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Patients' valuation of the prescribing nurse in primary care: a discrete choice experiment

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Abstract

Background Recently, primary care in the United Kingdom has undergone substantial changes in skill mix. Non-medical prescribing was introduced to improve patient access to medicines, make better use of different health practitioners' skills and increase patient choice. There is little evidence about value-based patient preferences for 'prescribing nurse' in a general practice setting.

Objective To quantify value-based patient preferences for the profession of prescriber and other factors that influence choice of consultation for managing a minor illness.

Design Discrete choice experiment patient survey.

Setting and participants Five general practices in England with non-medical prescribing services, questionnaires completed by 451 patients.

Main outcome measure Stated choice of consultation.

Main results There was a strong general preference for consulting 'own doctor' for minor illness. However, a consultation with a nurse prescriber with positive patient-focused attributes can be more acceptable to patients than a consultation provided by a doctor. Attributes 'professional's attention to patients' views' and extent of 'help offered' were pivotal. Past experience influenced preference.

Discussion and conclusion Respondents demonstrated valid preferences. Preferences for consulting a doctor remained strong, but many were happy to consult with a nurse if other aspects of the consultation were improved. Findings show who to consult is not the only valued factor in choice of consultation for minor illness. The 'prescribing nurse' role has potential to offer consultation styles that patients value. Within the study's limitations, these

findings can inform delivery of primary care to enhance patient experience and substitute appropriate nurse prescribing consultations for medical prescribing consultations.

Introduction

Primary care in the United Kingdom has undergone substantial changes in skill mix in recent times. This change has been driven by many factors including policy drives to make care more accessible to patients, to maximize use of skills of all health practitioners and the need to reconfigure services within finite resources. One aspect of using new and expanding professional roles to extend the options for delivering services is to make greater use of appropriately qualified nurses who can now prescribe independently, within their competence, any medicine for any condition.[1] The widening of scope of nurse independent prescribing to include all medicines across the British National Formulary in 2006 built upon previous forms of non-medical prescribing.[2] Recent evaluation of non-medical prescribers shows they can be as clinically appropriate in making prescribing decisions as their medical counterparts.[3]

Involving patients in the way health services are delivered has been championed by previous and current government health policies, not least because individual health, treatment and satisfaction can benefit.[4] Evidence from elsewhere shows patient acceptability for some roles previously the preserve of primary care doctors[5–9] and increasing recognition of the importance in paying attention to the individual's experiences of health care.[10] The 'consultation' is central to the delivery of primary care, but there are many alternative ways that it can be delivered and the patient experience can also vary. In a patient-focused health service, it follows that commissioners and providers need to take patients' preferences for alternatives to the traditional doctor–patient consultation into consideration. In the context of non-medical prescribing, we need targeted evidence on patient views of nurse independent prescribing (NIP) services, so we can better understand situations when consultations with prescribing nurses may be equally or more preferred alternatives compared to consultations with doctors. In turn, this can assist the re-configuration of primary care services to substitute appropriate nursing consultations for medical ones. To date, there is some evidence that patients have positive experiences of NIP services, but these findings are of limited usefulness as they do not measure value-based patient preferences.[11–13]

Arguably, in a patient focussed health service, we need to know not only overall value (or utility) of services perceived by patients, but also the trade-offs among different components (attributes) of services. The value patients place upon services can vary depending upon a variety of component characteristics that make up the patient experience, and it is possible to consider trade-offs between giving up some of one characteristic (e.g. longer waiting time) to obtain more of another (e.g. a higher level of 'continuity of care') by eliciting value-based patient preferences. Making trade-offs is a powerful and versatile concept in economics and has relevance informing how change in health services can be delivered taking account of value-based preferences. The Discrete Choice Experiment (DCE) is the best tool for enabling us to examine value-based preferences and trade-offs.[14]

The DCE permits the exploration and quantification of preferences for alternative configurations of, in this context, primary care consultations, on the assumption that consultations can be separated into, and described by, constituent key attributes and their levels. It is assumed the attribute levels determine the value of a consultation.

