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Preference-Based Assessments

A Discrete Choice Experiment to Elicit General Population Preferences Around the Factors Influencing the Choice to Make Clinical Negligence Claims

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ABSTRACT

Objectives: This article determines public stated preferences around different factors that influence the choice to make clinical negligence claims against a national healthcare system.

Methods: A large online survey was conducted using a discrete choice experiment (DCE) with the UK general population (N = 1013). DCE tasks involved a single profile and participants chose whether to make a claim for compensation (yes/no) after one of 3 randomly allocated patient safety incident (PSI) "scenarios" of different severities (mild, moderate, severe). DCE attributes described the actions of the healthcare system after a PSI and characteristics of the clinical negligence claims process. The data were modeled separately for each scenario (mild, moderate, severe) using logistic regression. Marginal effects and the probability of making a claim in a baseline case were estimated.

Results: Probability of choosing to claim was reduced by receipt of an apology, investigation and prevention of recurrence of the PSI, and longer time until claim decision and increased by an easy and straightforward claims process and high chance of compensation and for the mild scenario higher compensation amounts. Marginal effects and baseline case probabilities differed by scenario severity.

Conclusions: The results suggest the actions of the healthcare system after a PSI and characteristics of the claims process have a larger impact on the probability of making a claim for milder PSIs. For more severe PSIs, a larger probability of making a claim was observed, and the choice was less influenced by the actions of the healthcare system after the PSI and characteristics of the claims process.

Keywords: clinical negligence claims, discrete choice experiment, patient safety incident.

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Introduction

The quality of health and social care is of prime importance, and this includes the avoidance of patient safety incidents (PSIs) associated with care, in particular those caused by clinical negligence. PSIs can be defined as any unintended or unexpected incident that could have led or did lead to harm for ≥ 1 patients receiving healthcare.[1,2] Patients who experience a PSI may choose to make a litigation claim of clinical negligence against the public healthcare system or private healthcare provider. In the United Kingdom, the costs of these claims are covered from the budget of the public national healthcare system (NHS), representing significant opportunity costs (in that the funds are used for compensation rather than healthcare) (see, eg, Fenn [2002][3]). It may be that other more suitable schemes can be devised that provide appropriate redress but avoid costly and adversarial legal processes.

The proportion of people experiencing a PSI in the United Kingdom who subsequently make a claim via a legal process for financial compensation has been examined in the literature.[4] One study[4] analyzes data from 2 UK general population surveys (people aged 15 years and older) undertaken in 2001 (N = 8202) and 2013 (N = 19 746), finding in 2001 that 4.8% and in 2013 that 2.5% of respondents reported they had some illness, injury, or impairment that in their opinion was caused by their medical treatment or care over the last 3 years. Of these respondents, the proportion who pursued a legal claim for compensation was 10.5% in 2001 and 11% in 2013. Although this indicates both the proportion of respondents who regard themselves as having experienced harm from the NHS and the proportion of those who pursued a legal claim, this does not indicate the proportion of respondents who would choose to make a claim if the circumstances of the harm had been different or if the compensation scheme had differed in its characteristics. For example, respondents may have chosen to make a claim under different circumstances of the harm or vice versa. In addition, a legal claim is typically only pursued if a lawyer deems the claim to have both

Table 1. DCE attributes.

Factor	Attribute with levels	Number of levels	Variable in regression models
Apology	You received an appropriate apology and explanation from those responsible for the incident.	2	Apology
	You did not receive an apology or explanation.		Reference level
Investigation and prevention	A detailed investigation was carried out. You were satisfied that the NHS had taken appropriate measures to prevent this incident from happening again.	3	Invest_prev
	A detailed investigation was carried out. You were not satisfied that the NHS had taken appropriate measures to prevent this incident from happening again		Invest_noprev
	A detailed investigation was not carried out. You were not satisfied that the NHS had taken appropriate measures to prevent this incident from happening again.		Reference level
Holding to account	You think the claim process will hold those responsible for the incident to account.	2	Hold_to_account
	You do not think the claim process will hold those responsible for the incident to account.		Reference level
Difficulty	You feel that making a claim is easy and straightforward.	2	easy
	You feel that making a claim is complicated and a hassle.		Reference level
Length of claim process	After submitting your claim, you think it will take X years to receive a decision. • Mild scenario: X = 1, 3, 5 years • Moderate scenario: X = 1, 3, 5 years • Severe scenario: X = 3, 6, 10 years	3	Length process_Xy Reference level is the highest level (X = 5 years and X = 10 years for severe scenario).
Chance of compensation	You think there is a high chance you will get compensation.	2	Chance_comp
	You think there is a low chance you will get compensation.		Reference level
Amount of compensation	You think the compensation would be Z. • Mild scenario: Z = £1k, £10k, £20k • Moderate scenario: Z = £10k, £25k, £100k • Severe scenario: Z = £1m, £3.5m, £10m	3	Comp_amountZ Reference level is the lowest level (Z = £1k for mild, £10k for moderate, and £1m for severe scenario).
Scheme	The claim involves taking legal action against the NHS.	2	Reference level
	The claim is made by completing an application to a nonlegal government compensation scheme.		Admin_scheme

k indicates thousand; m, million; NHS, national healthcare system.

a high chance of success and a sufficiently large compensation reward to make the pursuing of a claim worthwhile for the lawyer and the claimant.

