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Which patient and doctor behaviours make a medical consultation more effective from a patient point of view. Results from a European multicentre study in 31 countries

HIGHLIGHTS

- Assessments of patient views on how doctors and patients can improve communication.
- Representative samples of primary care patients from 31 European countries.
- Multilevel exploration of the joint contribution of patient and country information.
- Being treated as a person and partner is universally considered of great importance.
- Patients attribute more responsibility to doctors for a more effective consultation.

ABSTRACT

Objective

To assess European patients' preferences regarding seven aspects of doctor-patient communication.

Methods

6049 patients from 31 European countries evaluated 21 doctor and 12 patient behaviours, through a patient-generated questionnaire (PCVq). Multilevel models explored the effects of patient characteristics, contextual and cultural dimensions on preferences.

Results

Patients attributed more responsibility to doctors, by giving greater importance to doctor than to patient factors, in particular to *Treating the patient as a partner* and *as a person* and *Continuity of care*.

Gender, age, education, the presence of chronic illness and two of Hofstede's cultural dimensions, Individualism and Indulgence, showed differential evaluations among patients. Women gave greater importance to all seven communication aspects, older patients to *being prepared for the consultation*, lower educated patients to *Treating patient as a person* and *Thoughtful planning*. Patients from countries with an indulgent background rated all seven communication aspects of greater importance. A more individualistic orientation

was related to lower importance regarding the four doctor's factors and the patient factor *Open and Honest.*

Conclusions

Treating the patient as a person and providing continuity of care emerged as universal values.

Practice implications

The findings should represent a landmark for the adaptation of patient-generated communication guidelines and programs in Europe.

1. INTRODUCTION

Primary care consultation deserves to be considered a "meeting between experts" [1], where the doctor's and patient's perspectives should be synergistically balanced and integrated [2]. In this view, the effectiveness of the medical encounter relies on the shared responsibility that both parties assume for making the communication fruitful. Patients, who were asked to express their opinion on reciprocal duties in the consultation, indicated that it was equally important for doctors as well as patients to communicate honestly, to be open about treatment and information, and to manage time effectively [3].

In the last decades, doctors have included these requirements among their goals [4]. However, patient health beliefs, preferences and emotions have hardly been explored yet and doctors sometimes fail to acknowledge the complexity of patient preferences [5,6].

The heterogeneity of patient needs is linked to numerous factors, which comprise personal characteristics such as socio-demographic status, health conditions, personality or health literacy [[7], [8], [9], [10]]. The development of personal preferences in healthcare seems to be affected by the environmental context [11,12], and cultural background in terms of dominant value systems [[13], [14], [15]]. Characteristics represented by national healthcare systems, public resources allocated to financing prevention and health education, service access and organization in terms of continuity of care, general practitioners' role and their workload and waiting-times, have also been identified as potential mediating factors [[16], [17], [18]].

Healthcare providers, who deal with this heterogeneity daily in their clinical practice have to rely on the indications given by official guidelines in order to decide which are the most appropriate behaviours to assume in the interaction with patients. In the last years, many international guidelines on doctor-patient communication, patient empowerment and shared decision making have been produced [[19], [20], [21]]. However, these recommendation are often developed in a specific national context and then spread worldwide, based on implicit assumptions of "interpersonal" and "cross-cultural" generalizability of what to consider an appropriate doctor-patient communication.

Until now, the few studies which have explored the potential effects of these individual and contextual factors analysed data using one-level models which are unfit to assess the joint effect of such characteristics [14,22].

In order to overcome this limitation, we present a multilevel approach aimed to assess the effect of individual and contextual variables on patients' preferences regarding the respective responsibilities of doctors and patients for an effective

medical consultation. Patient preferences were collected using a patient-based questionnaire (the Patient Consultation Value questionnaire - PCVq), administered to a sample composed of patients in 31 European countries.

More specifically, the research questions are:

- which of the specific behaviours of doctor and patient are indicated by patients as most important?
- are these preferences shared by all patients or are there different preferences according to specific socio-demographic profiles?
- are cultural dimensions and environmental conditions, at country level, relevant for explaining cross-national differences in patient preferences?

2. METHODS

2.1. Study design and sample

The data base of the present study is part of the data collected in a multicentre international survey named QUALICOPC (Quality and Costs of Primary Care in Europe). General Practitioners (GPs) and patients from 31 European countries and three non-European countries (Australia, Canada, New Zealand) were invited to participate. The aim was to obtain a nationally representative sample of GPs in each country. Data collection took place between October 2011 and December 2013. Ethical approval was acquired in accordance with the legal requirements in each country.

