

# Who chooses 'Choose and Book' for orthopaedic referrals? An evaluation of GP practice data as a source of information on inequalities in patient choice

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## Abstract

Since the introduction of 'Choose and Book' in 2006, several authors have contended that it is liable to be used differently by different sectors of the population and so increase health inequalities. However, since most of the data relate to whole populations or to individuals, it is difficult to build a picture of the way choice is exercised in regional and local communities. The objective of this study was to gather and analyse data on patients' choice of hospital for orthopaedic surgery from one GP practice; and on the basis of this analysis to assess the value of such data in identifying inequalities in the exercise of patient choice at the level of the local community. The choice of hospital for non-urgent orthopaedic referrals was examined across a diverse population registered with a single large GP practice which covered a mixed urban and rural population of significant ethnic and cultural diversity. The frequency with which patients chose a non-local hospital (used as a proxy for patient choice) was analysed against the variables of patient age, gender, ethnicity, first language, level of formal education and whether they lived in a more rural or urban area. There was a significant positive correlation between tendency to use a service other than the local NHS hospital and White British ethnic status. However, the reasons behind this trend remain a matter for debate and no evidence was found for other proposed correlations with sex, location, education or language. The available proxy measures do not seem to give a sufficiently reliable picture of the exercise of patient choice; population studies at the level of a single GP practice do not yield either sufficient numbers or sufficient individual detail to yield valid and reliable results. Although initially promising, data gathered at the level of a single GP practice do not seem likely to yield many new insights. Instead, more attention should be given to regional-level analysis; to more direct data-gathering that is less reliant on proxy measures; and to direct studies of particular sectors of the population (such as young people; minority ethnic communities) whose distinctive behaviour is overlooked in the large-scale studies.

Keywords: Patient Choice; Health Inequality; Orthopaedic

## Introduction

The vision of patient choice was to "create more knowledgeable, assertive and influential users of services" (Audit Commission, 2008) which would create competition between providers to increase efficiency and improve quality. (Dixon et al, 2010). Choose and Book was introduced in 2006 with the aim that GPs would be able to give patients a choice of five providers, including at least one from the independent sector. The way that Choose and Book is intended to be used is that the GP enters the speciality and subspecialty that is being referred to into the system during the consultation with the patient. All the providers available are listed by distance from the patient's home with an indication of the waiting time for the first appointment. The patient then chooses the provider that they wish to be referred to.

In order for choice to be a successful tool for quality improvement, three main conditions need to be fulfilled. The GP needs to offer the patients a choice, patients need to be able to (and wish

to) compare services and providers need to be able to ascertain that patients are choosing other providers and respond accordingly.

One of the concerns that has been raised about this system is that it could increase inequalities, (Hewitt, 2006). If patients from less affluent backgrounds, those without formal education or ethnic minorities find it

harder to exercise choice, then the providers may focus their attention and resources on attracting the more affluent, educated, majority-ethnic patients, knowing that they are the consumers who are likely to 'vote with their feet' (Hirschman, 1970) if they do not get the service that they would like. Additionally if people from less deprived backgrounds are able to exercise choice and travel further for better quality care then they may leave behind a local, failing hospital that people who have not been able to attend a hospital further away have no choice but to attend (Coulter et al 2005).

It follows that any assessment of the value of Choose and Book must take into account any differences in the way different sectors of the population exercise their choice, and from the start of the scheme studies of patient choice have had a significant part to play in its development. However, available research into the operation of Choose and Book is dominated by two basic approaches, each of which may be seen to have limitations. First, there are studies of quantitative data aggregated at national or regional level, which by virtue of their scale may overlook finer-grained distinctions between sub-sections of the population. Then there are small-scale qualitative studies based on interview data and therefore on individual patient self-report: these are subjective by definition, and do not lend themselves to generalization.

The purpose of this study is to establish whether an analysis of data at the level of the local population may usefully supplement these results by providing a sample large enough for general inferences to be drawn; but small enough to enable fine-grained analysis of particular sub-groups. The chosen level for study is that of a local GP surgery, since for a small and diverse population sample it allows the conflation of demographic data from the practice and Secondary Uses Service (SUS) information on the choices patients actually make. Our hypothesis was that, by sacrificing sample size for local detail, it may be possible to find more evidence for variabilities which had been identified in the qualitative studies but not clearly identified in the large-scale analyses of data.