The aim of this study was to identify and quantify patient preferences for both profession of prescriber and factors that influence choice of who to consult for managing a common acute minor condition in primary care. We discuss how the findings can be used to better inform commissioners and providers of these services to

reconfigure the delivery of consultations based on what patients may find acceptable.

Method

The DCE approach is an established and valid method for establishing the value of nurse-led services[5,15] and primary health care.[16–18] The approach asks individuals to make hypothetical (yet realistic) choices about their most preferred option from a choice of options uniquely described by combinations of attribute levels. The relative importance of the different attributes is then estimated using regression analysis. We assumed respondents in this study obtained utility (value) from the attributes making up the primary care consultation. These attributes relate to the patient experience of the delivery of care; all other aspects, including appropriateness of the health care received, are assumed equal across the alternatives. The design of the DCE was informed by published guidance[19] and adapted to fit the study context using data from a wider evaluation of non-medical prescribing.[20]

The choice context and services on offer

The DCE approach relies on individuals considering the information presented to them and making informed choices by weighing up the differences in attribute levels of each choice. Thus, it is important to carefully attend to the presentation of choices, ensuring they are as realistic and familiar as possible to the intended respondents. A primary care setting was selected because evidence from a national survey of the working practices of 862 NIPs carried out in the lead up to the study showed the most frequent setting for NIP consultations was primary care (39.1% general practice, 8.1% NHS Walk-in-Centres).[20] It was assumed our survey respondents would be more likely to either have direct experience of nurse prescribers or be aware of their role in primary care.

The choices presented had three alternatives: two alternative professional consultations (described as 'own doctor' or 'prescribing nurse') and a 'do nothing' one (i.e. no primary care consultation). By using three alternative choices, we reflected good research practice (studies with more than two alternatives have shown more robust results[21] and those with more than three, excessive respondent burden and less reliable results[22]). The 'do nothing' alternative added relevancy as it allowed for the fact that some respondents might not choose to attend for a consultation for the condition described; particularly if they did not perceive the symptoms to be sufficiently serious. By choosing 'do nothing', it was inferred that respondents could prefer other alternatives (wait for the symptoms to clear up in their own time, self-medicate, consult community pharmacist, etc.). However, the individual alternatives were not specified.

Patients' priorities for attributes of primary care vary depending on the reason for consulting.[18,21] A vignette was designed to contextualize the choices based on survey evidence,[20] expertise within the evaluation team and literature[3–7,23] and piloted for plausibility. Survey data showed that the group of patients that respondents reported prescribing for most frequently was those presenting with infection. In the vignette, the key presenting symptoms were headache, fever, aching bones, and sore throat persisting for 3 days and when diagnosed were typically considered as a minor, self-limiting illness that can benefit from a professional consultation to obtain a diagnosis and, if needed, appropriate treatment to speed up the recovery process. Table 1 shows the vignette for the minor illness and an example of a choice.

A 'labelled' choice experiment is used when it is expected labels attached to the alternatives have intrinsic value.[22] Labelled alternatives were key to the current study given the primary interest in exploring how NIPs can have a greater role in primary care and whether or not patients would choose to consult them.

Attributes and levels

Beyond who to consult, other attributes of the consultation were based on characteristics

Table 1 Vignette and example of a choice. Imagine you have a headache and fever, your bones are aching and your throat is sore. You are still able to do all the things you usually do but are more tired than usual. The symptoms started to appear about 3 days ago and were slightly worse when you woke up this morning. Your symptoms are unlikely to get better quickly without help from a professional about your diagnosis and their advice including any prescription medicine to treat the condition

	Prescribing Nurse	Own Doctor	Do nothing
Access	See same day at WIC	See 2 days later at surgery	–
Length	Consultation is 40 min	Consultation is 5 min	–
Attention	Professional appears to listen	Professional appears not to listen	–
Help	Professional offers diagnosis & medicines advice	Professional offers only diagnosis	–
Which consultation would you choose? (Tick one box only)	☐	☐	☐

WIC, Walk-in-Centre.

relevant to both the policy initiative to enhance the NIP role in developing front line health services and those relevant to developing a patient-focused service. Not surprisingly patients generally want better access to primary health services and a quality interpersonal relationship with the professional.[5,9,11,13,16,17,21,24,25] These factors are reflected, to some extent, in the routine monitoring of patient satisfaction in the GP Patient Survey.[26] In this study, key characteristics were distilled into four distinct attributes.

The alternative specific attribute 'accessibility' (ACCESS) was used for capturing differences in *where* the patient wanted to make an appointment and *length of time* to obtain one – the premise being that NIP appointments may be easier to obtain (patients are seen the next day at the surgery or same day at the Walk-in-Centre (WiC), but it is usual to wait longer for a GP appointment) but more familiar premises (i.e. GP surgery) may be more preferred. The alternative-specific attribute 'length of consultation' (LENGTH) was used as studies have shown the importance of the length of a primary care consultation in patients' experience of satisfactory consultations.[5,27] Further, the NIP survey of working practices showed NIP consultations are typically longer than a usual GP consultation,[20] which, if they also enable high-quality patient–professional interaction alongside competency in diagnosis and prescribing, may be more preferred.

The attribute 'professional's attention paid to your views on your problem/medicines' (ATTENTION) captured evidence that patients', based on the experience of consultations with NIPs, find them more approachable than GPs[11,12,27–29] and more likely to elicit patient's concerns and beliefs about the necessity of taking medicines, in turn more likely to lead to better adherence to medications.[30] The attribute, 'help offered' (HELP), reflected the aim of NIP to offer complete episodes of care by offering prescribing alongside diagnosis within their area of competency. In turn, extending the nursing role in primary care in this way offers patients a different choice from traditional nurse consultations in which prescribing would not have featured.

The levels assigned to attributes were identified with the help of NIP national survey data, GP Patient Survey,[26] expertise within the research team and literature[5,7,11,12] (Table 2).

Experimental design

Current practice was followed to design the choice sets for the health professional alternatives.[14,17] An online design catalogue was used to derive an orthogonal fractional factorial design (i.e. uncorrelated levels of attributes) with 16 profiles (www.research.att.com/~njas/oadir/). The second choice was created using a systematic level change (a standard approach where design codes assigned to the attribute

Table 2 Attributes and levels

Attribute (Short name)	Level
Accessibility ($ACCESS_{NIP}$, $ACCESS_{Own\ doctor}$)	Next day at surgery (NIP) Same day at WiC (NIP) 2 days later at surgery (doctor) Next day at surgery (doctor)
Length of consultation (min) ($LENGTH_{NIP}$, $LENGTH_{Own\ doctor}$)	10, 20, 30, 40 min (NIP) 5, 10, 15, 20 min (doctor)
Professional's attention paid to your views on your problem/medicine(s) (ATTENTION)	Appears not listen Appears to listen
Help offered by professional (HELP)	Only advice provided Diagnosis and advice provided

increases by a constant factor to produce a uniquely different set of alternatives. Presenting a third fixed choice ('do nothing') meant statistical properties and statistical efficiency of the final design was checked following piloting and the identification of attribute levels for this fixed option. Total number of choices to individuals was minimized by blocking the experimental design into four different questionnaire versions incorporating four choices each. The design allows for a main effects model to be estimated. (Details available upon request.)

Survey

Data were collected through a self-complete DCE questionnaire. This was piloted with 12 patients attending a general practice. The instrument included a section on the choices (an additional pseudochoice was added to check 'consistency' of responses using a choice with one alternative clearly better and therefore preferred). It also included a section asking about socioeconomic background, current health, and use of primary care services. The survey was conducted during Winter 2009 in five general practices geographically spread across England whose practitioner teams included non-medical prescribers. Respondents were current patients waiting to see health professionals on the days of data collection. It was not of concern what health problem respondents were waiting to be seen for on the day, rather they were regarded as typical general practice patients. Each practice was asked to personally hand out 150 questionnaires. As each practice was unable to keep close track of numbers of questionnaires distributed, it was not possible to calculate a response rate. Each practice had a minimum target response of 105 questionnaires (70%). This sample size provided opportunity to explore subgroup analysis and respondent variation.[31–33] NHS Ethics approval was obtained from Dorset Research Ethics Committee in February 2009, REC Ref No 08/H0201/163.

Data analysis and validity

Alternative econometric models are available to analyse choice data,[19,21] we present results using the multinomial logit model (MNL). This was found to be the most statistically efficient of a number of models tested using BIOGEME software (http://biogeme.epfl.ch/) (details upon request). Prior to full analysis, the estimated models were checked for theoretical validity by considering the sign on the coefficients of the alternative-specific constants and attributes. Table 3 shows the descriptions of the variables included and the *a priori* hypothesis expected for the sign of each coefficient. The table then describes the arguments in the 'own doctor' utility function (Equation 1) and 'NIP' utility function (Equation 2), respectively. The labels for 'own doctor' 'prescribing nurse' alternatives are accounted for as alternative-specific constants ($\alpha 1$ and $\alpha 2$) within each utility function, respectively. We expected respondents to prefer longer consultations and higher levels of quality relating to the patient–professional interaction of their patient experience. In other words positive signs for all attributes were expected.

We investigated the impact differences in patient characteristics had choice through a number of hypotheses. For example, we hypothesized that individuals with poorer

Table 3 Variables included in discrete choice experiment multinomial logit regression models

Variable	Coefficient	Definition	Hypothesis
Own Doctor	$\alpha 1$	General preference for own doctor compared with 'do nothing'	No *a priori* hypothesis
Prescribing Nurse	$\alpha 2$	General preference for prescribing nurse compared with 'do nothing'	No *a priori* hypothesis
$ACCESS_{own\ doctor}$	$\beta 1$	1 = seen by doctor next day at the surgery; 0 = seen by doctor 2 days later at the surgery	+ sign
$ACCESS_{NIP}$	$\beta 2$	1 = seen by nurse prescriber same day at the Walk-in-Centre; 0 = seen by nurse prescriber next day at the surgery	+ sign
$LENGTH_{own\ doctor}$	$\beta 3$	5 min difference in length of consultation time with own doctor	+ sign
$LENGTH_{NIP}$	$\beta 4$	10 min difference in length of consultation time with prescribing nurse	+ sign
ATTENTION	$\beta 5$	1 = professional appears to listen to your views; 0 = professional does not appear to listen to your views	+ sign
HELP	$\beta 6$	1 = diagnosis and advice provided; 0 = only advice provided	+ sign

Utility functions estimated

$Utility_{Own\ doctor} = \alpha 1 \text{Own Doctor} + \beta 1\ ACCESS_{own\ doctor} + \beta 3\ LENGTH_{own\ doctor} + \beta 5\ \text{ATTENTION} + \beta 6\ \text{HELP}$ (Equation 1)

$Utility_{NIP} = \alpha 2 \text{Prescribing Nurse} + \beta 2\ ACCESS_{NIP} + \beta 4\ LENGTH_{NIP} + \beta 5\ \text{ATTENTION} + \beta 6\ \text{HELP}$ (Equation 2)

health may be more likely to choose the 'own doctor' alternative on the basis that these individuals are more likely to have a pre-existing relationship with their doctor.[5] However, as we found no significant variation to report, we use the results and findings from the basic main effects regression, Model 1. It was expected that patients with experience of consulting a NIP previously would be more likely to choose the 'nurse prescribing' alternative given the importance of experience has previously been demonstrated.[11,12,15] Model 2 estimates the utility function of the subgroup of respondents with previous experience of NIP. A main effects model of consistent respondents is presented as regression Model 3. We investigated this subgroup by using the test of consistency to distinguish so-called 'rational' choosers. As DCEs rely on hypothetical choices, there has been much debate around the issue of whether to include all respondents or only those that have answered 'consistently'.[14] As currently available tests of consistency are not conclusive, best practice is to explore the impact of 'consistency' by considering utility models with/without consistent respondents but remain cautious of deleting responses as this may be inappropriate for policy making purposes.[14]

Using the regression results

The coefficients generated by a regression analysis can be used to evaluate overall utility of particular services of interest so long as they can be described using the attribute level space and a comparative ranking of the alternatives established. The regression analysis results for Model 1 were used in this way to calibrate estimates of total utility for different consultations. The output represents a relative utility score for a set combination of attribute levels describing a 'style' of consultation.

Results

Patients' responses and background characteristics

Questionnaires were completed by 451 patients waiting to see a health professional. All respondents completed the choices, and therefore, no missing values were generated. Table 4 shows background characteristics for the 451 respondents, 355 of whom (78.7%) passed the consistency test. The table also shows the distribution of choices across the alternatives. 'Do nothing' was infrequently chosen (2%), most choices were more evenly distributed

Table 4 Descriptive statistics of sample and choices (n = 451)

Variable	Frequency	%
Gender (female)	217	51.9
Age [Median] (IQR)	48	(35–62)
Lives with a chronic disease	181	40.3
Health today		
Very good	50	11.2
Good	137	30.7
Neither good nor poor	118	26.5
Poor	121	27.1
Very poor	20	4.5
Usually pays for NHS prescription	289	72.3
Income status		
Up to £20 000	119	28.2
£21 000 – £40 000	165	39.1
More than £40 000	138	32.7
Expecting a prescription today	250	56.1
Expecting to see nurse today	26	10.4
Past experience of medicines prescribed by nurse	121	31.3
Passed consistency test*	355	78.7
Choices	***N* = 1779**	**%**
Prescribing nurse	722	40.8
Own doctor	984	55.3
Do nothing	34	1.9

IQR, Inter Quartile Range.
*Consistent responses were identified by building in a test of 'consistency' into the questionnaire. A pseudo choice was added which contained one superior option in a set of choices, that is, dominated on all the attribute levels – a 'pass' was given for the dominant option being selected.

between 'prescribing nurse' (41%) and 'own doctor' (55%).

Patients' preferences

Table 5 shows the regression results. The preferred model, Model 1 demonstrated a reasonable model fit (Log likelihood = −1559, Pseudo-R^2 = 0.193) and distinctive respondent preferences for consulting the different primary care health professionals for the minor illness vignette.

The label 'own doctor' was found to be a significant determinant in choosing an alternative for managing the minor illness condition. This is shown by the statistically significant coefficient ($\alpha 1 = 1.02$, $P < 0.01$). It can be interpreted as a strong general preference to see the doctor relative to doing nothing. However, choosing is also a function of the interpersonal relationship with the professional. This is shown by the statistically significant coefficients ATTENTION ($\beta_5 = 0.958$, $P < 0.01$) and HELP ($\beta_6 = 0.370$, $P < 0.01$) and, in turn, 'appearing to listen to your views about your problem/medicines' was more strongly preferred. To a lesser extent, the time spent in the consultation with the doctor was important ($LENGTH_{own\ doctor}$, $\beta_3 = -0.046$, $P < 0.01$) but not the wait to get an appointment; ($ACCESS_{own\ doctor}$). This means respondents were indifferent to being asked to wait to be seen the next day or in 2 days' time.

Both the statistically significant attributes ATTENTION and HELP have expected signs (i.e. showing that higher levels of these attributes are more preferred). However, contrary to expectation, the attribute $LENGTH_{own\ doctor}$ has a negative sign. This means that for the sample surveyed shorter consultations with own doctor were more preferred than longer consultations with own doctor.

Only the two quality indicators used to describe the patient–nurse interaction (i.e. ATTENTION and HELP) were statistically significant determinants of choosing a NIP consultation. There was no general preference for consulting with a nurse (as evident by the statistically non-significant label 'prescribing nurse') or for the other patient experience factors; $LENGTH_{NIP}$ and $ACCESS_{NIP}$. This is interpreted for the respondents in our sample as showing no preference over how quickly to access a prescribing nurse (the same day in a Walk-in-Centre or the next day at the surgery) or to any longer time consulting with them. It would seem that a high-quality interaction with prescribing nurse while valued is not necessarily linked to the ability to offer longer appointments, at least not in the case of the condition presented.

Model 2 in Table 5 shows the impact of past experience of nurse prescribing on preference for consultation. The model has an acceptable model fit (Psuedo $R^2 = 0.296$). The key

Table 5 The regression results

	Model (1) All respondents	Model (2) Subgroup past experience NIP	Model (3) Subgroup 'consistent' respondents
Own Doctor	**1.02***	2.040*	0.995*
Prescribing Nurse	**0.243**	1.690*	0.610*
$ACCESS_{own\ doctor}$	**0.131**	0.684	0.449†
$ACCESS_{NIP}$	**0.112**	−0.175	0.0756
$LENGTH_{own\ doctor}$	**−0.046***	−0.089*	−0.060*
$LENGTH_{NIP}$	**0.001**	0.004	0.0055
ATTENTION	**0.958***	0.826*	1.190*
HELP	**0.370***	0.401*	0.494*
No. responses	**1770**	342	1395
No. respondents	**451**	121	355
Goodness of fit measures			
Log likelihood (0)	**−1944.544**	−375.725	−1532.564
Log likelihood (model)	**−1559.040**	−256.647	−1079.919
Pseudo-Rho-square‡	**0.193**	0.296	0.289
Likelihood ratio-test	**771.007**	238.156	905.291

NIP, Nurse independent prescribing.
*Statistically significant at 1% level.
†Statistically significant at 5% level.
‡Psuedo-Rho-square for logit regression is analogous to R^2 in linear regression, but values do not translate linearly; so for example, pseudo-R^2 values of between 0.3 and 0.4 translate as an R^2 of between 0.6 to 0.8.
Note: The preferred model MNL1 used for policy analysis is reported in bold.

difference when compared with Model 1 is that a statistically significant general preference for prescribing nurse ($\alpha 2 = 1.69$, $P < 0.01$) compared with 'do nothing' enters the utility function. While not as strong a general preference as found for 'own doctor' ($\alpha 1 = 2.04$, $P < 0.01$), respondents with past experience of NIP consultations are more likely to consult a nurse for minor illness than 'do nothing'.

The subgroup of respondents who were judged to have passed the test of consistency, are modelled in Model 3, Table 5. Again this model showed an acceptable model fit (pseudo-$R^2 = 0.289$). On this occasion, findings also showed the determinates of utility of a NIP consultation comprised a general preference for prescribing nurse ($\alpha 2 = 0.61$, $P < 0.01$) and the attributes ATTENTION and HELP. Similarly, the determinants for a doctor consultation comprised a general preference ($\alpha 1 = 0.995$, $P < 0.01$), the attributes ATTENTION and HELP and both access attributes $LENGTH_{own\ doctor}$ and $ACCESS_{own\ doctor}$.

While the regression results of Model 1 show a strong general preference for doctor consultations all else being equal, it does not necessarily suggest NIP consultations will not be chosen. This is because other attributes relating to patient experience also have an impact on choice. Table 6 uses the regression results to estimate total utility of different consultation styles to show there are combinations of less positive attribute levels for a doctor consultation which can be offset by more positive attributes of the NIP consultation to yield higher levels of relative utility.

In Table 6, for example, the consultation described as 'A' provides the best level of service; yielding 2.0 units of utility. Consultation configurations 'B' through 'H' yield lower utility, all else equal. Yet, while highest total utility is estimated for consultation 'A' (a consultation with the doctor with positive patient experience factors), other consultations styles with the prescribing nurse are more preferred to doctor consultations. For example, consultation 'C' is a style described by being seen by a prescribing nurse the same day at the Walk-in-Centre for a 15-min consultation during which the nurse pays attention to the patient views

Table 6 Estimating utility for various consultation styles

Description (attribute levels given in parenthesis)*	Estimated total utility
Doctor (see next day, 10-min consult, pays attention, diagnosis & advice)	2.0
Doctor (see 2 days later, 10-min consult, pays attention, diagnosis & advice)	1.9
NIP (same day at WIC, 15 min, pays attention, diagnosis & advice)	1.7
NIP (next day at surgery, 15 min, pays attention, diagnosis & advice)	1.6
NIP (same day at WIC, 15 min, pays attention, advice only)	1.4
NIP (next day at surgery, 15 min, pays attention, advice only)	1.2
Doctor (see next day, 10-min consult, not pay attention, diagnosis & advice)	1.0
Doctor (see 2 days later. 10-min consult, not pay attention, diagnosis & advice)	0.9

*Focus is on *differences* in consultations (taken as given that all consultations provide patient with prescription if needed).

on her condition/medicines and offers diagnosis and advice. It is a more preferred style to doctor consultations 'G' or 'H'. The style of consultation more than compensates for a doctor consultation where there is no attention paid to the patient's view, all else being equal. Using the regression results in this way, it is possible to identify styles of NIP consultation for minor illness that can substitute for doctor consultations.

Discussion

This study was part of a wider study that set out to evaluate non-medical prescribing in England.[20] In this study, we see that respondents' preferences for consulting their own primary care doctor for managing the minor acute condition remained strong. Similar DCE studies conducted in a primary care setting have showed patients generally prefer a doctor to a nurse.[5,6,12] At one level, this should not be surprising given that a significant proportion of GP consultations still involve minor illnesses making this a common patient experience.[34] However, our results also showed that many respondents were happy to consult with a NIP if other aspects of the consultation were improved. This too fits with other evidence.[6] Importantly, our findings also show a general preference for who to consult is not the only valued factor in choice of consultation for minor illness. The DCE approach deconstructed the consultation experience into a number of key attributes which highlighted different consultation styles of both doctor and nurse prescribers. These attributes reflected aspects of what is known to be important to patients – better access and quality interpersonal relationships.[5,6,16–18,23,27–29,35] The study showed that the generic attributes reporting on the quality of the patient–professional interaction mattered the most. In order of relative importance these were; 'attention paid by the professional to the patient's views about medicines' followed by the level of 'professional's help offered'. In particular, the expanded NIP role for qualified nurses has potential to offer consultation styles that patients value building on earlier evidence that patients' find them approachable[5,6,26–28] and able to discuss concerns and beliefs about illness/treatment and talking medicines.[29]

The study also showed that, in the case of seeing a doctor, the alternative-specific attribute 'length of consultation' was important, but the direction of the relationship to utility was counter to expectations. One explanation for this finding may lie with respondent's perception of the severity of the symptoms described. If these are considered tolerable, the usual length of a typical consultation may be sufficient to obtain the information/reassurance and, if necessary, prescription required. This view is supported in a recent DCE study of managing minor symptoms: here there was a continuum of decreasing preference associated with the amount of waiting time to deal with symptoms as severity of the condition increased.[36]

Interestingly, accessibility to consultations as assessed by the attributes ACCESS (where and how long to make an appointment) and LENGTH (length of time spent in the consultation) were found not to influence choice.

Respondents in our sample were indifferent to being asked to wait to be seen the next day or in 2 days' time to see a doctor. Rather it was more important, all else being equal, to see a doctor regardless of the wait time. Respondents further showed no preference over how quickly they could access NIP consultations (same day in a Walk-in-Centre or next day at the surgery) nor a preference for spending longer time consulting with them. It would seem that a high-quality interaction with a prescribing nurse whilst valued is not necessarily linked to the ability to offer longer appointments or primary care location, at least not in the case of the minor illness presented.

There were noteworthy differences between relative preferences obtained from the complete sample and from the subgroups with past experience of consulting with a NIP and those who answered the DCE 'consistently'. The importance of experience has previously been demonstrated[10–13,15] and our findings provide further support that relevant experience influences choice; demonstrating a stronger general preference for the newer NIP role. This suggests it takes time for patients to get accustomed to, or gain experience of, such new professional roles but once gained, our findings suggest, will be more likely to state a preference for a nurse prescriber again. 'Consistent' respondents appeared to be more accepting of a 'prescribing nurse' than the whole sample, although debate continues in the literature about what to do with such preferences.[14] The main impact of our sub-group of consistent respondents served to strengthen the relative importance of 'prescribing nurse'.

A key challenge facing commissioners is to make best use of skills of different clinicians in primary care as well as recognize the importance that patients place on certain patient experience factors. The results of this study can begin to demonstrate how commissioners can explore alternative configurations in line with both these objectives. By using the estimated parameters from a well-fitting regression model, we demonstrated acceptability to patients' of using prescribing nurses to consult for a minor illness by exploring the attributes which compensate for not consulting the doctor if the NIP consultation offers other valued aspects of the consultation. Further research is needed, but our results suggest that, for minor illness consultations, a patient-focused nurse prescribing service in general practice is more acceptable to patients than a poorer quality service provided by doctors. Furthermore, as more patients experience NIP care, our findings would also suggest preferences for NIP consultations will strengthen.

A particular strength of the study was using an evidence-based approach in designing the vignettes used in the research. We paid careful attention to the choice context of the study. At the commencement of the study, there was limited information on current working practices for NIP professionals working in primary care in the NHS in England and whether patients' valued this role.[20] Informed by the national survey of NIPs, the decision was taken to elicit patient preferences within a familiar context of consulting about a common minor acute illness commonly reported by NIP professionals working in the field. The study assessed the relative importance of attributes around the decision to consult capturing key patient experience factors. This choice context is likely to remain relevant in the future development of NIP-led services of this kind.

Other study strengths were: in the process of creating the experiment, contemporary issues about measuring design efficiency and choosing the most appropriate design were considered; and the impact of 'consistency' of responses and patient experience of nurse prescribing on regression modelling was investigated.

In paying careful attention to the choice context, we included a 'do nothing' alternative which reinforced the realism of the context and the plausibility of the modelling.[37] However, using an umbrella term to capture all the other alternatives together also masks the impact of the specific alternatives (such as 'watchful waiting' or self-medication). There are always trade-offs in designing a DCE, future research may wish to explore how a more complex

experiment might capture a fuller range of alternatives. Another possible limitation of the study was the representativeness of the respondents and therefore generalizability of findings. Although field sites involved in the study were spread across England and delivered comparable services[20] the overall representativeness of the sample remains unknown. Any possible issue in the representativeness of the sample could have an impact on policy analysis and the use of findings to support any policy change. For this reason, it is important that future research pays close attention to understanding the limits of generalizing results, particularly in areas where there is greater social disadvantage.

The DCE approach for valuing health care has become widely used in recent years. While it is true that much of the evidence gathered in this way has been shown to be reliable and internally valid more ought to be researched into demonstrating the external validity of results. External validity is, however, challenging for any value-based measure applied to publicly funded health care services given the lack of a market. Other aspects, such as possible concerns about the appropriateness of the health care received might be important to patients when choosing between different health-care packages, although for our study the choice of these specific DCE attributes was supported by evidence from the literature, discussion with experts and pilot work with patients. Unfortunately, no costing data on the delivery of the alternative services were considered. Future work should integrate costing and DCE output within a cost-effectiveness framework to investigate how preferences (and their heterogeneity) might influence cost-effective decisions.

Conclusion

Patients in this study tended to express a strong general preference for consulting their own doctor for minor illness. We investigated and provided new empirical evidence of strength of patient preferences for using a 'prescribing nurse' in a general practice setting. A minor illness consultation with a nurse prescriber with positive patient-focused attributes can be more acceptable to patients than a consultation provided by a doctor. The general preference to see a doctor for the minor illness was less strong in those who had experience of consultations with a prescribing nurse. Our findings can be used by commissioners who are making decisions about future service provision.

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Ethical approval

NHS Ethics approval was obtained from Dorset Research Ethics Committee in February 2009, REC Ref No 08/H0201/163.

Competing interests

None.

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