Details about the study protocol and recruitment procedure have been published elsewhere [23,24], as well as the results of several parallel sub-studies [[25], [26], [27], [28], [29]].

For the present study only the 31 European countries were considered, corresponding to 6129 patients who filled out the PCVq. The participation rate was 97%. Eighty patients with incomplete data were excluded so that the final sample consisted of 6049 patients. The patient characteristics are shown in Table 1; the sample size per country is displayed in Table 2.

[TABLE 1][TABLE 2]

2.2. Dependent variables: Doctor and patient roles and responsibilities

The patients' preferences regarding doctor and patient communicative behaviours before, during and after the medical encounter were collected with the PCVq. The PCVq data were reduced into four doctor and three patient factors, corresponding to different roles and responsibilities in the relationship building process.

Briefly, doctors should:

1. *treat the patient as a partner*, for example by facilitating patients' questions and exploring their treatment preferences;

2. *treat the patient as a person*, for example by listening attentively, being respectful and without prejudice;

3. guarantee *continuity of care and promote self-management*, by clear *instructions* for aftercare and by remaining in touch after the consultation;

4. deal *with* new media and other sources of information (abbreviated: *additional information*): give leaflets, point to websites, avoid telephone interruptions and avoid pre-collection of information by receptionist.

Patients should:

1. be open and honest about health problems, self-medication, other treatments and psychological problems;
2. be prepared for the consultation by preparing questions, keeping a symptom diary or preparing a list of topics to be discussed;
3. plan *thoughtfully*, for example by making arrangements such as bringing a companion or keeping appointments.

The PCV questionnaire showed good properties of reliability, with an ordinal-alpha value of 0.95 (0.88 and 0.93, respectively for patient and doctors behaviours), calculated on the 31 country sample [30]. More detailed information, such as the PVCq item list and the procedures regarding the reduction into factors, are reported in Appendix A in Supplementary material.

2.3. Potential predictors at individual level (micro)

The patient characteristics which could explain the heterogeneity of patient preferences were: age, gender, education (low: no qualification to lower secondary education; medium: upper secondary level; and high: post-secondary or higher level), household income (below, around or above perceived country average), perceived health (answer to "How would you describe your own health in general?" from very good to fair or poor) and chronic conditions (yes or no answer to "Do you have a longstanding disease or condition?").

2.4. Potential predictors at country level (macro)

The EU country characteristics comprise information on healthcare organization, derived from administrative sources, and on society value systems.
The structure of healthcare systems was measured by Health Expenditure per capita, the percentage of public expenditure on total health expenditure, the numbers of physicians, nurses and midwives per 1000 people [31], the health financing systems classified as National Health Service - NSH, Social Security Health service - SSH, and "In transition" to SHI, which describes the countries of the former Soviet Union [32].

Values, believes and habits were explored using the cultural dimensions of Hofstede's model [33]. The model empirically describes the national organizational cultures through six perspectives defined as:

- Power Distance (PDI): related to the perception and acceptance of the power inequality in the society; high scores indicates a culture in which people pay attention to gap between the different levels of the hierarchy.
- Uncertainty Avoidance (UAI), related to the level of tolerance for uncertainty and ambiguity; high scores indicate a culture where stability, structured rules and social norms are appreciated.
- Individualism versus Collectivism (IDV), related to the integration of individuals into primary groups; high scores define a society where individuals tend to take care of only themselves and their immediate relatives.

- Masculinity versus Femininity (MAS), related to the division of roles between women and men; high scores refer to a culture oriented to differentiate competencies and positions.
- Long Term versus Short Term Orientation (Ltowvs), related to the cultural perspective of time, the importance attributed to traditions and perseverance values; high scores fit a pragmatic approach to problem-solving and to plan for future.
- Indulgence versus Restraint (IVR), related to the different level of "gratification of basic and natural human desires related to enjoying life"; high scores are linked to indulgent values.

Despite its many limits in terms of information quality and methodological rigour [34], Hofstede's model is one of the most frequently used systems designed to evidence cross-country differences. It has the advantage of quantifying the differences among countries in terms of distances among people groups and its indices propose themselves for cross-national research. In the field of doctor-patient communication the model was applied by Meeuwesen et al. [14], who found that differences in communication patterns of European countries could be linked to Hofstede's cultural dimensions.