## Background

Research into the exercise of patient choice predates the introduction of the 'Choose and Book' system. As Jones and Mays conclude in their systematic review of the subject (Jones and Mays 2012):

*The evidence on patient choice of provider in the English NHS is dominated by studies of pilots which differ significantly from current choice policy making it difficult to predict what effect routinely offering free choice of provider to all non-urgent patients will produce (p1).*

Most notable is the Patient Choice Project, which between 2002 and 2006 piloted a version of 'Choose and Book' in the London area (Burge et al 2004; Dawson et al, 2004; Burge et al 2005; Dawson et al, 2006). The evaluation of this project found that 66% of patients who were offered the opportunity to change providers accepted treatment at another hospital, and 79% of these patients chose to be treated at an independent treatment centre. They found that the impact of this was a reduction in waiting times across London, including at the hospitals who did not participate in this project. However, this research did not look at the choices made by different sectors of the population, and the London Patient Choice Project was not representative of patient choice in reality as many of the structural barriers to choice (information, transport links) were removed (Coulter et al, 2005). Furthermore, the London area is by any measure a 'special case', with a very high concentration of options for non-urgent surgery and a highly developed public transport system. There are few reasons to believe that findings from a London-based study will

be reproduced elsewhere.

On a larger scale, national (e.g. Damiani et al 2005; Propper et al 2006; Siciliani and Martin 2007) and international (e.g. Varkevisser and van der Geest 2007, for the Netherlands) studies produced conclusions that are particularly persuasive because of their large sample size; but for the same reason cannot explore the likely determinants of the exercise of choice in small sub-populations where the data require a more fine-grained analysis. Thus, for example, Varkevisser and van der Geest identify age, employment status and urbanisation among the predictors of a decision to exercise choice; but their data apply to the whole of the Netherlands and cannot be analysed according to regional or local variables.

At the other end of the scale in terms of sample size, there has been a number of attempts to gather smaller but richer data that describes local health care arrangements and deploys interviews or questionnaires with people who have been referred to local hospitals, or hypothetical situations to analyse the choices people would make in practice (e.g. Exworthy and Peckham (2006) Victoor et al (2012) Birk et al (2011) Robertson and Burge (2011)). In particular, an influential study conducted through semi-structured interviews by The King's Fund (Dixon et al 2010) gathered data on patients' stated intentions and found that three quarters of patients said choice was important to them. These studies demonstrate a high degree of agreement: older patients were less likely to travel further (although Dixon et al's 2010 found the opposite) and people with a high socio-economic status and a high level of education were more likely to travel further; there was some evidence that ethnic minorities were less willing to travel a greater distance. More highly educated, younger patients and those on a higher income were more likely to make an active choice. Some research found that women were more likely to choose their hospital.

However, the weakness of these studies is that little or no data was gathered on whether and how the participants actually did exercise choice: the one exception (Birk et al 2011) relies on the memories of patients about how a choice was made. The difficulty with these studies is that they may be measuring patients' approval of the concept of the 'Choose and Book' system rather than the ways they actually use it (see Barnett et al 2008). Victoor et al (2012) found there were significant differences between patient stated preferences and revealed preferences. 'The paradox of choice' (Schwartz, 2004) is that if there is the potential for a negative outcome from the choice being made (as is the case when choosing a hospital to undergo surgery), people are often reluctant to choose instead ask the GP where they should be referred to, or choose the local hospital on the grounds of convenience. (Taylor et al, 2004; Berendsen et al 2010 for Netherlands).

There is, therefore, a significant gap in the research into what is actually happening 'on the ground'. On the one hand, the prevalence of national-level data studies of the choices people make may obscure significant geographic and social variations: the decision is actually made by reference to the conditions that pertain within a radius of a few miles, not across the nation as a whole. On the other, studies of individual patients' own responses, often to hypothetical situations, may be revealing more about their approval of the concept of Choose and Book than what they would do in practice. There is a gap between the decisions that people say they would make in hypothetical situations, and the ones they actually make when confronted with the choice.

Given this gap in the literature, we designed the present study to test the feasibility of gathering and analysing data at the local level by making use of the information already held by GP practices and local hospital trusts. Our hope was to generate data which were sufficiently fine-grained and robust to identify effects and inequalities at a local level.

## Method

This study was designed around a particular GP practice in the North Midlands part of England which demonstrates a good range of patients, ethnicities, ages, education and habitats and therefore encompassed sufficient diversity to test for these variables. The decision to use a single GP practice reduces the confounding effect e.g. of different levels of information and different

forms of advice offered in different surgeries.

The intention was to gather empirical evidence regarding the way in which the variables of patient age, gender, ethnicity, first language, level of formal education and place of residence (rural/urban) may correlate with their decision to seek treatment at a centre other than their local NHS hospital. These variables have been chosen as they are the ones used in the Dixon (2011) study, are fairly representative of those identified in small-scale studies generally, and because the data can be gathered from patient records.

The following inclusion criteria were used to assemble the sample:

- 1) Orthopaedic surgery patients. The reasoning behind this is that it is a speciality in which a variety of realistic choices exist (i.e. several different hospitals / treatment centres within a commutable distance) and where the number of referrals is high enough to ensure a representative sample size. Furthermore, unlike e.g. dementia, it is unlikely that the condition will have a cognitive impact on the patient.
- 2) Only elective referrals, since as noted above a sense of fear or urgency may itself affect the likelihood of the patient exercising choice, and a patient needs time to gather information before referral (Moscone et al, 2012).
- 3) Only referrals through the GP practice, as this is the point at which 'Choose and Book' is designed to operate.
- 4) Patients of a single designated GP practice.

For the purposes of data collection, the GP practice was selected which had the largest number of annual referrals and fulfilled the criteria identified above. Since the sample comprised all referrals for orthopaedic surgery from this practice, the approximate distribution across variables (particularly age, ethnicity and education) could not be estimated in advance of the study. A power calculation for the ANOVA was performed predicated on a medium effect size (Cohen's  $f=0.25$ ), in the absence of any analogous research which would give an estimate of predicted effect (we argued that, in any case, the ability to a small effect would be of limited practical value). Since the dependent variable in each case was the same, the analysis of data took the form of a succession of binary logistic regression analyses. Following Cohen (1988, 1992) the required sample size was set at  $N=128$ , based on  $\alpha$  set at 0.05 and  $\beta$  at 0.2 ( $1-\beta=0.8$ ).

Data from the GP practice were collected for all orthopaedic referrals in the period 1<sup>st</sup> April 2012 to 31<sup>st</sup> March 2013 with the clinical system providing demographic data and the CUBE system (which is a local system that pulls together Secondary Uses Service (SUS) data and enables it to be interrogated) providing details of the hospital they attended. By comparing the patient's postcode with their choice of hospital, it was possible to divide the sample into those who had attended their closest hospital and those who had attended a non-local one. Data were further sorted by patient age, sex, ethnicity and first language. Analysis of electoral ward by population density provided a proxy measure of whether the patient lived in a predominantly rural or urban context. Similarly, a proxy estimate of level of education was provided by electoral ward data on the proportion of the ward with Level 4 education.

**Table 1.** Independent variables correlated with use of local/non-local hospital (dependent variable)

	Proxy measure	Independent Variable
Continuous independent variables	Age	Patient's age
	Percentage of the area with a level four qualification	Educational status of the patient
	Population density of the area	To indicate how rural or urban the area in which the patient lives is – persons per hectare
Discrete independent variables	Gender	Gender
	British or mixed British; Other	Minority/Majority Ethnic
	First language	English/non-English speaker

Binomial logistic regression analysis (SPSS-22) was used to investigate possible correlations between any of the continuous variables and the likelihood of the patient attending their non-local hospital. Pearson correlation tests were used to determine any link between each of the discrete independent variables and the choice of a non-local hospital (Table 2).

## Results

The data that were originally exported included all orthopaedic first outpatient appointments from 1<sup>st</sup> April 2012 to 31<sup>st</sup> March 2013 based on data recorded by the hospital. This was extracted from the 'CUBE' system (which is a local system that pulls together Secondary Uses Service (SUS) data and enables it to be interrogated). According to the 'CUBE' there were 320 recorded first appointments during this time, but 64 carried a duplicate NHS number. This could have been because when the patient attended for their first appointment they were then referred to a different consultant in the same department, who perhaps specialised in their condition. For the purposes of this research, however, these were discarded as duplicates.

The clinical system was then examined for the period 1<sup>st</sup> December 2011 to 31<sup>st</sup> March 2013, the earlier start date being to account for the lag between first referral (on the clinical system) and first appointment (on CUBE). However, when the data was cross referenced it was discovered that only about half of the first outpatient appointments recorded by the hospital were supported by the data on the clinical system. This gave a final dataset of 132 patients (of which 10 were missing data on ethnicity and language).

Of the 132 patients who had a complete dataset, a third (44) chose to bypass the local hospital. The patients who had opted to attend a different hospital were split between 20 choosing to attend the private provider under the NHS, 22 choosing the independent treatment centre and two opting for NHS Hospital Trusts that were in a different county.

**Table 2.** Relationship between choice of local/non-local hospital and a range of independent variables.

Independent Variable	N	Test	Test statistic	Significance
British or mixed British; Other	122	Pearson (2-tailed)	r=.216	.017
First language	122	Pearson (2-tailed)	r=.134	.142
Gender	132	Pearson (2-tailed)	r=.043	.625
L4 qualification	132	Logistic regression	F=.014	.906
Persons per hectare	132	Logistic regression	F=.275	.598
Age	132	Logistic regression	F=1.143	.203

These results indicate a positive significant relationship between ethnicity (as British/mixed British or other) and tendency to exercise choice  $r = .216$ ,  $p < 0.05$ . There is no evidence of a correlation with gender or first language. There was no significant relationship between tendency to exercise choice and the proxy variables for education, rural/urban or age.

## Discussion

The fundamental assumption underlying this study is that patients who travel beyond the closest hospital have actively chosen to attend the 'best' centre, whereas those who remain at the local hospital do so because they have not actively exercised choice. This is an assumption that is made elsewhere (Varkevisser and van der Geest, 2007, Victoor et al, 2012) and is based on the premise that people generally do not like to travel and therefore they would only be willing to bypass the nearest hospital for certain reasons. However, if for example the patient is dependent on a bus service, they may make their choice based upon the bus routes. Conversely, if a patient is already resident in the vicinity of the 'best' centre for their treatment, they may make an active choice to attend there. Since demographic categories are not typically evenly distributed geographically, these effects may mask findings which could only be perceived by using a still more finely-grained

analysis.

Contrary to some suggestions, there was no evidence of correlation with gender, with level of education or rural/urban differences. However, the proxy variables used to measure the last two factors are highly inexact and of questionable value. Intuitively, it is plausible that both educational level and social geography will influence the exercise of hospital choice, but simple measures of this type are unlikely to distinguish the operative from the confounding variables. Each of these domains would require much more fine-grained and acute analysis.

There is evidence that those of a non-British ethnicity are less likely to exercise patient choice, but there is no evidence that this is an effect of language, the most obvious conclusion. Similarly, we considered but rejected the hypothesis that the effect was due to a concentration of non-British ethnic populations in city centres, where the largest and best-equipped hospitals are found: there is no apparent correlation between exercise of choice and population density. Findings such as this suggest the need for caution in simply equating the apparent failure to exercise choice with social exclusion or reduced options, but do not cast light on the other significant factors in play.

All of the comparisons presented in this paper suffer from a lack of statistical power, and this represents a dilemma of small-scale studies. On the one hand, the strength of a study such as this is that it can present a finer level of detail than a large national study; on the other, the most significant detail may be at a still lower level, in which individuals make decisions within a web of intricate factors and considerations; but with each gain in detail there is a loss in sample size.

It appears, then, that any attempt to provide more precise data and a more fine-grained analysis of Choose and Book by an intensive study of data from a single GP practice is likely to founder on four methodological issues that are currently difficult to address. As well as the assumption that distance provides a proxy for the dependent variable (an assumption shared with most data-driven studies in this field) there is the problem of identifying suitable proxies for the independent variables; of the presence of multiple confounding variables; and of the limitations of small sample size for detecting and distinguishing small effect sizes.

## Conclusions

In the light of the discussion above, it seems unlikely that studies at the level of a single GP practice will generate much useful information in the discussion of the potential contribution of Choose and Book to health inequalities.

The study suggests that, if analyses at the national level lack sensitivity to local effects, analyses at the level of a single GP practice lack sufficient power or resolution to identify key variables. In order to shed light on the operation of Choose and Book at the local level, the ideal design is likely to be a compromise (either the extension of the sample to the level of the CCG; or a mixed methods study using interview data to supplement the patient records) or a more intensive study of a particular sector of the population which might be at particular risk of suffering from health inequalities as a result of the implementation of the Choose and Book system.

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## Ethical Approval

Since only aggregated anonymised data were collected from a GP database, it was not necessary to seek IRAS approval. Overall approval was obtained from the Staffordshire University Faculty of Health Sciences Ethics Committee. Written permission for data extraction (with conditions) was obtained from the senior partner.

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