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Decision-Making-Criteria Among European Patients: Exploring Patient Preferences For Primary Care Services

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Background: Health economics preference-based techniques such as, Discrete-Choice-Experiments (DCEs), are often used to inform public health policy on patients' priorities when choosing healthcare. Although there is general evidence about patients' satisfaction with General-Practice (GP) care in Europe, to our knowledge no comparisons are available that measure patients' preferences in different European countries, and use patients' priorities to propose policy changes.

Methods: A DCE was designed and employed to capture patients' preferences for GP care in Germany, England, and Slovenia. 841 eligible patients were identified across nine GP practices in the three countries. The DCE questions compared multiple healthcare practices (including their 'current GP practice'), described by the following attributes: 'information' received from the GP, 'booking time', 'waiting time' in the GP practice, 'listened to', as well as being able to receive the 'best care' available for their condition. Results were compared across countries looking at the attributes' importance and rankings, patients' willingness-to-wait for unit changes to the attributes' levels, and changes in policy.

Results: 692 respondents (75% response rate) returned questionnaires suitable for analysis. In England and Slovenia, patients were satisfied with their 'current practice', but they valued changes to alternative practices. All attributes influenced decision-making, and 'best care' or 'information' were more valued than others. In Germany almost all respondents constantly preferred their 'current practice', and other factors did not change their preference.

Conclusion: European patients have strong preference for their *status quo,* but alternative GP practices could compensate for it, and offer more valued care.

Key words: Patient preferences, GP care, priorities, patient-centred care, quality of care

Introduction

Patient choice of healthcare provider has become an increasingly important aspect of healthcare policy in many European countries. Unfortunately much of the discussion in the literature so far focused the attention on choice of secondary provider, with scarce recognition of the importance of patient choice, and patient preferences in relation to primary care.[1] Which aspects of care patients value and how they make trade-offs between them should be considered to make sure that policy changes can truly enhance patient access to primary care services and the quality of care received.[2]

Recent European policy developments have brought increased attention to choice in the primary care setting.[1] For example, in England, the national GP contract was recently amended to expand free choice of GP practice (outside of standard boundaries or catchment areas of practices) following a 12-month pilot scheme started in 2012.[3] In Germany patients can access the GP of their choice regardless of area of residence, although more recently there have been attempts to promote registration with a GP to strengthen the gatekeeping and coordinating roles of GPs.[4] In Slovenia, patients have free choice of GP with a restricted number of one change per year. [5] In light of the increased trend in choice policies across primary care across Europe, this paper offers a unique perspective on decision-making criteria among European patients, using the discrete choice experiment (DCE) approach to capture their preferences for primary care services across a series of country settings.

DCE is an economic tool that can be used to study preferences across a variety of settings. Its application to health can demonstrate the value a particular healthcare service has when making decisions.[6-7] It is based on two assumptions: (i) healthcare interventions, services and policies can be described by their attributes (or characteristics); and (ii) an individual's valuation depends on the levels of these characteristics. It allows quantification of the patient benefit (i.e. satisfaction) attached to the healthcare service when described by its several aspects that can span across structure (e.g. 'location'), process (e.g. 'waiting time' and 'quality of the treatment') or health outcomes (e.g. 'health state'). The benefits of using the DCE approach for eliciting patient preferences in healthcare are many manifold. First, a DCE simultaneously examines all aspects of care that are important to patients, creating a hierarchy of relative

importance of, for example, structure or process-related attributes as compared to health outcomes. Second, a DCE may - mimic actual decision making because it requires respondents to make trade-offs in a choice context. For example, a DCE can show how much patients value a more convenient location by how much they are willing to sacrifice other aspects of their care, like waiting time. Third, a DCE also allows quantifying the overall benefit attached to hypothetical healthcare practices described by selected attribute levels, including combinations that represent models of care that may not be currently available. Lastly, hypothetical healthcare practices can be compared alongside existing practices (e.g. 'current care'). Having the opportunity to essentially 'opt-out' of making a hypothetical choice is an important feature, as it allows respondents not to be forced to make a choice that they would not make in real life (Ryan et al, 2008). This feature is particularly important when valuing patient preferences for policy changes from the 'current care' to 'alternative healthcare practices'. This is the first DCE study aimed at comparing patient preferences for GP care across a series of European countries, and discussing the use of patient satisfaction data when informing policy changes across country settings.

Methods

The DCE questionnaire

A description of the DCE questions is presented here; however more details are provided in Appendix 1 on: the DCE choice set creation (with an example of a DCE choice and detailed description of its attributes and levels); questionnaire design and development; the inclusion of validity tests and robustness checks; feasibility and piloting; preparation for data collection and analysis; and ethical approval. First, respondents were asked to describe their 'current GP practice' in terms of five characteristics (and choose between their attached levels): (i) being able to receive all the 'information' they want from the GP on their care (Rarely; Sometimes; Most of the times; Always); (ii) being 'listened to and involved in decision making' Rarely; Sometimes; Most of the times; Always); (iii) the 'booking time' (Next day; One week; Two weeks; Three weeks); (iv) the 'waiting time' spent in the GP practice (10, 20 30 or 40 minutes); (v) and being able to receive the 'best care' available for their health state from the GP (Rarely; Sometimes; Most of the times; Always). Following that, patients were then asked to complete a set of five DCE choices about their most preferred GP practice. Each choice compared three separate GP practice

services ('hypothetical Practice A', 'hypothetical Practice B' and their 'current practice' described by combinations of the same attributes and levels used above; see appendix 1). The set of choices was created according to best practice in the design of DCE[6-7] (details are in Appendix 1).

An additional set of questions addressed patients' socio-demographic characteristics, health status and use of healthcare.

Data collection, sample and sample size

Germany, Slovenia and England were selected as a convenient sample of European countries involved in the European-Union-Cross-Border-Care-Collaboration project (EUCBCC; www.ecabeurope.eu). Nine separate GP practices were involved in the study (two GP practices in Germany, three GP practices in England and four GP practices in Slovenia; see Appendix 2). They were chosen as a convenient sample of data collection sites equally distributed between urban and rural locations, and ranged in size from one to 21 general practitioners. A target recruitment of about 100 patients from each GP practice was estimated to be sufficient for comparing preferences across country settings.[8] The questionnaire was administered to patients aged 18 years or older whilst attending their GP practice. Subjects that were too ill to listen to the researcher were excluded from the study. A researcher was available during data collection in the GP practice to provide clarification and assistance in completing the questionnaire. After giving their signed consent, respondents were invited to complete a questionnaire either whilst waiting (with the option of completing it after the consultation) or later at home (to be returned in a prepaid envelope).

Analysis of data

Only questionnaires with a completed DCE choice set and section on their 'current practice' were considered for analysis. GP practice characteristics, patient responses, aspects of their 'current practice' service, and demographic characteristics were analysed using raw statistics. Categorical data were described using frequencies and percentages, whilst continuous data were described with a mean and standard deviation.

The utility or satisfaction function, which specifies the relationship between the attributes and preferences, was derived from the DCE choice set and estimated using an appropriate regression model (see appendix 3).[6-7]

Results from the raw statistics and regression model are presented for the pooled data ('all countries') and for the three country-specific subgroups.

Comparing patient preferences across countries

Differences in the scale parameter prevented direct comparison of regression coefficients between groups. Hence, the regression coefficients were indirectly compared looking at the attribute importance ranking and willingness-to-wait (WTW) estimates for changes in GP care[9] (explanations are presented in appendix 4).

Comparing policy changes across countries

Two examples of change in healthcare practice were proposed (*change in healthcare practice 1*, from 'current practice' to hypothetical 'alternative practice 1', and *change in healthcare practice 1*, from 'current practice' to hypothetical 'alternative practice 2'). Details on the actual characteristics attached to each healthcare practice ('current practice', 'alternative practice 1' and 'alternative practice 2') are presented in table 2. Measure of patient satisfaction for the two proposed changes is provided by WTW for the change; details are presented in appendix 4.

Results

GP practices, patient responses, and their socio-demographic characteristics

Between May and October 2012, 841 eligible patients were identified across the GP practices of which 692 returned a completed questionnaire (Table 1A). In Germany and Slovenia, all eligible patients who received the survey completed it (128 and 329 respectively). German patients, however, did not sign the consent form; their justification being that the GP practices did not want them to do so. They were worried to release any personal data reported on the consent form, although we assured they were to be

kept confidential and collected only for ethics purposes. In England, 149 out of 384 questionnaires distributed were either not returned to the researcher (n=135) or returned, but the respondents refused to take part (n=14; by not signing the consent form, not completing the questionnaire or subsequently withdrawing from the study). The large volume of not returned questionnaires was mainly due to one GP practice where the questionnaires were distributed to patients by the GP practice receptionists for completion at home. In this particular GP practice only 61% (235/384) of the questionnaires were returned with attached signed consent form. Overall, the following numbers of questionnaires were suitable for analysis: 128 in Germany, 213 in England, and 289 in Slovenia.

Patient 'current practice'

Current experience of GP care was positive across countries, and characterised by: (i) receiving 'information' most of the time/always (93%); (ii) being 'listened to and involved in decision making' *most of the times/always* (92%); (iii) a 'booking time' of *one week* or less (86%); (iv) an average 'waiting time' of about 20 minutes; (v) and receiving 'best care' *most of the times/always* (92%; see appendix 5, 'all countries').

When looking at the country-specific data, the best attributes' levels combination for the 'current practice' was reported by the German sub-group. Here, more than 88% respondents experienced a 'current practice' with the most convenient attributes' levels attached to it (*always* receiving 'information', *always* being 'listened to and involved in decision making', *always* receiving 'best care', *next day* 'booking time'). Moreover their average 'waiting time' was about 28 minutes (details are reported in appendix 5).

DCE questions

Validity of respondents

About 90% of the questionnaires that were analysed resulted with valid responses, coming from patients who passed the internal consistency test (see appendix 1). Results from separate models including all responses vs. those with valid responses only, indicated that there are no apparent differences between the overall fit and the individual attribute level coefficients. Therefore, all respondents were considered

for analysis. Theoretical validity was gained, as the parameter estimates from the regression model presented the same sign and significance as expected (see appendix 1).

Constant choices

71.75% of respondents presented a consistent preference for their current practice, and did not want to trade for alternative practices as they were satisfied with their experience of current GP care (Table 1A, questionnaires with constant choice for 'current practice'). When looking at the country-specific data, Germany reported the greatest proportion of respondents with dominant preferences (Germany 96.09%, Slovenia 61.70%, England 59.15%; Table 1A, questionnaires with constant choice for 'current practice'). The greater was the proportion of people who did not want to change their 'current practice', the more satisfactory was the combination of attribute levels attached to it (see appendix 5).

Comparing patient preferences across countries

The importance ranking for the GP practice characteristics is summarised in Figure 1. For the German respondents attending their 'current practice' was the only valued aspects of care. In Slovenia and the UK, where respondents also valued other aspects of care apart from continuity of care with their 'current practice', receiving 'best care', 'information', and being 'listened to and involved in decision making' were ranked between 1st- 4th places. 'Booking time' and 'waiting time' were always reported as the least preferred (5th or 6th places).

The marginal willingness-to-wait (WTW) estimates are the most easily interpretable measure of the relative importance placed on attributes, and Table 2 reports the results of this exercise. For examples in the 'all countries' group, an extra willingness to wait of 43 minutes for receiving *always* 'best care' meant that respondents were willing to wait extra 43 minutes to change from a GP practice where they *rarely* receive 'best care' to a GP practice where they *always* receive 'best care'. A negative willingness to wait of 35 minutes for 'alternative practice' meant that respondents were willing to wait extra 35 minutes to receive care from their 'current practice' rather than moving to another GP practice (*ceteris paribus*).

Comparing policy changes across countries

Two specific changes in GP care from their 'current practice' to alternative practice configurations are illustrated in Figure 2. When looking at *change in healthcare practice 1*, respondents valued moving from their 'current practice' to an alternative practice offering the same care, with the advantage of: a decreased 'booking time' (from *one week* to *next day*), and 'waiting time' (from *20 minutes* to *15 minutes*; see Figure 2). When looking at *change in healthcare practice 2*, there is added benefit attached to the change from their 'current practice' to an alternative practice offering a service with increased quality of care (receiving *always* 'best care' rather than *most of the times*) and reduced 'waiting time' (from *20 minutes* to *15 minutes*). More specifically, the added benefit attached to *change in healthcare practice 2* is almost three times greater than the benefit attached to *change in healthcare practice 1* (4 minutes vs. 11 minutes WTW, respectively; 'all countries' group). Country-specific analysis showed that the values attached to the two changes varied significantly across country settings.

Discussion

Results from this multi-country DCE study conducted in England, Germany, and Slovenia reported that current experience of GP care is valued across country settings. In England and Slovenia, patients also valued changes to alternative GP practices. All service characteristics influenced their choice, but 'best care' and 'information', were more important than the others. In Germany only 'receiving their current GP care' was valued, and almost all respondents were not willing to trade their current experience with other models of care.

The findings showed strong evidence of *status quo* bias, where any change from the baseline 'current practice' is perceived as a loss.[10] According to status quo bias theory[11], this evidence could be interpreted in three different ways according to: *rational decision making*, where patients perceive that the change to an alternative GP could lead to greater anxiety for the chance than actual benefits; *cognitive misperception*, where even small losses of changing from the current situation could be perceived as larger than they actually are; and *psychological commitment*, e.g. previous commitment to a GP, family's opinion, or the desire to direct and control their own situation, can cause reluctance to change. Crucially, the evaluation of the benefit

attached to particular changes in GP care proved that alternative models could compensate for the strong preferences for the *status quo,* and offer more valued healthcare practices across settings.

This study confirmed the previous literature regarding patient preferences for GP care in Europe (see appendix 1). The evidence showed that patient value their GP care, and a series of aspects are important when making their choice, including: 'information', 'listened to and involved in decision making', 'continuity of care', 'waiting time', 'booking time' and 'best care'. The strength of this study lies in the fact that real data on patients' individual experience were considered in the evaluation, and patients were allowed to state their preference for their *status quo,* and compare it to alternative healthcare practices. In previous exercises they were either forced to choose alternative options or to compare them to a constant 'current practice' that did not take individual differences into account.

The majority of the publications reported in Appendix 1 investigated UK-based patient experiences, followed by few other country specific evaluations (in Denmark[12], in the Netherlands[13], and in Switzerland[14]) and one multi-country comparison conducted in 12 different European settings.[15] The latter study was an evaluation of healthcare quality looking at WHO measures of achievement employed across EU countries. The authors were able to capture large variations in patient satisfaction attached to particular dimensions of care both across settings and individuals. The added value of this study is that, although applied to a smaller number of countries, the DCE survey was not only able to gather information on what aspects of care are important to patients, but also calculate trade-off between them, measure the overall patient satisfaction attached to alternative healthcare practices, and value the benefit for policy changes.

There is ongoing discussion in the literature about incorporating an objective measure of the patient utility to support open public involvement in public health decision-making; DCE could be a useful tool to assist policy makers in the redesign of primary care services according to patient experience.[16] Results from our study can also support policy makers and clinicians when providing the quality information patients need when making decisions on their care. Recent EU policy developments included the creation

of National Contact Points across member states to assist patients, and provide them with quality information when seeking care in their home country and abroad.[17]

When comparing findings across the three case studies, particular attention needs to be placed on the international divergences in the service organisation and management, as well as in the differences in culture, previous experience, socio-economic factors and health status of respondents.[18] For example, German and Slovenian patients who accessed walk-in practices with no need of booking their visits might have valued differently the booking time attribute compared with English patients who needed to book their appointment in advance. Moreover, German participants were also more reluctant to participate in the research and release personal views and information. This might have influenced their reported experience of 'current GP care', and opportunity to prefer other services beyond their current experience. Contract constraints forced our survey to be conducted in three countries already involved in the EUCBCC project, and time and budget constraints limited the number of GP practices invited to take part. The restricted GP and country sample sizes did not support the generalisability of findings across European settings, and did not allow further multilevel analyses to take into account correlations at multiple levels (national, practice, individual, and multiple responses from individuals).[19] Future work should support the challenge of validating stated preferences with revealed preferences from actual behaviour (i.e., testing for external validity[6]).

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drafting and revision of the paper; SK contributed to the design and development of the survey, data collection, interpretation of the results, and revision of the paper; CK contributed to the design of the survey, interpretation of the results and revision of the paper; RP contributed to the design of the survey, interpretation of the results and revision of the paper; EW contributed to the design of the survey, interpretation of the results and revision of the paper; KW contributed to the development of the survey; data collection, and data entering; PD contributed to the design of the survey, interpretation of the results and revision of the paper.

Conflicts of interest: none declared

Key-points:

- A Discrete-Choice-Experiment (DCE) was used to elicit patients' preferences for alternative models of GP care across three European countries (Germany, England, and Slovenia).
- Current experience of GP care was positive across the three case studies.
- In Germany only receiving care from their current practice was important, and almost all respondents were not willing to trade it with other practices. English and Slovenian respondents valued all aspects of care, although 'best care' and 'information' were more valued than others.
- European patients value GP care; and although their current experience is valued highly, future changes in healthcare practice could reconfigure more appealing models across country settings.

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SUPPLEMENTARY MATERIAL

Appendix 1: development of the questionnaire

The vignette, and identification of attributes and their levels

The choice of the vignette, the attributes and their levels were informed through appropriate review of the DCE literature on patient priorities for general practice between 1 January 2002 and 31 December 2012.[15] Data extrapolated from the 15 studies showed parallels with what previously reported by Wensing et al (1998).[16] Overall, the following dimensions were reported as preferred attributes of care: 'Waiting time and flexibility' and 'booking time' (included in Wensing's dimension of 'availability and accessibility'); 'competence and best care' (included in Wensing's dimension of 'medical care)'; 'patient involvement, patient needs and humaneness' (included in Wensing's dimension of 'relation and communication'); 'information and counselling' (included in Wensing's dimension of 'information support'); and 'continuity, cooperation and special services' (included in Wensing's dimension of 'organisation and cooperation'). According to subsequent discussion with the research team, experts, a series of patients and their representatives the vignette and core set of service characteristics were selected to ensure European respondents were presented with an appropriate choice context in a way that is as realistic and as understandable as possible.

The vignette presented the respondent with a hypothetical situation where they had to imagine that they need GP care for a non-urgent issue (such as a common cold, for instance). They were offered a choice of multiple GP practices described in terms of: (i) being able to receive all the 'information' they want from the GP on their care (see 'information' reported in the literature review above); (ii) being 'listened to and involved in decision making' (see 'listened to and involved in decision making' reported in the literature review above); (iii) the 'booking time' and the 'waiting time' spent in the GP practice (see 'Waiting time and flexibility' and 'booking time' reported in the literature review above); (iv) and being able to receive the 'best care' available for their health state from the GP (see 'competence and best care' reported in the literature review above). For more details see table A1. The additional 'current practice'

embedded in the choice set offered the opportunity to see their current GP at each appointment (see 'continuity of care' reported in the literature review above).

Table A1: DCE attributes and their levels

Attributes	Description	Levels	Coding
Information	Being able to receive all the information you want from the GP on your care (e.g. treatment, tests, test results, and referral to hospital)	Rarely Sometimes Most of the times Always	(reference level) Dummy variables
Listened to and involved in decision making	Being listened to and involved in decision making about your care with the GP	Rarely Sometimes Most of the times Always	(reference level) Dummy variables
Booking time	The time you spend waiting between booking your GP appointment and it happening	Next day One week Two weeks Three weeks	(reference level) Dummy variables
Waiting time	The time it takes you to wait in the practice for your GP appointment to begin	10 minutes 20 minutes 30 minutes 40 minutes	Continuous
Best care	Being able to receive the best care available (according to clinical evidence) for your health state from the GP	Rarely Sometimes Most of the times Always	(reference level) Dummy variables

Choice set creation, questionnaire design, and validity tests

Two generic hypothetical GP practice alternatives and their 'current practice' were then compared within a series of 16 choice tasks generated using a D-optimal approach designed to elicit the maximum information from respondents (http://www.choice-metrics.com/ and 17). Since a 16 choice set could be excessively burdensome for respondents to complete in the limited time available at the GP practice (see data collection below), the 16 choice sets were divided into four separate versions of the questionnaire, each of them accommodating for the design D-optimal properties (http://www.choice-metrics.com/). One additional choice had a dominant option (one alternative had superior levels for all attributes) and was added to test for internal consistency.[18] Before completing the DCE exercise respondents were asked to describe the service received at their 'current practice' to be kept as constant comparator for the entire choice set. An example of choice is presented in figure A1.

Figure A1: Example of DCE choice

QUESTION	Practice A	Practice B	
Information you want	Most of the time	Rarely/never	
Listened to and involved in decision making	Rarely/never	Most of the time	
Booking time	Within 2 weeks	Within 1 week	
Waiting time	20 minutes	30 minutes	
Best care	Always	Rarely/never	
Which situation would you choose?	***I choose Practice A*** ☐	***I choose Practice B*** ☐	***I choose My Current Practice***[a] ☐

a: Each respondent defined the levels for their current practice in an earlier section of the questionnaire and were encouraged to think about these levels when completing the choice sets.

Robustness checks

The theoretical validity of responses was explored by examining the sign and significance of parameter estimates. *A priori,* we expected respondents to prefer: receiving 'information' (positive sign); being 'listened to and involved in decision making' (positive sign); having shorter 'booking time' and 'waiting times' (negative signs); receiving 'best care' (positive sign); and staying with their 'current practice' (negative sign). Respondents who were not willing to trade (i.e. 'dominant preferences' for their 'current practice', if they chose this option every time it was offered) were also considered.

Testing the feasibility and piloting the questionnaire, and preparing for data collection and analysis

The questionnaire feasibility was tested with 57 participants at two London-based GP practices in August 2011 using an in-person survey approach. Consultation with the practices and academic colleagues, as well as further consultation with the literature led to a new version of the questionnaire. A pilot with 36 patients at one participating GP practice in England informed further changes to the attributes and levels.

Pilot data were also used to inform the design of the DCE choice tasks (http://www.choice-metrics.com/). The first days of data collection were used to further test the questionnaire with about 15 participants from each country. Since no further changes were made, the data collected were considered for the final analysis.

A core group of researchers had an active role in the adaptation and translation of the DCE questionnaire, supervised the implementation of the survey in preparation for data collection. The data collection, entering, checking and cleaning strategies were standardized across countries as preparatory workshops were carried out to train country researchers responsible for these activities.

Ethics approval

Ethical approval was provided by the London School of Economics Ethics Committee, and confirmed by the appropriate bodies across country settings. For the English case study GP practice-specific approval was sought with individual Primary Care Trusts.

Appendix 2: GP practices

	All countries n (%)	Germany n (%)	England n (%)	Slovenia n (%)
GP practices	9	2	3	4
Number of GPs working for the participating GP practices	70	2	17	51
Number of GPs per GP practice (average, min max)	6 (1-21)_	1 1-1	3 3-11	13 (1-21)
GPs gender (male)	20 28.57[a]	2 100[a]	8 47.05[a]	10 19.60[a]
Urban location (vs. rural)	5 55.55	1 50.00	2 66.67	2 50.00
GP practices providing walk-in service	1 (11.11)	1 (50.00)	0	4 (100)[b]
Type of patients registered at the GP practice	Private and non-private	Private and non-private	Non-private only	Non-private only

a: percentages are referred to the number of GPs working for the participating GP practices; b: Every participating practice had special hours (e.g. one or two hours at the beginning of the working day) dedicated to walk-in visits only.

Appendix 3: Regression model: Multinomial conditional logit model

The multinomial conditional logit model [19] was used to analyse the response data, with the following utility function being estimated:

$$U_{ji} = V_{ji} + \varepsilon_{ji} \quad \text{Eq 1}$$

Where

$$V_{ji} = \beta_1*\text{INFO\_SOMETIMES} + \beta_2*\text{INFO\_MOST} + \beta_3*\text{INFO\_ALWAYS} + \beta_4*\text{LISTENED\_SOMETIMES} + \beta5*\text{LISTENED\_MOST} + \beta_6*\text{LISTENED\_ALWAYS} + \beta_7*\text{BOOK\_1WEEK} + \beta_8*\text{BOOK\_2WEEKS} + \beta_9*\text{BOOK\_3WEEKS} + \beta_{10}*\text{WAIT} + \beta_{11}*\text{BESTCARE\_SOMETIMES} + \beta_{12}*\text{BESTCARE\_MOST} + \beta_{13}*\text{BESTCARE\_ALWAYS} + \text{Constant} * \text{ALTERNATIVE\_GP} \quad \text{Eq 2}$$

U_{ij} = the utility of the jth choice to the ith individual, V_{ij} is the systematic part of the utility function observable by the researcher and ε_{ji} is the error term. Dummy variable were used to analyse categorical attributes, with reference levels identified in Appendix 1 (Table A1). The alternative practice constant is describing the general preference for alternative practice A or B over the 'current practice', with the defined dummy variable omitted attributes' level captured in these constants. β_1-β_{13} are the coefficients to be estimated for the attributes.

Appendix 4: attribute importance ranking and willingness-to-wait estimates for changes in GP care

With the importance rankings, the range of estimated parameter values for each attribute was calculated and then normalised by dividing each attribute's value by the sum of all the ranges of attribute values such that the sum of all the importance values add to 100%.[20]

For example, Best care importance = $\text{Range}\beta_{bestcare}/(\text{range}\beta_{bestcare}+\text{range}\beta_{information}+\text{range}\beta_{listenedto}+\text{range}\beta_{bookingtime}+\beta_{waitingtime}+\text{constant})]*100$; $\beta_{1\text{-}13}$ and the 'alternative practice' constant are reported in appendix 5). The coefficient for 'waiting time' was multiplied by 20 minutes to reflect what reported in the 'current practice' ('all countries', see appendix 5) in order to compare coefficients.

Patients' value (i.e. willingness-to-wait) for changes in GP care covered the measure of: (i) unit changes in each attribute reported as the average marginal willingness to wait for a unit increase in each attribute, calculated as – (regression coefficient for attribute x)/(regression coefficient for 'waiting time'); (ii) changes in overall GP care reported as the average willingness to wait when changing their GP care and moving from their 'current practice' to alternative practices (with other combinations of attributes' levels). Willingness to wait for a change in GP care (mean, 95% confidence interval) was estimated using the multiple choice option model as proposed by Small and Rosen (1981; see below).[21] Two examples of changes in healthcare practice from their 'current practice' to alternative practice configurations were reported with attached measure of patient satisfaction for the change (i.e. willingness to wait for the change; see Figure 2). Results from the self-reported 'current practice' (pooled group 'all countries') were used to inform the *status quo* scenario.

Willingness-to-wait (WTW) for changes in healthcare practice 1 and 2 were calculated using the multiple alternatives formula[21]:

$$WTW \quad for \quad change \quad _{1,2} = \quad -\frac{1}{\beta_{waiting}}\left\{\ln\sum_{i=1}^{I} e^{V_i^{(1)}} - \ln\sum_{i=1}^{I} e^{V_i^{(0)}}\right\} - \frac{1}{\beta_{waiting}}\left\{\ln\sum_{i=1}^{I} e^{V_i^{(1)}} - \ln\sum_{i=1}^{I} e^{V_i^{(0)}}\right\}$$

Eq1

where V_i is defined as $V_i = \beta_1$*INFO_SOMETIMES + β_2*INFO_MOST + β_3*INFO_ALWAYS + β_4*LISTENED_SOMETIMES + β5*LISTENED_MOST + β_6*LISTENED_ALWAYS + β_7*BOOK_1WEEK + β_8*BOOK_2WEEKS+ β_9*BOOK_3WEEKS + β_{10}*WAIT +β_{11}*BESTCARE_SOMETIMES+β_{12}*BESTCARE_MOST+β_{13}*BESTCARE_ALWAYS+Constant *ALTERNATIVE_GP.

Change in healthcare practice 1

V_i^0 represents the initial state of the world and it is defined as '$V_{Current\ practice}$' = β_1*0 + β_2*1+ β_3*0+ β_4 *0+ β_5 *1 + β_6*0 + β_7*1 + β_8*0+ β_9*0 + β_{10}*25 + β_{11}*0 + β_{12}*1+ β_{13}*0 + Constant*0)

V_i^1 represents the new state of the world and it is defined as '$V_{Alternative\ practice\ 1}$' = β_1*0 + β_2*0+ β_3*1+ β_4*0+ β_5*0 + β_6*1 + β_7*0 + β_8*0+ β_9*0 + β_{10}*20 + β_{11}*0 + β_{12}*1+ β_{13}*0 + Constant*1;

β coefficients 1-13 and constant values are reported in appendix 6.

Change in healthcare practice 2

V_i^0 represents the initial state of the world and it is defined as '$V_{Current\ practice}$' = β_1*0 + β_2*1+ β_3*0+ β_4 *0+ β_5*1 + β_6*0 + β_7*1 + β_8*0+ β_9*0 + β_{10}*25 + β_{11}*0 + β_{12}*1+ β_{13}*0 + Constant*0)

V_i^1 represents the new state of the world and it is defined as '$V_{\text{Alternative practice 2}}$' = β_1*0 + β_2*0+ β_3*1+ β_4 *0+ β_5*0 + β_6*1 + β_7*0 + β_8*0+ β_9*0 + β_{10}*20 + β_{11}*0 + β_{12}*0+ β_{13}*1 + Constant*1 ; β coefficients 1-13 and constant values are reported in appendix 6.

Appendix 5: 'Current practice'

	All countries n (%)		Germany n (%)		England n (%)		Slovenia n (%)	
Information:								
Rarely	9	1.43	0	0	3	1.41	6	2.08
Sometimes	36	5.71	0.78	0.78	11	5.160	24	8.30
Most of the times	142	22.50	13	10.20	76	35.70	53	18.30
Always	443	70.30	114	89.10	123	57.80	206	71.30
Listened to and involved in decision making:								
Rarely	17	2.70	0	0	8	3.76	9	3.11
Sometimes	33	5.24	1	0.78	11	5.16	21	7.27
Most of the times	119	18.90	5	3.91	62	29.10	52	18.00
Always	461	73.20	122	95.30	132	62.00	207	71.60
Booking time: Next day	365	57.90	122	95.30	58	27.20	185	64.00
One week	175	27.80	6	4.69	88	41.30	81	28.00
Two weeks	67	10.60	0	0	48	22.50	19	6.57
Three weeks	23	3.65	0	0	19	8.92	4	1.38
Best care:								
Rarely	6	0.95	0	0	1	0.47	5	1.73
Sometimes	42	6.67	0	0	13	6.10	29	10.00
Most of the times	202	32.10	15	11.70	94	44.10	93	32.20
Always	380	60.30	113	88.30	105	49.30	162	56.10
Waiting time (mean, standard deviation)	22.76	10.10	28.80	8.13	17.18	7.43	24.22	10.50

Appendix 6: Results from the multinomial conditional logit model

Variables	All countries βx	All countries Std. Err.	All countries P>z	Germany βx	Germany Std. Err.	Germany P>z	England βx	England Std. Err.	England P>z	Slovenia βx	Slovenia Std. Err.	Slovenia P>z
(Compared with rarely)												
Information - sometimes (β1)	1.00	0.24	**<0.01**	2.30	1.86	0.22	1.83	0.48	**<0.01**	0.55	0.28	**<0.05**
Information - most of the times (β2)	1.52	0.21	**<0.01**	1.55	1.85	0.40	2.81	0.45	**<0.01**	0.65	0.25	**<0.01**
Information - always (β3)	2.28	0.19	**<0.01**	1.45	1.69	0.39	3.53	0.43	**<0.01**	1.62	0.22	**<0.01**
(Compared with rarely)												
Listened to - sometimes (β4)	0.69	0.23	**<0.01**	1.05	1.49	0.48	1.50	0.41	**<0.01**	0.40	0.28	**0.15**
Listened to - most of the times (β5)	1.39	0.22	**<0.01**	0.28	1.50	0.85	2.12	0.39	**<0.01**	1.35	0.28	**<0.01**
Listened to - always (v6)	1.90	0.20	**<0.01**	1.99	1.42	0.16	2.76	0.38	**<0.01**	1.40	0.24	**<0.01**
(Compared with next day)												
Booking time - 1 week (β7)	- 0.59	0.14	**<0.01**	- 3.64	1.90	0.06	-0.57	0.27	**<0.05**	-0.57	0.18	**<0.01**
Booking time - 2 weeks (β8)	- 1.19	0.17	**<0.01**	- 0.31	2.00	0.88	-1.12	0.30	**<0.01**	-0.89	0.24	**<0.01**
Booking time - 3 weeks	- 1.50	0.19	**<0.01**	- 1.56	1.88	0.41	-2.23	0.35	**<0.01**	-0.90	0.23	**<0.01**
Waiting time (β10)	- 0.05	0.01	**<0.01**	0.01	0.03	0.83	-0.08	0.01	**<0.01**	-0.06	0.01	**<0.01**
(Compared with rarely)												
Best care - sometimes (β11)	0.82	0.23	**<0.01**	1.70	1.29	0.19	2.19	0.48	**<0.01**	0.32	0.28	**0.256**
Best care - most of the times (β12)	1.92	0.24	**<0.01**	0.80	1.34	0.55	2.86	0.50	**<0.01**	1.75	0.28	**<0.01**
Best care - always (β13)	2.33	0.23	**<0.01**	3.05	1.30	0.06	2.95	0.49	**<0.01**	2.09	0.27	**<0.01**
(Compared with current)												
Alternative practice (Constant)	- 1.92	0.09	**<0.01**	- 5.12	1.76	**0<0.01**	-1.64	0.16	**<0.01**	-1.87	0.14	**<0.01**
No. of observations	7560			1536			2556			3468		
No. of respondents	630			128			213			289		
Goodness of fit (R squared)	0.675			0.936			0.67			0.595		

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