In order to better interpret the regression values, the country scores of the Hofstede's cultural dimensions for the 31 countries are reported in Table 1B of Appendix B in Supplementary material.

2.5. Statistical analysis

The dataset has a two-level hierarchical structure with questionnaire scores and socio-demographic variables of patients at level 1 (micro), cultural and environmental conditions of each country at level 2 (macro) [35]. Since each level is potentially a source of variability to be explained, an approach which parcels out the variance into the two levels was adopted in order to identify which set of explanatory information deserved exploration. Intra-class Correlation Coefficient (ICC) was calculated to disentangle the percentage of variance due to countries (variance *between* cluster on *total* one) and patients (variance *within* cluster on *total* one).
A set of two-way ANOVA and a Pearson's correlation matrix were used, respectively at micro and macro level, to explore bivariate relationships and select the main predictors of the multilevel analysis (see Appendix B in Supplementary material for intermediate explorations).
The combined effects of patient and country characteristics on each PCVq factor, were estimated using a set of three multilevel models. The model (a), called "intercept only", was designed without explicative variables (not shown and used as base of comparison) in order to estimate the heterogeneity due to country-level. Model (b) estimated the joint effects of micro information on each factor. In the model (c), the country-level variables were added to those included in the previous model, estimating the contribution of macro information. Following the decomposition of variance approach
[36], level-specific pseudo-R^2 was calculated to compare the models and estimate the global contribution of each set of micro and macro information, considering the explicative variables at each level as a whole. Akaike information criterion (AIC)

and Bayesian Information Criterion (BIC) were also performed as goodness of fit statistics and to assess competing models (following an empirical rule based on differences: the most favourable model is linked to the lowest value).
In order to facilitate the interpretation of regression coefficients the continuous predictors, *i.e.* Hofstede's cultural dimensions and patients' age, were rescaled by subtracting their sample average. Doing so, the regression intercept ("constant" in Table 3, Table 4) can be interpreted as the expected value of dependent variable when the predictor values are set to their means.

[TABLE 3]
All analyses were performed using STATA 14.2.

3. RESULTS

3.1. Which of the specific behaviours of doctor and patient are indicated by patients as most important?

Overall, the distributions of four doctor and three patient PCVq factors were negatively skewed (index range: −0.55;−0.14), presented no floor effects (the frequencies of 1, "not important" anchor-point, are less than 1.5%), but moderate ceiling effects (range: 3–18%, "very important"). Three quarters of the patients highly valued the doctor factors: *Treating the patient as a partner* (mean = 3.3) and *as a person* (3.2) and *Continuity of care* (3.3). The last factor, *Additional information,* was less appreciated (2.7) and only a quarter of patients expressed a mean score higher than 3. The three patient factors tended to assume lower values: *Being open and honest* (3.2), *Thoughtful planning* (3.0) and *Being prepared for the consultation* (2.8) (Table 2, Total row).

3.2. Are these preferences shared by all patients or are there differences according to specific socio-demographic profiles?

The set of models (b) modulates the joint effects of individual patient characteristics on each factor (Table 3, Table 4). A parsimonious criterion in selecting the explanatory variables was adopted so that only the significant ones are included in the final models. The intermediate ANOVA explorations among patient subgroups are reported in Table 2B of Appendix B in Supplementary material.
The final findings show that female gender was associated with a greater attributed importance to all the seven communication aspects. Suffering of a chronic condition promoted a positive orientation of patients towards *Thoughtful planning,* and B*eing treated as a partner* and *as a person* by the doctor. Similar evaluations were expressed by low educated patients. Older more than younger patients value their *Being prepared for* the consultation, while younger patients seem to appreciate *Additional information* in terms of website information and leaflets.
The heterogeneities of the phenomena investigated were mainly due to individual differences, as estimated by ICCs of "intercept only models" (range: 6–11%), which means that about one-tenth of variation is between countries. The contribution of our micro-level variables can explain only a small part of heterogeneity (pseudo-R^2 of patient level range: 1–2%), even if the comparisons between "intercept only" (a) and "micro-info" (b) models, in terms of goodness of fit statistics, are always favourable to the latter.

3.3. Are cultural dimensions and environmental conditions relevant for explaining cross-national differences in patient preferences?

Table 2 shows the distribution of the PCVq factors across Europe. As confirmed by the intra-class correlation coefficient (ICC), the heterogeneities among countries are moderate and vary from 11% (*Patient preparation to the consultation*) to 6% (*Thoughtful planning*). The mean values differ little between countries, although some cross-national differences become more important when interpreted using the original item scale scores. For instance, the Czech, Italian and Bulgarian patients gave the lowest scores to *Being prepared for the consultation* (mean values around 2.3, corresponding to 'somewhat important') while the patients from Cyprus, Sweden and Spain gave the highest scores (3.0–3.3; corresponding to important). A similar trend can be observed for *Additional information* (ICC = 9%), to which Italy, Latvia, Belgium and the Czech Republic assigned least importance (mean values were around 2.3) compared to Turkey, Slovenia and Cyprus (close to 3.1).

Moving to specific national characteristics the preliminary analyses, which explore the relationships among the macro-information and the seven PCVq factors (Table 3B, Appendix B in Supplementary material), showed a generally weak correlation between PCVq factors and some Hofstede's dimensions, which are: *The Indulgence versus Restraint, Long term perspective and Individualism*. The structure of healthcare systems, in particular the number of health workers, such as physicians, nurses and midwives, and health financing systems, marginally affects doctor and patient roles and responsibilities. The amount of health expenditure appeared not informative, with the exception of the positive relationship between expenditure per capita and the O*pen and honest* patient role (Pearson correlation = 0.4).

The joint effects of the macro-level information on the PCVq factors, which were explored using model (c), were confirmed for two of the Hofstede dimensions: Restraint (IVR) and Individualism (IDV). All doctor factors and the patient factor *Openness* were more positively evaluated in countries with a prevalently collectivistic culture; while the significant IVR coefficients confirm the effect of an indulgent society system on all seven PCVq factors (Table 3, Table 4).

The overall contribution of the information at macro level (model c) is relevant, although modest, for two doctor factors, which are *Patient as a partner* and *as a person* (level two Pseudo R^2 = 55% and 52%; explaining 5% and 8% of the total variance, respectively) and one patient factor, O*pen and honest* (Pseudo R^2 = 55%, corresponding to 6%).

4. Discussion and conclusions

4.1. Discussion

In the present study, European patients' preferences on seven aspects of doctor-patient communication were assessed through the application of multilevel methodology. This approach enabled the joint exploration of the relationship between compositional differences, using explicative information both at individual and contextual level (within and between countries). To our knowledge, this represents an innovative contribution to the existing evidence, which until now has been based on studies where the impact of individual and contextual variables on patient preferences were explored separately through association measures or one level analysis of variance [14,37].

Our results reveal a cross-national and inter-individual appreciation of the doctors' and patients' responsibilities, as indicated by the ceiling effect shown in the Table 2, the low intra-class correlations and the small differences demonstrated by the regression models at both levels, contextual and individual. The factors assessed were patient generated – that is, they were derived from patients' tips collected in focus groups [38,39] – which, as confirmed in the sample of the present study, are well-founded. It is therefore reasonable to conclude that this set of roles and responsibilities of doctors and patients, which in the view of patients contribute to an effective consultation, represent a milestone for the development or adaptation of patient-generated European clinical guidelines and healthcare training programs.
Special attention deserves the issue of reciprocal engagement and commitment of doctors and patients during the consultation. Participants attributed greater responsibility for an effective consultation to doctors; for example patients want to be recognized as partner but, at the same time, they attribute less importance to their own *preparation to the consultation*. It might be surprising that our results suggest that not all patients are willing to take an active role in the preliminary phase of the consultation.
However, in the last few years, several studies have underlined how personal and cultural patient variables can modulate patient preferences regarding the degree of involvement [9,40,41]. The impact of such variables on active *preparation to the consultation* has been confirmed by our regression model which identified gender, age and other contextual information as explanatory characteristics, suggesting caution in the implementation of this communication aspect to different settings and populations. A final reinforcement comes indirectly from a slight but potentially meaningful trend, which is that suffering from a chronic condition predisposes patients to invest more in the partnership and to assume a proactive attitude, embodied by their personal involvement in *planning thoughtfully* their contribution to the therapeutic process. Interestingly, patients show awareness that dealing with a long-lasting condition necessarily implies their concrete commitment to preserving their health, and that this role cannot be completely delegated to their healthcare providers.
Although doctors' contributions were 'universally' appreciated by the sample, one role 'dealing with *additional information',* gathered less consensus than the others. Using a receptionist as a filter, avoiding disturbances (i.e. telephone calls during the consultation), suggesting other sources of information (leaflets and website) were considered important but not among the priorities of the doctor. This implies that generally patients consider essential the achievement of the core functions of the consultation (i.e. being treated as a person, continuity of care etc.), and show a more tolerant attitude towards the use of filters and a lower interest in alternative sources of information and telephone interruptions. An exception to this trend is represented by younger patients who particularly valued the dimension '*additional information*', probably because they are more familiar with alternative sources of information that triangulate the traditional dual model of doctor-patient communication, like e-communication or web-based sources of support. Our results instead seem to confirm the findings of Dearden et al. [42], who reported that only a few patients (18%) had negative feelings about interruptions while the majority had no problem in continuing the consultation after being interrupted.

Concerning the explicative power of the cultural and environmental characteristics selected in order to explain their influence on patients' preferences, only two of the Hofstede dimensions proved to be partially informative: Indulgent vs Restrained and Individualistic vs Collectivistic. Participants who live in countries characterized by a more indulgent and collectivistic cultural background, for example Ireland and Iceland, appreciated doctor-patient roles and responsibilities more than those coming from nations such as Latvia and Italy, characterized by a more restrictive and individualistic cultural orientation. Indulgent societies are characterized by a positive and optimistic attitude towards life, active participation and perception of personal life control [33]. It is reasonable to suppose that all these characteristics foster patients' attitude to playing an active role in the management of their health and facilitate their engagement in the consultation, making them feel involved and co-responsible for its effectiveness.

The interpretation of the individualism/collectivism effect is less self-evident. Former studies have adopted this dimension as a framework for assessing cultural influences on communication [13]; some of them suggested that an individualistic culture leads people to act on their own, make their own choices and refer to themselves as separate individual entities. In contrast, a collectivistic society relies on mutual interdependence [43], where citizens are group- oriented and pursue the common interest. For this reason they might be more oriented towards a doctor-patient partnership where both protagonists collaborate for the common goal of patients' health and well-being.

The explanatory variables of the present study were selected on the basis of the existing literature. However, their exploratory power proved to be limited, since only a minimal part of the moderate variance among countries and patients was explained. Future research should look for additional patient and contextual characteristics which might influence patient preferences. Examples of other potentially explicatory patient variables whose impact on communication has been checked by previous studies are personality traits (extra-introversion) [44], state and trait anxiety [45], trust [46], attachment style [47], and health literacy [10,48]. Contextual characteristics could include for instance the accessibility, continuity of care, coordination with other levels of health care and comprehensiveness, which describe the quality of healthcare systems [49,50].

4.2. Limitations and strengths

The main strengths of this study are threefold: the involvement of patients as partners in the research process, the application of multilevel methodology in this setting and the sample size, which included almost all the European countries.

Patients' involvement in the development of the items and in the application of the questionnaire is in line with what has been advocated during the last decades by several sources who emphasized the importance of user involvement in clinical research [51,52]. This effort is particularly valuable in a setting where often the definition of what is "patient-centered" is incongruently based on the indication given by a pool of experts, from which patients are excluded.

The multilevel framework made it possible to quantify the effect of a set of contextual information measured at macro level, on some outcomes of interest measured at micro level. If on the one hand this represents an advantage, on the other hand it was hard to discern the appropriate information at the macro-level and to harmonize data coming from different sources, such as administrative and survey

datasets. Another potential limitation is that we targeted our contextual variables at the country level, thereby excluding from the analysis other potentially more explicative variables – in terms of micro-cultures – collectable at a lower level, like for example rural vs urban area [53].

4.3. Conclusions

Our results reveal a cross-national and inter-individual appreciation of doctors' and patients' responsibilities as defined by the PCVq. These might therefore represent a landmark for the development or the adaptation of patient-generated clinical guidelines and healthcare training programs for European countries. The implementation of some specific communication aspects, such as for example patients' active participation in the consultation, has to be tuned according to some personal and contextual variables. Future studies might further explore the role played by contextual variables, which according to our results seems only partially explained by national differences.

4.4. Practice implications

This dataset might be the basis for the elaboration of guidelines for a more effective consultation. Rating scales assessing doctors' communication style might also be developed on the basis of the PCVq factors. The material collected could also be included both in training programs for medical students and health providers and in seminars dedicated to patients themselves in order to encourage behaviours which from the patient perspective help to make the consultation more effective. The implementation of some specific communication aspects, such as for example patients' active participation in the consultation, should be tuned according to some personal and contextual variables.

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Conflict of interest

The authors have no potential conflict of interest related to the subject of the paper.

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APPENDIX A. SUPPLEMENTARY DATA

The following are Supplementary data to this article:

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TABLES

Table 1. Characteristics of patient participants (N = 6049).

Socio-demo and clinical characteristics*	N	%
Gender: female	3714	62%
Age: mean (sd)	49	(17)
18–29	834	14%
30–49	2281	38%
50–69	2099	34%
> 70	788	13%
Living: alone	1019	17%
with adults and children	1996	33%
only adults	2721	46%
Only children	231	4%
Education: pre-primary	1407	23%
upper secondary	2514	42%
post-secondary	2061	34%
Occupation: employed	3389	55%
Retired	1416	23%
Unemployed	551	9%
homeworker	409	7%
Other	345	6%
Birth place: this country	5607	93%
Another Eu country	197	3%
Outside EU	213	4%
Health: very good	863	14%
Good	2945	49%
Fair or poor	2135	35%
Chronic disease	2638	44%

*1% missing values.

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Table 2
The seven PCVq dimensions for each European country (mean values and their standard deviation).

Country	N	Pt as a partner	Pt as a person	Continuity of care	Additional information	Open and honest	Pt preparation for the consultation	Thoughtful planning
Austria	186	3.46 (0.39)	3.24 (0.44)	3.39 (0.51)	2.82 (0.47)	3.39 (0.43)	2.94 (0.59)	3.17 (0.45)
Belgium	398	3.19 (0.52)	3.21 (0.53)	3.26 (0.56)	2.48 (0.68)	3.14 (0.57)	2.58 (0.68)	2.97 (0.54)
Bulgaria	221	3.28 (0.53)	3.25 (0.52)	3.18 (0.60)	2.65 (0.66)	3.21 (0.52)	2.47 (0.73)	3.07 (0.59)
Cyprus	70	3.64 (0.35)	3.52 (0.37)	3.52 (0.42)	3.00 (0.62)	3.42 (0.51)	3.25 (0.66)	3.58 (0.45)
Czech Rep.	220	3.13 (0.49)	3.03 (0.52)	3.26 (0.54)	2.44 (0.67)	2.87 (0.61)	2.27 (0.62)	2.76 (0.58)
Denmark	207	3.24 (0.55)	3.25 (0.56)	3.11 (0.63)	2.57 (0.66)	3.32 (0.55)	2.75 (0.75)	3.04 (0.61)
Estonia	126	3.40 (0.43)	3.20 (0.51)	3.44 (0.57)	2.64 (0.61)	3.06 (0.57)	2.70 (0.69)	3.08 (0.55)
Finland	129	3.26 (0.45)	3.07 (0.53)	3.01 (0.60)	2.46 (0.55)	3.07 (0.49)	2.70 (0.59)	2.82 (0.55)
Germany	234	3.42 (0.41)	3.29 (0.42)	3.34 (0.49)	2.83 (0.51)	3.38 (0.42)	2.85 (0.58)	3.12 (0.47)
Greece	219	3.30 (0.46)	3.31 (0.45)	3.30 (0.54)	2.68 (0.56)	3.15 (0.54)	2.75 (0.61)	3.09 (0.53)
Hungary	211	3.20 (0.50)	3.19 (0.46)	3.04 (0.62)	2.63 (0.60)	2.87 (0.58)	2.60 (0.68)	2.85 (0.55)
Iceland	78	3.47 (0.41)	3.32 (0.47)	3.37 (0.59)	2.73 (0.65)	3.30 (0.53)	3.00 (0.71)	3.10 (0.60)
Ireland	179	3.52 (0.44)	3.43 (0.49)	3.46 (0.53)	2.88 (0.66)	3.40 (0.47)	2.93 (0.67)	3.22 (0.54)
Italy	217	3.04 (0.53)	3.17 (0.52)	3.08 (0.61)	2.36 (0.63)	3.09 (0.54)	2.34 (0.79)	2.73 (0.61)
Latvia	207	3.07 (0.46)	2.72 (0.50)	2.91 (0.58)	2.44 (0.59)	2.75 (0.55)	2.66 (0.58)	2.73 (0.49)
Lithuania	221	3.02 (0.43)	2.80 (0.45)	3.29 (0.43)	2.63 (0.53)	2.95 (0.48)	2.74 (0.58)	2.90 (0.47)
Luxembourg	76	3.38 (0.52)	3.45 (0.49)	3.38 (0.55)	2.68 (0.62)	3.32 (0.55)	2.89 (0.72)	3.19(0.60)
Malta	67	3.36 (0.50)	3.19 (0.58)	3.40 (0.68)	2.83 (0.68)	3.20 (0.61)	2.90 (0.69)	3.10 (0.60)
Netherlands	220	3.34 (0.41)	3.24 (0.43)	3.19 (0.51)	2.76 (0.53)	3.33 (0.42)	2.79 (0.54)	3.05 (0.47)
Norway	170	3.39 (0.42)	3.30 (0.46)	3.38 (0.45)	2.73 (0.56)	3.35 (0.47)	2.73 (0.61)	3.04 (0.48)
Poland	219	3.25 (0.47)	3.16 (0.44)	3.19 (0.48)	2.81 (0.55)	3.04 (0.48)	2.66 (0.65)	3.12 (0.48)
Portugal	210	3.40 (0.45)	3.50 (0.42)	3.30 (0.53)	2.73 (0.58)	3.28 (0.46)	2.91 (0.65)	3.13 (0.51)
Romania	220	3.43 (0.51)	3.31 (0.55)	3.46 (0.52)	2.86 (0.66)	3.36 (0.56)	2.99 (0.65)	3.19 (0.56)
Slovakia	210	3.25 (0.35)	3.12 (0.40)	3.34 (0.47)	2.69 (0.53)	3.18 (0.42)	2.87 (0.63)	2.73 (0.48)
Slovenia	214	3.42 (0.40)	3.36 (0.42)	3.33 (0.51)	3.02 (0.51)	3.33 (0.44)	2.82 (0.58)	3.16 (0.50)
Spain	429	3.32 (0.39)	3.32 (0.42)	3.15 (0.45)	2.92 (0.46)	3.34 (0.40)	3.04 (0.52)	3.06 (0.45)
Sweden	109	3.42 (0.42)	3.33 (0.43)	3.32 (0.48)	2.84 (0.54)	3.26 (0.48)	3.14 (0.55)	3.18 (0.49)
Switzerland	195	3.41 (0.40)	3.30 (0.50)	3.27 (0.51)	2.65 (0.62)	3.26 (0.50)	2.78 (0.67)	3.11 (0.51)
Turkey	292	3.38 (0.49)	3.40 (0.47)	3.36 (0.50)	3.08 (0.58)	3.24 (0.52)	3.03 (0.67)	3.12 (0.56)
England	153	3.44 (0.43)	3.29 (0.51)	3.30 (0.56)	2.82 (0.61)	3.37 (0.48)	2.99 (0.63)	3.17 (0.52)
FYR Mac.	142	3.36 (0.50)	3.42 (0.49)	3.22 (0.59)	2.89 (60)	3.11 (0.52)	2.82 (0.66)	3.01 (0.59)
Total	6049	3.31 (0.48)	3.24 (0.50)	3.26 (0.55)	2.72 (0.62)	3.20 (0.53)	2.78 (0.67)	3.04 (0.55)
ICC %		7.7	10.0	9.2	9.3	7.8	10.9	5.8

Table 3
Multilevel linear models on four doctor roles and responsibilities related to patient and country characteristics.

		Patient as a partner		Patient as a person		Continuity of care		Additional information	
		Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)	Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)	Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)	Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)
Fixed part									
Micro-level	Constant	3.25 (0.03)**	3.31 (0.02)**	3.16 (0.04)**	3.23 (0.03)**	3.21 (0.03)**	3.26 (0.03)**	2.67 (0.03)**	2.75 (0.03)**
	Gender (female vs male)	0.09 (0.01)**	0.09 (0.01)**	0.15 (0.01)**	0.15 (0.01)**	0.10 (0.01)**	0.10 (0.01)**	0.08 (0.02)**	0.09 (0.02)**
	Age (centred; mean = 49)							−0.002(<0.01) **	−0.002(<0.01)**
	Education: medium vs lower			−0.04 (0.02)*	−0.04 (0.02)*				
	higher vs lower			−0.01 (0.02)	−0.01 (0.02)				
	Chronic condition (yes vs no)	0.05 (0.01)**	0.05 (0.01)**	0.04 (0.01)**	0.04 (0.01)**				
Macro	Hofstede's IDV		−0.004 (0.001)**		−0.006 (0.001)**		−0.004 (0.001)**		−0.006 (0.002)**
	Hofstede's IVR		0.005 (0.001)**		0.006 (0.001)**		0.003 (0.001)**		0.005 (0.001)**
Random part									
variance of intercept (country)		0.02 (0.01)	0.008 (0.002)	0.03 (0.01)	0.02 (0.01)	0.02 (<0.01)	0.01 (<0.01)	0.03 (<0.01)	0.02 (<0.01)
residual variance (patients)		0.21 (<0.01)	0.206 (0.004)	0.22 (<0.01)	0.22 (<0.01)	0.28 (0.01)	0.28 (0.01)	0.34 (<0.01)	0.34 (<0.01)
ICC %		8.2 (2.1)	3.7 (1.1)	11.5 (2.7)	5.7 (1.5)	6.0 (1.6)	4.3 (1.2)	7.9 (2.0)	4.7 (1.3)
Goodness of fit									
AIC		7555.95	7536.25	7919.91	7901.88	9498.55	9492.79	10690.27	10678.41
BIC		7589.38	7583.06	7966.66	7961.98	9525.37	9533.01	10723.76	10725.31
Pseudo R^2 level-one (patients)		0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
Pseudo R^2 level-two (country)		<0.01	0.55	<0.01	0.52	<0.01	0.28	<0.01	0.41

significant coefficient (*: $p < .05$; ** $p < 0.01$).
Model b: individual explicative variables; country is a random effect (intercept was calculated for each country).
Model c: individual and contextual explicative variables; country is introduced as a "fixed effect", measured by its "contextual "explicative variables.

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Table 4
Multilevel linear models on three patient roles and responsibilities related to patient and country characteristics.

		Open and honest		Pt preparation for the consultation		Thoughtful planning	
		Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)	Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)	Model (b) Coeff. (s.e)	Model (c) Coeff. (s.e)
Fixed part							
Micro-level	Constant	3.13 (0.03)**	3.20 (0.02)**	2.74 (0.04)**	2.75 (0.04)**	2.96 (0.04)**	2.98 (0.03)**
	Gender (female vs male)	0.12 (0.01)**	0.12 (0.01)**	0.10 (0.02)**	0.10 (0.02)**	0.13 (0.01)**	0.13 (0.01)**
	Age (centred; mean = 49)			0.004 (0.001)**	0.004 (<0.01)**		
	Education: medium vs lower					−0.04 (0.02)*	−0.04 (0.02)*
	higher vs lower					−0.01 0.02)	−0.01 (0.02)
	Chronic condition (yes vs no)					0.06 (0.01)**	0.06 (0.01)**
Macro	Hofstede's IDV		−0.004 (0.001)**				
	Hofstede's IVR		0.007 (0.001)**		0.005 (0.011)**		0.004 (0.001)**
Random part							
variance of intercept (country)		0.03 (<0.01)	0.01 (<0.01)	0.04 (0.01)	0.03 (0.01)	0.03 (0.01)	0.02 (0.01)
residual variance (patients)		0.25 (<0.01)	0.25 (<0.01)	0.40 (0.01)	0.40 (0.01)	0.27 (0.01)	0.27 (0.01)
ICC %		10.3 (2.5)	4.8 (1.3)	9.2 (2.2)	7.3 (2.8)	9.5 (2.4)	7.2 (1.9)
Goodness of fit							
AIC		8847.78	8827.99	11638.05	11632.45	9084.95	9078.14
BIC		8874.59	8868.22	11671.54	11672.65	9131.69	9131.56
Pseudo R^2 level-one (patients)		0.02	0.02	0.02	0.02	0.02	<0.01
Pseudo R^2 level-two (country)		<0.01	0.55	0.02	0.24	<0.01	0.26

significant coefficient (*: $p < .05$; ** $p < 0.01$).
Model b: micro information (individual explicative variables); country is a random effect (intercept was calculated for each country).
Model c: micro and macro information (individual and contextual explicative variables); country is introduced as a "fixed effect", measured by its "contextual" explanatory variable.