to promote a broader range of services among primary care physicians in a country. First, and most evidently, this can be achieved by implementing a broad scope of training in the specialized education. Depending on the developments in the community, additional competences can also be acquired through continuous medical education (CME). However, it should also be ensured that payment policies fairly compensate the primary care practices for the time and effort invested to function as a “one-stop shop” (Grumbach 2015). A broad range of services offered does not necessarily indicate high technical quality delivered. It is important that primary care physicians also acquire the relevant competences to provide certain services.

Additionally, it is important that the services provided match with the needs of the community. This also allows them to gain experiences and maintain their competences (Starfield 1998).

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the supporting information tab for this article: Appendix SA1: Author Matrix.

Appendix SA2: Measurement of Patient Perceived Quality of Care.

Appendix SA3: Measurement of the Range of GP Service.

Appendix SA4: Summary of Values of Background Characteristics.

Appendix SA5: Results Linear Multilevel Analyses of Patient Perceived Accessibility.

Appendix SA6: Results Linear Multilevel Analyses of Patient Perceived Continuity of Care.

Appendix SA7 Results Linear Multilevel Analyses of Patient Perceived Doctor-Patient Communication.

Appendix SA8 Results Logistic Multilevel Analyses of Patient Perceived Involvement in Decision Making.

Appendix SA9: Results Linear Multilevel Analyses of Patient Perceived Comprehensiveness of Care.

FORMULA AND TABLES

FORMULA 1

$$resp_{ijkl} \sim N(XB, \Omega)$$

$$resp_{ijkl} = \beta_{0jkl}scale + \beta_1 it2_{ijkl} + \beta_2 it3_{ijkl} + e_{3ijkl}item1_{ijkl} + e_{4ijkl}item2_{ijkl} + e_{5ijkl}item3_{ijkl}$$

$$\beta_{0jkl} = \beta_0 + f_{0l} + v_{0kl} + u_{0jkl}$$

Table 1: Intraclass Correlations (ICCs) of Empty Multilevel Regression Models Dependent Variables

	<i>Patient perceived quality of . . .</i>				
	<i>Access</i>	<i>Continuity</i>	<i>Communication</i>	<i>Involvement</i>	<i>Comprehensiveness</i>
ICCs Empty Models					
Levels					
Country level	41.2%	36.4%	12.3%	10%	44.7%
GP practice level	54.8%	26.1%	35.6%	18.2%	52.7%

Table 2: Regression Coefficients between the Range of GP Services and Patient Perceived Quality of Care (Summary Results of the Multilevel Analyses)

	<i>Patient perceived quality of . . .</i>				
	<i>Access</i>	<i>Continuity</i>	<i>Communication</i>	<i>Involvement</i>	<i>Comprehensiveness</i>
Regression coefficients					
Service components					
First contact care	0.70 (0.23)**	0.90 (0.31)**	0.03 (0.11)	0.11 (0.05)*	0.86 (0.37)*
Treatment of diseases	0.79 (0.23)**	1.73 (0.31)***	0.08 (0.11)	0.00 (0.05)	0.45 (0.37)
Technical procedures	0.53 (0.20)**	0.38 (0.26)	-0.10 (0.09)	0.01 (0.04)	0.22 (0.31)
Prevention	0.99 (0.60)	0.88 (0.80)	0.30 (0.28)	0.26 (0.13)*	3.14 (0.95)**
Reduction of variance in patient perceived quality due to GP service components					
Levels					
Country level	12.4%	7.7%	0%	1.3%	2.3%
GP practice level	1.0%	1.3%	1%	1.8%	0.5%
Patient level	0.6%	0%	1%	–	0.4%

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .