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Patient Preferences for Treatment of Low Back Pain—A Discrete Choice Experiment

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ABSTRACT

Background: Back pain imposes a substantial economic and social burden, and treatment decisions are distorted by conflicting evidence. Thus, it is important to include patient preferences in decision making and policy making. **Objective:** To contribute to the understanding of patient preferences in relation to the choice of treatment for low back pain. **Methods:** A discrete choice experiment was conducted with consecutive patients referred to a regional spine center. The respondents (n = 348) were invited to respond to a choice of two hypothetical treatment options and an opt-out option. The treatment attributes included the treatment modality, the risk of relapse, the reduction in pain, and the expected increase in the ability to perform activities of daily living. In addition, the wait time to achieve the treatment effect was used as a payment vehicle. Mixed logit models were created to perform analysis. Subgroup analysis, dividing respondents into sociodemographic and disease-related categories, further explored the willingness to wait. **Results:** Respondents assigned positive utilities to positive treatment outcomes and disutility to higher risks and longer waits for effects of treatment and to surgical interventions. The model captured significant heterogeneity within the sample for the outcomes of pain reduction and the ability to pursue activities of daily living and for the treatment modality. The subgroup analysis revealed differences in the willingness to wait, especially with regard to treatment modality, the level of pain experienced at the time of data collection, and the respondents' preferences for surgery. **Conclusions:** The majority of the respondents prefer nonsurgical interventions, but patients are willing to wait for more ideal outcomes and preferred interventions. The results show that health care professionals have a very important task in communicating clearly about the expected results of treatment and the basis of their treatment decisions, as patients' preferences are highly individual.

Keywords: decision making, discrete choice experiment, low back pain, patient preferences, stated preferences.

Introduction

The inclusion of patient preferences in the decision-making process about optimal treatment is becoming more acceptable among doctors because knowledge about the patient's general expectations and preferences can guide the choice of treatment and, in some cases, even improve the outcome of treatment [1–5]. Patients also gain satisfaction from being heard and want to be included, even to a degree that has been previously underestimated by doctors [6,7]. Some authors suggest that including patients' preferences in clinical decision making is a central aspect of practicing evidence-based medicine [8] and that health care effectiveness should be judged partially on the extent to which patients' preferences are respected [9].

Low back pain (LBP) substantially reduces quality of life, poses an economic and social burden, and commonly leads to early retirement, absenteeism, and disability [10–12].

Patients suffering from LBP ultimately have to make a difficult choice from an array of treatment and management options, trying to optimize outcomes while reducing the burden of their disease [13]. Ultimately, patients may have to choose between two very distinct treatment paths: surgical or nonsurgical treatment.

In the case of LBP, the choice of treatment modality is complicated by the conflicting evidence and the lack of certainty about recovery with any treatment modality [10,14–17]. These complications have resulted in remarkable variation in surgery rates across the world because the indications for surgery appear to be multifaceted; in some cases, they are associated with the patient's health care practitioner or the center/region/country where treatment is provided [18–21]. The literature also indicates a high level of variance in treatment results in both surgically and nonsurgically treated patients [19,20,22–25]. For the group of patients suffering from unspecific LBP, the 5-year post-treatment results are the same regardless of treatment modality [26–30].

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These findings have prompted much discussion of the (cost-) effectiveness and the prioritization of various treatment strategies, both politically and among health care professionals, with suggestions of focusing on decreasing surgery rates due to higher costs and lack of clinical effects [13,19,20,31,32].

It has been argued that the absence of a notable difference in the effects of treatments could actually be seen as a window of opportunity for allowing true consideration of patients' preferences in clinical decision making [13]. Quantifying preferences and exploring trade-offs may be very helpful for patients and doctors. This process could play a valid role in addition to the other decision-making tools already used in clinical decision making about treatment for back pain [33–35].

The objective of this article was to increase the understanding of patients' preferences with regard to LBP treatment by quantifying the utilities and trade-offs of treatment options and treatment outcomes from the patient perspective. The study adds to the scarce literature on patients' preferences for treatments of back pain or spinal disease by analyzing preferences using state-of-the-art design and modeling techniques allowing for investigations of preference heterogeneity and by focusing on a novel part of the patient experience by investigating choices before they are influenced by hospital experts.

Methods

In eliciting preferences, discrete choice experiments are widely used and accepted. This methodology (as opposed to satisfaction surveys, for example) enables a systematic investigation of the importance of particular characteristics of the available options as well as the relative importance of the characteristics [36].

Development of Survey

The attributes and levels were chosen on the basis of knowledge from previous studies and a thorough qualitative process that included observatory fieldwork, interviews with patients and doctors, think-aloud exercises focusing on the discrete choice experiment in particular, and both qualitative and quantitative pilot-testing of the entire survey. Each step of the predesign process contributed to the development of the choice experiment. For a more complete description, see Kløjgaard et al. [37]

The included attributes reflected the treatment, the effects and risks of the treatment, and a time aspect—mirroring the large differences in the perceived effects of treatment for patients taking part in both surgical and nonsurgical cross-disciplinary therapies [6,10,18]. The qualitative work suggested that these attributes best reflected the complexity of the treatment choice faced by patients and also captured the most common and most important aspects of the drivers of the choice. The response options were based on qualitative and quantitative tests of different options and were intended to ensure trade-offs that were believable without being too extreme [36].

Table 1 shows the included attributes, levels, and hypotheses (the expected direction in which a change in the attribute levels would affect utility).

The questionnaire also contained questions on sociodemographic and pain-related information as well as information on treatment expectations, with the main characteristics of the respondents summarized in Table 2.

Experimental design

The survey used a Bayesian-efficient design created in Ngene software [38]. Priors were obtained from the quantitative pilot study (n = 17, each given 10 choice sets). This pilot survey had an orthogonal design. The pilot data were analyzed with a multinomial logit model, providing estimates of the size and direction of the coefficients.

In total, 18 choice scenarios were grouped into three different sets of six tasks, minimizing the correlation with the blocking variable [38,39]. Each task presented the respondents with three treatment options, with the first two alternatives representing the hypothetical treatment options. The remaining option was a no-choice option. The respondents were asked to indicate their preferred alternative.

The patients were randomly allocated to one of the three blocks, and we tested whether the randomization process was successful in terms of demographic parameters.

All the attributes were dummy-coded except the wait time, which was coded as linear.

An example of a choice set is shown in Figure 1.

Data Collection and Setting

The data were collected at The Spine Centre of Southern Denmark, Lillebælt Hospital, Middelfart, in the southern region of Denmark. This center is the only public spine center in the region, which has approximately 1.3 million inhabitants. Approximately 12,500 new outpatients are treated either nonsurgically or surgically each year. There are no inpatients examined at the center.

Any patient who has suffered from neck or back pain for more than 2 months can be referred to the center. Approximately half of these patients suffer from acute disc diseases, and the rest are experiencing long-lasting neck pain or unspecified LBP.

On their first visit, the nonacute patients are seen by a nurse. The first visit includes an initial screening by a nurse and a magnetic resonance imaging scan. Subsequent visits include a multidisciplinary team consultation, in-depth anamneses, and clinical examinations. Most of the patients are treated nonsurgically, while some patients are referred to the surgical specialists at the center.

In this study, the patients were given a questionnaire on their first visit to The Spine Centre. The questionnaire was paper-based and later returned by mail. Thus, the questionnaire was distributed before the patients had any knowledge about the diagnosis and treatment path suggested by the experts at the center. The results of their magnetic resonance imaging scans were also unknown.

To prevent bias, the nurses and secretaries who distributed the questionnaires were carefully instructed on numerous occasions to ensure that all eligible patients were included, bearing in mind the sole exclusion criterion of neck pain.

Econometric Analysis

To measure the patients' preferences, the choices from the experiment were analyzed in a logit model. When preferences

Table 1 – Attributes and levels.

Attribute	Levels	Hypothesis
Modality	Nonsurgical	
	Surgical	−/+
Pain level	Same	
	Less	+
	None	++
Problems with ADL	Same	
	Fewer	+
	None	++
Risk of relapse	1 in 10	
	2 in 10	−
	3 in 10	−−
Time to treatment effect	1, 3, 6, 12 mo	−

ADL, activities of daily living.