PSIs differ in terms of the circumstances of the incident, the healthcare system response to the incident, the short-term and long-term impacts (including financial, physical, and emotional impacts) of the incident on the patient, and the sociodemographic characteristics of the patient. Qualitative research has been undertaken on this topic to identify the factors that influence people's choice to make a claim of clinical negligence, where the primary reason for making a claim is presented, along with all reasons that were selected for making the claim.[5] Nevertheless, the relative importance of factors or how the combination of these influenced the choice to make a claim is not considered, and we have not identified in the literature any preference studies (for example a stated preference study) assessing this. Better understanding of both the factors that influence the choice to make a litigation claim and the relative importance of these factors is informative for policy. Better understanding can be used to target policy to better manage healthcare provider and patient relations

Figure 1. DCE scenario descriptions.

Mild scenario	While receiving treatment from the NHS you experienced an unintended or unexpected incident which led to harm For example, an injury during minor eye surgery ▪ The incident caused health problems that were **temporary** ▪ You had to take **a month** off work ▪ You needed additional care or financial support as a result of the incident for **1 month** only
Moderate scenario	While receiving treatment from the NHS you experienced an unintended or unexpected incident which led to harm For example, an injury during surgery resulting in lifelong leg problems ▪ The incident caused **minor** health problems for **the rest of your life** ▪ You had to take **a year** off work ▪ You needed additional care or financial support as a result of the incident for **the rest of your life**
Severe scenario	While receiving treatment from the NHS you experienced an unintended or unexpected incident which led to harm For example, a delay in diagnosis caused your legs and lower body to be permanently paralysed ▪ The incident caused **severe** health problems for **the rest of your life** ▪ You are **unable** to work for **the rest of your life** ▪ You need additional care or financial support as a result of the incident for **the rest of your life**

after a PSI. The relative importance of different factors for choosing to make a claim can be determined by the elicitation of hypothetical stated preferences from members of the general population around whether they would choose to make a claim of clinical negligence when presented with a range of different scenarios. This is informative for generating stated preferences of people who could in the future experience a PSI.

This article determines UK public stated preferences around different factors that influence the choice to make clinical negligence claims against a NHS and assesses whether this differs by the severity of the PSI. This adds to the existing literature assessing whether participants who have experienced a PSI have pursued a claim for compensation, by exploring how the characteristics of the PSI, the way the healthcare provider responded after the PSI, and the characteristics of the compensation system may affect the choice to claim for compensation through examining hypothetical preferences of the general public (as users of the healthcare system and potential future claimants).

Methods

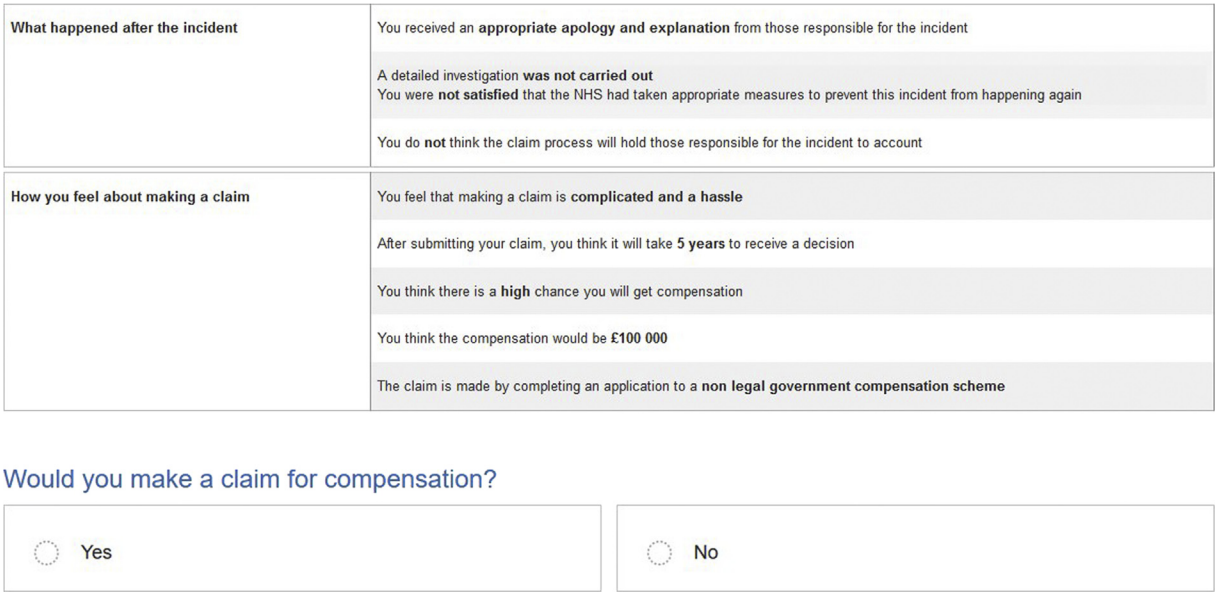
A discrete choice experiment (DCE) is a commonly used and accepted technique to inform healthcare policy. In a standard DCE, respondents are asked to answer DCE tasks where in each task the respondent is presented with a set of alternatives (typically 2 or 3 alternatives) and they are asked to select 1 in accordance with their preference (see Soekhai et al [2019][6] for further information on DCEs). DCE was selected because this has the advantage of enabling participants to consider several attributes at the same time, it can be successfully administered online without an interviewer present enabling quick and affordable data collection,[7] and it is appropriate for our research question. The DCE used here was a single profile (rather than 2 or 3 profiles as are typically used in a DCE), and participants were asked whether they would make a claim for compensation (yes/no).

Determining DCE Attributes, Scenarios and Wording

Determining DCE attributes

Attributes were determined to describe the actions of the healthcare system after the incident and characteristics of the claims process. The underlying factors for the attributes were informed by the literature[4,5,8-13] and input from policy makers. Initially, a long list of factors (or themes) and possible attributes within these were identified from the literature, and a subset of these were selected by the study team with input from policy makers. The factors had to meet the following criteria: identified as important to people who had experienced harm as reported in the literature, relevant and informative for policy, and distinct from the other (selected) factors. The selected attributes and levels had to meet the following criteria: appropriate, relevant, and informative for policy; independent and assessing a different concept to all other attributes; and describing the situation that occurred rather than preferences (eg, "You did not receive an appropriate apology and explanation" rather than "You want to receive an appropriate apology and explanation"). Input on the levels was provided by policy makers with knowledge of the current legal system for making claims for compensation and how this was related to different severities of PSIs (see below). The selected factors, attributes, and levels in the DCE are presented in Table 1. The DCE included 8 attributes with either 2 or 3 levels. One of the attributes, investigation and prevention, contains 2 separate factors that were merged because they are not independent and not all possible combinations are plausible. The 2 factors were presented separately in the survey, but were combined into a single attribute in the

Figure 2. Example DCE task for the moderate scenario.



NHS indicates national healthcare system.

design and model (see section "The sample"). The number of attributes is consistent with some DCE studies, where a recent review of DCEs in health economics[6] found that the percent of DCEs with between 7 and 9 attributes was 21% in 2013 to 2017.

Determining the PSI scenarios

The DCE attributes cover the actions of the healthcare system and characteristics of the claims process that are within the control of policymakers. Scenarios have been used in recognition of the fact that the choice whether to make a claim for compensation is likely to be affected by the specific characteristics of the PSI and its impact on the health and life of the patient. Scenarios provide a context for the participants to respond and have been chosen to reflect the spectrum of PSI observed in real life. An additional reason for reflecting the characteristics of different incidents in each DCE task as scenarios instead of DCE attributes is to keep the number of attributes manageable for the participants to make their choice and potentially avoid complicating the survey. To broadly cover the spectrum of severity of PSIs, 3 scenarios were determined to briefly describe a potential incident and summarize the impact on the health and life of the patient across a range of severity of impact: mild, moderate, and severe. Each PSI scenario included an example incident (provided by policy makers) and described the impact of the incident across the health, work, and care and financial support needs of the patient (informed by Gray et al [2017][4]). The 3 selected PSI scenarios are presented in Figure 1.

Refining wording and task framing

Piloting was undertaken to examine whether respondents correctly understood the meaning of the tasks and attributes using online interviews with a convenience sample of 10 participants (8 female, 2 male, all nonacademic) of the general population recruited via a list of volunteers at the University of Sheffield. Feedback was sought on the wording of attributes including their levels, introduction, scenarios, and example DCE questions and on the formatting and framing of the DCE tasks. The wording, formatting, and framing were refined iteratively. Participants received a £10 voucher as a thank you for participating.

The DCE survey (see below) was soft launched with a pilot sample of approximately 100 people. After the pilot, the lowest level for the compensation attribute was changed from £5000 to £1000 for the mild PSI to obtain preferences for a small compensation amount. Pilot survey responses for the moderate and severe scenarios only were included in the main survey sample, given that for these scenarios no changes were made after the pilot.

Eliciting General Population Preferences

Design

It is not always feasible and often not efficient to include every combination of attributes within the set of choices the respondent sample is presented with. To optimize the ability of the data to inform our understanding of the impact of all attributes across their ranges, profiles were selected based on a D-optimality algorithm using the dcreate Stata module.[14,15] The same design was used for each of the 3 scenarios (mild, moderate, severe), yet because of differences in the levels for 2 of the attributes the profile descriptions differed across the scenarios. For each scenario, the design consisted of 30 choice sets, making 90 choice sets in total, and allowed for the estimation of all main effects.

The DCE Survey

Before starting the survey, participants viewed an information sheet about the survey and provided informed consent. Participants were randomized to 1 of the 3 PSI scenarios (mild, moderate, severe) (see Fig. 1) and only answered DCE tasks for the one PSI. The survey had 4 stages. First, participants completed sociodemographic and health questions. Second, participants watched a short video that explained the PSI and the DCE tasks including the attributes (although the levels were not explained). Third, participants completed one practice DCE question, received feedback about their choice (an explanation of their choice in a pop-up box), and then were able to amend their choice and complete the practice question again (see Appendix Table A1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2

022.01.020 for these responses). Participants then completed 10 DCE tasks (see Fig. 2 for an example of a DCE task), which were randomly drawn from the 30 choice sets in the design. Before the fourth and seventh tasks, participants were again shown the details of the PSI as a reminder. Fourth, participants completed questions about whether they would ever make a clinical negligence claim for compensation against the NHS, their attitudes toward the NHS (questions were used from the British Social Attitudes Survey[16]), whether they had experienced a PSI with brief details, some further sociodemographic questions, one question on how difficult the DCE tasks were to understand and one question on how difficult the DCE tasks were to answer (see Appendix Table A2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020 for the questions), and a free text box where respondents were able to leave comments about the survey. Survey participants were thanked for their participation with a nominal amount of vouchers that can be accumulated and exchanged for goods.

The sample

The sample comprised 1000 members of the UK general population, who were selected as the population of interest, because of their ability to answer hypothetical questions and as users of the NHS. Survey participants were recruited using an existing online panel from a market research agency and were sampled to include participants from England, Wales, Scotland, and Northern Ireland. Quota sampling was used for age and gender based on the 2011 UK census, to ensure a representative sample of the UK population across age and gender.

The survey was conducted from July 2020 to August 2020. Ethical approval for the project was granted by the University of Sheffield Research Ethics Committee.

Modeling General Population Preferences

The DCE survey data were modeled using a standard logit (logistic) regression model with standard errors adjusted for clustering at the individual level, with separate models estimated for each of the 3 scenarios. The dependent variable was the choice to make a claim, 1 = yes and 0 = no. Models were estimated that included both length of process and compensation as categorical and continuous variables, and the linearity of these variables was assessed before deciding whether to treat the variables as categorical or continuous in the models presented. The remaining attributes were categorical, using the variable definitions described in Table 1. Models for each scenario were also estimated using mixed logit, where all attributes and the constant were specified to have random coefficients that are normally distributed.

The probability of making a claim in a baseline case with all categorical attributes set to their reference level is reported, along with marginal effects, which measure the difference in the probability of making a claim when one attribute is changed from the level used in the baseline case. The marginal effects were used to indicate the importance of each of the factors associated with the PSI in influencing the choice of participants to make a clinical negligence claim against the NHS.

Exploratory analysis of preference heterogeneity was undertaken for a subsample of respondents who had previously experienced a PSI. This was done using a model with interactions for all main effects variables for patients who had previously experienced a PSI, to identify any significant differences between their preferences and those of the other respondents. To calculate the marginal effects separately for people in the sample who had previously experienced a PSI and those who had not, separate models were estimated.

Results

DCE Survey

The sample

The sociodemographic characteristics of the sample are presented in Table 2 and compared with the UK general population. The survey sample comprises 1013 members of the UK general population and is nationally representative for age and gender. The scenario subsamples are each representative for age, but the gender, employment status, household income, and parent/guardian composition varies across the 3 scenario subsamples. All subsamples have a proportion of individuals who are furloughed, because the survey was undertaken during the COVID-19 pandemic when a government furlough scheme was available. Most participants are in very good or good health, although there are a large proportion of participants who report having a long-term health condition.

Most participants across the sample have no problems with mobility or vision (these are the example health problems used in the scenario examples), and this is approximately 70% for each sample for each health problem. This indicates that approximately 30% of the sample have health problems in the area of health referred to in the example scenario. Approximately 17% of the sample (n = 175) has experienced a PSI previously. Of these respondents, the proportion whose PSI was experienced in the NHS was larger for the severe scenario subsample (87.69% in comparison with 81.48% and 82.14% for the mild and moderate subsamples, respectively), and the proportion of participants who took legal action against the NHS was larger for the severe scenario subsample (32.31% in comparison with 20.37% and 26.79% for the mild and moderate scenario subsamples).

Attitudes toward the NHS

Overall attitudes to the NHS in the study sample are more favorable than survey responses to the British Social Attitudes Survey conducted in 2018 that reflect public attitudes before the COVID-19 pandemic[16] (Appendix Table A3 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020). There are some differences in the responses across the 3 scenarios samples for the attitudinal questions, but the proportions are broadly consistent. Nevertheless, the proportion of participants stating whether they would never make a clinical negligence claim for compensation against the NHS varied across the 3 samples, varying from 30.48% in the mild scenario sample to 18.62% in the severe scenario sample.

Participants' understanding of the DCE tasks

Most participants found the DCE questions both easy to understand (88.45%) and easy to answer (82.43%) (Appendix Table A2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020). In total, 12.93% of participants answered the practice question twice because when their choice was explained to them they were no longer happy with their choice and chose to repeat the practice question (Appendix Table A1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020).

Modeled Preferences

Modeled results of the choice to make a claim for compensation using the logistic regression are presented in Table 3. The reference level and definitions of each attribute are described in Table 1. Given that the variables representing length of process and compensation were shown to be nonlinear, they are treated as categorical variables in the models reported. Mixed logit results

Table 2. Sociodemographic data.

Characteristic	Mild n = 315	Moderate n = 349	Severe n = 349	Full sample N = 1013	UK general population*
	%	%	%	%	%
Gender					
Male	43.17	49.86	51.86	48.47	49.1
Female	56.51	50.14	48.14	51.43	50.9
Other	0.32	0	0	0.1	
Age by category					
18-24	12.06	8.88	9.74	10.17	46.6†
25-34	19.37	20.06	20.92	20.14	
35-44	18.1	14.33	14.33	15.5	
45-64	31.11	34.96	34.67	33.66	32.5
65+	19.37	21.78	20.34	20.53	20.9
Average age	46.17 (17.75)	48.46 (17.72)	47.75 (17.54)	47.50 (SD 17.67)	
Marital status					
Single	30.79	26.93	27.51	28.33	
Married/partner	56.83	60.46	59.60	59.03	
Separated	1.90	0.57	1.72	1.38	
Divorced	6.35	8.88	7.74	7.70	
Widowed	3.49	2.87	3.44	3.26	
Prefer not to say	0.63	0.29	0	0.3	
Activity					
Employed/self-employed	55.87	49.86	52.72	52.71	61.7
Retired	23.17	24.07	22.92	23.4	13.9
Looking after home	4.13	6.30	4.30	4.94	4.3
Carer	0.63	1.15	0.57	0.79	
Student	5.71	6.3	6.02	6.02	9.3
Seeking work	0.95	0.86	2.29	1.38	
Unemployed	2.86	4.58	4.01	3.85	4.4
Furloughed‡	1.90	2.87	1.72	2.17	
Long-term sick	3.81	3.44	4.30	3.85	4.3
Other	0.32	0.57	1.15	0.69	2.2
Prefer not to say	0.63	0	0	0.20	
Highest level of education					
Primary	0.32	0.86	1.15	0.79	
Secondary (GCSE/ O-level)	22.22	24.64	20.92	22.61	
Further education (A-level)	25.40	22.06	26.65	24.68	
Degree	46.35	49.00	49.28	48.27	
Other	5.71	3.44	1.72	3.55	
Prefer not to say	0	0	0.29	0.1	
Ethnicity					
White	86.98	86.25	88.54	87.27	
Asian/Asian British	6.35	6.59	5.73	6.22	
Black/African/black British	2.22	3.44	4.3	3.36	
Mixed	2.86	1.72	0.86	1.78	
Other	0.32	0.86	0	0.39	
Prefer not to say	1.27	1.15	0.57	0.99	
Parent or guardian					
Yes	31.11	26.36	24.93	27.34	
No	67.94	72.78	73.64	71.57	

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Table 2. Continued

Characteristic	Mild n = 315	Moderate n = 349	Severe n = 349	Full sample N = 1013	UK general population*
	%	%	%	%	%
Prefer not to say	0.95	0.86	1.43	1.09	
Home ownership					
Own home outright/mortgage	71.11	64.76	70.49	68.71	
Rent from a local authority	10.79	12.89	11.17	11.65	
Rent from the private sector	15.24	19.2	14.61	16.39	
Other	1.59	2.87	3.44	2.67	
Prefer not to say	1.27	0.29	0.29	0.59	
Annual household income					
£0-£5199	0.32	2.29	3.72	2.17	
£5200-£10 399	4.44	4.87	4.58	4.64	
£10 400-£15 599	6.98	12.32	9.46	9.67	
£15 600-£20 799	8.57	11.46	7.74	9.28	
£20 800-£25 999	10.48	9.17	11.17	10.27	
£26 000-£31 199	12.70	8.60	11.17	10.76	
£31 200-£36 399	6.67	7.16	5.44	6.42	
£36 400-£51 999	22.22	17.19	21.49	20.24	
£52 000+	21.90	19.77	20.06	20.53	
Prefer not to say	5.71	7.16	5.16	6.02	
General health					
Excellent	16.51	15.47	14.33	15.4	
Very good	29.21	31.23	29.8	30.11	
Good	31.11	28.37	36.1	31.89	
Fair	19.37	21.49	15.76	18.85	
Poor	3.81	3.44	4.01	3.75	
Long-term health condition (≥ 12 months)					
No	58.73	56.73	56.45	57.26	
Yes	39.68	42.41	42.69	41.66	
Prefer not to say	1.59	0.86	0.86	1.09	
Problems walking about					
No problems	71.75	71.63	71.92	71.77	
Slight problems	17.14	16.62	17.77	17.18	
Moderate problems	5.4	8.02	6.59	6.71	
Severe problems	5.08	2.58	3.15	3.55	
Unable to walk about	0.63	1.15	0.57	0.79	
Vision					
No problems	70.48	69.34	69.63	69.79	
Slight problems	20.63	23.21	25.21	23.1	
Moderate problems	7.62	4.3	4.58	5.43	
Severe problems	0.63	2.29	0.57	1.18	
Extreme problems	0.63	0.86	0	0.49	
Experienced a PSI					
Yes	17.14	16.05	18.62	17.28	
No	81.59	80.8	77.94	80.06	
Prefer not to say	1.27	3.15	3.44	2.67	

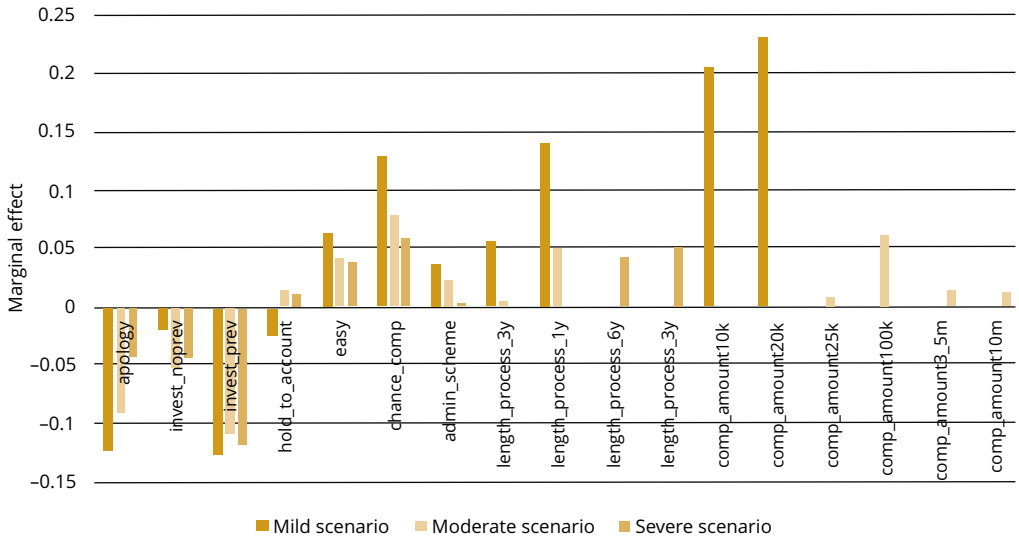
GCSE indicates General Certificate of Secondary Education; PSI, patient safety incident.
*Statistics for England in the Census 2011. The census includes persons aged 16 years and older whereas this study only surveys persons aged 18 years and older.
†Age distribution is here reported as the percent of all adults aged 18 years and older.
‡The survey was conducted in July and August 2020 when a furlough scheme was in operation in the United Kingdom, where because of the COVID-19 pandemic some employees were placed on temporary leave and received 80% of their wages paid by the UK government.

Table 3. Modeled results and marginal effects of the choice to make a claim for compensation using the logit model and the predicted probability of choosing to make a claim in the baseline case

Variable	Regression coefficients			Marginal effects		
	Mild scenario	Moderate scenario	Severe scenario	Mild scenario	Moderate scenario	Severe scenario
apology	−0.544*	−0.437*	−0.235*	−0.124*	−0.0916*	−0.0427*
	(0.0810)	(0.0831)	(0.0791)	(0.0191)	(0.0174)	(0.0143)
invest_noprev	−0.083	−0.262*	−0.241†	−0.0200	−0.0531*	−0.0439†
	(0.0894)	(0.0936)	(0.106)	(0.0217)	(0.0187)	(0.0194)
invest_prev	−0.556*	−0.514*	−0.602*	−0.127*	−0.109*	−0.119*
	(0.102)	(0.120)	(0.114)	(0.0234)	(0.0252)	(0.0236)
hold_to_account	−0.104	0.077	0.067	−0.0251	0.0144	0.0113
	(0.0665)	(0.0778)	(0.0844)	(0.0161)	(0.0147)	(0.0142)
easy	0.256*	0.235*	0.248*	0.0634*	0.0423*	0.0394*
	(0.0757)	(0.0741)	(0.0810)	(0.0187)	(0.0135)	(0.0133)
chance_comp	0.518*	0.474*	0.393*	0.129*	0.0797*	0.0596*
	(0.0815)	(0.0907)	(0.100)	(0.0200)	(0.0166)	(0.0165)
admin_scheme	0.149†	0.127	0.015	0.0368†	0.0234	0.00251
	(0.0690)	(0.0782)	(0.0868)	(0.0170)	(0.0145)	(0.0147)
length_process_3y	0.228†	0.029		0.0563†	0.00543	
	(0.0889)	(0.0829)		(0.0220)	(0.0157)	
length_process_1y	0.570*	0.282*		0.141*	0.0500*	
	(0.0931)	(0.0936)		(0.0228)	(0.0169)	
length_process_6y			0.263†			0.0416†
			(0.103)			(0.0172)
length_process_3y			0.335*			0.0517*
			(0.103)			(0.0169)
comp_amount10k	0.836*			0.205*		
	(0.104)			(0.0250)		
comp_amount20k	0.946*			0.231*		
	(0.112)			(0.0265)		
comp_amount25k		0.041			0.00768	
		(0.0935)			(0.0177)	
comp_amount100k		0.352*			0.0612*	
		(0.115)			(0.0201)	
comp_amount3_5m			0.080			0.0134
			(0.106)			(0.0178)
comp_amount10m			0.078			0.0130
			(0.115)			(0.0192)
Constant	−0.317†	1.063*	1.276*			
	(0.155)	(0.164)	(0.175)			
Observations	3150	3490	3490			
Log likelihood	−1958	−1808	-1661			
Rho-squared	0.0729	0.0344	0.0229			
Predicted probability of choosing to make a claim in the baseline case	0.421* (0.0378)	0.743* (0.0312)	0.782* (0.0298)			

Note. Baseline case (refer to Table 1): you did not receive an apology or explanation; a detailed investigation was not carried out and you were not satisfied that the NHS had taken appropriate measures to prevent this incident from happening again; you do not think the claim process will hold those responsible for the incident to account; making a claim is complicated and a hassle; you think it will take 5 years (mild and moderate scenarios)/10 year (severe scenario) to receive a decision; there is a low chance you will get compensation; you think the compensation would be £1000 (mild scenario)/£10k (moderate scenario)/£1m (severe scenario). Robust standard errors reported in parentheses.
k indicates thousand; NHS, national healthcare system.
*$P < .01$.
†$P < .05$.

Figure 3. Marginal effects of the choice to make a claim for compensation using the logit model (the difference in the probability of choosing to make a claim when one attribute is changed from its reference level).



are presented in Supplemental Materials (Appendix Table A4 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020).

The sign of the coefficients is as expected across all of the models for all 3 scenarios, where a positive (negative) sign indicates that the variable increases (decreases) the likelihood of choosing to make a claim in comparison with the reference level for that attribute.

The probability of choosing to make a claim in the baseline case (where all attributes are set to their reference level) is 42.1%, 74.3%, and 78.2% across the mild, moderate, and severe scenarios, respectively (Table 3). The baseline cases do differ across the scenarios, given that the compensation amount differs across each scenario and the time taken to reach a decision about the claim is larger for the severe scenario in comparison with the mild and moderate scenarios.

The marginal effects, which measure the change in the probability of choosing to make a claim when a single attribute is changed from its reference level, are reported in Table 3. They are also displayed graphically in Figure 3 to highlight the relative importance of the different attributes and how this relative importance differs across the 3 scenarios. For example, receiving an apology reduces the baseline case probability of choosing to make a claim by 12.4 percentage points (p.p.), 9.16 p.p., and 4.27 p.p. in the mild, moderate, and severe scenarios, respectively.

The marginal effects indicate:

- Receiving an appropriate apology and explanation from those responsible for the incident significantly reduces the probability of choosing to make a claim. The size of the impact is larger for the mild scenario, followed by the moderate scenario and is smallest for the severe scenario.
- Where a detailed investigation was conducted but the participant was not satisfied that the NHS had taken appropriate measures to prevent this incident from happening again, this significantly reduces the probability of choosing to make a claim for the moderate and severe scenarios (although not for the mild scenario).
- Where a detailed investigation was conducted and they were satisfied that the NHS had taken appropriate measures to prevent this incident from happening again, this significantly reduces the probability of choosing to make a claim. The size of the impact is largest for the mild scenario, although the size is similar across all scenarios.
- Thinking that the claim process will hold those responsible for the incident to account does not significantly affect the probability of choosing to make a claim.
- Where the claim process is easy and straightforward, the probability of choosing to make a claim is significantly increased. The impact is larger for the mild scenario, followed by the moderate scenario, and is smallest for the severe scenario.
- Thinking there is a high chance of getting compensation significantly increases the probability of choosing to make a claim. The size of the impact is larger for the mild scenario, followed by the moderate scenario, and is smallest for the severe scenario.
- Where the claim is made by completing an application to a nonlegal government compensation scheme (in comparison with taking legal action against the NHS), there is a small but significant increase in the probability of making a claim for the mild scenario (although not for the moderate or severe scenarios).
- The probability of choosing to make a claim significantly increases as the anticipated number of years taken to reach a decision on the claim reduces (with the exception of reducing years from 5 to 3 for the moderate scenario).
- For the mild scenario, the probability of choosing to make a claim significantly increases as the expected compensation amount increases. For the moderate scenario, the probability of choosing to make a claim significantly increases for the highest compensation amount only (£100 000). For the severe scenario, higher expected compensation amounts do not significantly affect the probability of choosing to make a claim.

Preference heterogeneity was explored by including interaction effects for all of the attributes for the subsample of participants who have previously experienced a PSI (Appendix Table A5 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2022.01.020). Some variables are significant,

although this differs across the scenarios and there is no consistent pattern.

Discussion

This study has presented the results of an online DCE survey that elicited stated preferences from members of the UK general population to indicate the relative importance of different factors on the choice to make a claim for compensation. The factors that were included in the DCE describe the actions of the NHS after the incident and characteristics of the claims process. The most important study strengths are that a representative sample of the UK general population for age and gender was achieved and, furthermore, that the choice of factors was informed by both the existing literature and policy makers, and the factors were worded using input from members of the general population. This process was undertaken to ensure the factors were appropriate and relevant while being clear and understandable by the target survey sample. In this instance, recently undertaken and highly relevant published qualitative research[5] was used to inform attribute selection rather than undertaking qualitative research on the same topic bespoke for this study, because this is an ethical, time-effective, and cost-effective approach that ensures that the views of people who have experienced a PSI are considered. The DCE survey was soft launched using a small pilot sample, which indicated no issues, before full data collection. The final data were modeled using a logistic regression and marginal effects were used to indicate the impact on the probability of choosing to make a claim for each of the factors and to assess whether this impact differed across the severity of the PSI.

Overall, the results indicate that providing an appropriate apology and explanation, conducting a detailed investigation, and taking appropriate measures to prevent the incident from happening again significantly reduce the probability of choosing to make a claim. This is in accordance with a US study finding that the introduction of a program that included apology, explanation, and a commitment to learn and improve (among a series of other measures) led to a fall in claims and lawsuits.[17] Characteristics of the claims process of being easy and straightforward, having a higher chance of compensation, and a shorter length of time until a decision about the claim is reached significantly increase the probability of choosing to make a claim. The results indicate that the expected compensation amount affects the probability of choosing to make a claim for the mild PSI but not for the severe PSI. Overall, the probability of choosing to make a claim is highest for more severe PSIs, and the probability of choosing to make a claim is less affected by the actions of the NHS after the incident or by characteristics of the claims process. The probability of choosing to make a claim is lowest for the mild PSI, and the results indicate that the probability of choosing to make a claim can be affected by a relatively larger amount by changing the actions of the NHS after the incident and characteristics of the claims process. Overall, this suggests that the actions of the NHS after a PSI and the characteristics of the claims process will have a larger impact on the probability of choosing to make a claim for milder PSIs and that for more severe PSIs there is both a larger probability of choosing to make a claim and this choice is less influenced by the actions of the NHS after a PSI and the characteristics of the claims process.

Although the results differ for the mild scenario in comparison with the moderate and severe scenarios, it should also be noted that the sample sociodemographic characteristics also differ for the mild sample in comparison with the moderate and severe scenario samples. In the mild scenario sample, there is a larger proportion of females, fewer individuals with a degree, and fewer individuals who are parents or guardians. Attitudes toward the NHS do not differ for the mild scenario sample in comparison with the other samples, providing no evidence to suggest that the differences are due to differences in underlying attitudes toward the NHS. Greater exploration of preference heterogeneity (beyond experience of a PSI as already reported) may be informative, but was not undertaken because of the limited sample size for each of the 3 scenarios that does not enable us to fully explore observed preference heterogeneity across a range of different characteristics.

The expected compensation amount has a different impact on the probability of choosing to make a claim across the 3 scenarios, where larger amounts significantly increase the probability of choosing to make a claim for the mild scenario and for the largest compensation amount for the moderate scenario. The compensation amount of £25 000 did not increase the probability of choosing to make a claim over the reference level of £10 000 in the moderate scenario. Although the lowest compensation levels were similar for the mild and moderate scenarios, the impact on the probability of choosing to make a claim was different, suggesting that the amounts are perceived differently across the scenarios. The very large compensation amounts of £3.5 million (m) and £10m in the severe scenario did not increase the probability of choosing to make a claim over the reference level of £1m, and this may be because they are all considered large, "life-changing" amounts such that there is little perceived difference between £1m and £10m.

Interpretation of the survey results should take into consideration that the survey makes no reference to whether participants are eligible to make a claim, because the DCE cannot ask participants to make a claim where eligibility or ineligibility is included as an attribute. This means that participants will have assumed they are eligible to make a claim, but this does not reflect reality where eligibility to make a claim is not determined by the participant themselves but their particular PSI. The survey also does not include the role of the legal representative in the legal scheme, where there may be a principal-agent problem (where the lawyer may not act in the claimant's best interest).

The survey results could be used to target policy to effectively manage healthcare provider and patient relations after a PSI; for example, it is shown that it is important that after a PSI the healthcare provider gives an appropriate apology and explanation, conducts a detailed investigation, and takes appropriate measures to prevent the incident from happening again. The results could also be used to indicate the number of claims and budgetary impact for the implementation of different appropriate compensation schemes (and should not be used, eg, to design the scheme to increase barriers to making claims).

The study identified that a large proportion of respondents would (ever) choose to make a claim for compensation when asked explicitly regardless of the scenario (64.5%, 69.1%, and 76.8% for the mild, moderate, and severe scenarios respectively), and within the DCE tasks, the probability of choosing to make a claim is also large for the baseline case (see Table 3) (42.1%, 74.3%, and 78.2% for the mild, moderate, and severe scenarios, respectively). These proportions are much larger than identified in the literature at 10.5% in 2001 and 11% in 2013 of participants who had experienced harm.[4] This may have occurred for many reasons, including that our survey elicits stated preferences whereas the other study[4] identified revealed preferences. In addition, the characteristics of the incident including the impact of the harm experienced, what happened after the incident, and how you feel about making a claim may differ for the hypothetical scenarios

included in the survey and the actual incidents experienced by members of the general population. In addition, the survey includes a (hypothetical) nonlegal government compensation scheme and the (actual) legal scheme, whereas surveys of actual decisions only include the legal scheme, where some of the decision around the choice to make a claim may have also been affected by eligibility and size and likelihood of the expected compensation perceived by a lawyer. Finally, in the DCE, the tasks contain levels for all attributes whereas, in the case of revealed preferences, some of these levels may have been unknown.

It should also be noted that the proportion of participants stating they had experienced a PSI (17.28%) is much larger than observed in other surveys (this was 4.8% in 2001 and 2.5% in 2013[4]). This could be due to differences in question wording, and there may also be a selection bias of people answering the survey because those who have experienced a PSI may have been more likely to complete the survey.

Our main design choices—namely to have a single profile, scenarios to accompany the profile, and randomization to the different scenarios—were undertaken to develop a bespoke solution to a unique research question. To the best of our knowledge, this is the first DCE or preference elicitation study to have examined such a research question, necessitating an innovative approach that differs from more conventional DCE studies. The inclusion of multiple scenarios enabled us to determine the impact of severity of the PSI; separating the scenarios from the DCE attributes enabled us to have more attributes in addition to the aspects in the scenarios; and having a single profile with a choice of "make/not make a claim" allowed us to identify the probability of choosing to make a claim. Nevertheless, that is not to say that the study could not be improved, and like any novel approach, refinements can be made when the method is repeated in future research, such as including a larger sample size to allow greater assessment of preference heterogeneity and a larger number of different compensation amounts.

One major limitation of the project is that the data collection was undertaken during the COVID-19 pandemic, the biggest public health crisis in living memory. Attitudes toward the NHS and around making a claim of clinical negligence against the NHS may have been affected by this situation, and any such changes may endure. It is not clear whether this would affect the relative importance of the factors that change the likelihood of making a claim for compensation after a PSI. Although it was not possible to remove consideration of the pandemic from participants' responses to the survey, the framing of the DCE survey did not include mention of COVID-19 or any health symptoms of COVID-19. The survey was undertaken online and it is not expected that this online mode of administration will have affected on the results, given that online surveys have been commonly used in recent years and it is expected online surveys will become increasingly popular in the years during and after the COVID-19 pandemic.

It is possible that participants undertaking the survey differed across their unmeasurable characteristics to those who typically complete online surveys or even those who would complete interviews on similar topics in their own home. During the pandemic, all UK residents were encouraged to stay at home, and people's availability and willingness to complete online surveys may have been positively affected by this particularly in the area of health. Nevertheless, given that recruitment was undertaken by a market research agency using an existing panel of people who are willing to answer online surveys, the impact of this may have been minimized because only people who were already signed to up to the panel would have been requested to participate in the survey. The recruitment of the sample using an existing online panel faces the criticism that the sample will not include the computer illiterate or those with no internet access, although would include those that are shielding because of COVID-19, which would have been missed using other modes of administration.

Another potential limitation is the sample size, because although we have $>$ 1000 participants in total, the sample size for the each of the 3 scenarios of the DCE is between 315 and 349 participants. The sample size was sufficient to enable the generation of reliable modeled estimates, but the subsample of participants who reported previously experiencing a PSI in real life is small (n = 54 to n = 65) and too low to be able to generate reliable modeled estimates for the subsamples.

There are both advantages and disadvantages in the selection of the general population sample whose preferences would not be affected by any previous experience of PSIs. This study indicates the relative importance of different factors on the choice to make a claim for compensation after a PSI using a sample who reflect users of the healthcare system who could experience a future PSI and a minority of participants who have experienced a PSI. It is recommended that future research consider DCE questions similar to these in a sample of people who have experienced a PSI.

Supplemental Material

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REFERENCES

1. Sari AB, Sheldon TA, Cracknell A, Turnbull A. Sensitivity of routine system for reporting patient safety incidents in an NHS hospital: retrospective patient case note review. *BMJ*. 2007;334(7584):79.
2. Report a patient safety incident. NHS England. https://www.england.nhs.uk/patient-safety/report-patient-safety-incident/. Accessed March 4, 2021.
3. Fenn P. Counting the cost of medical negligence. *BMJ*. 2002;325(7358):233–234.
4. Gray AM, Fenn P, Rickman N, Vencappa D. Changing experience of adverse medical events in the National Health Service: comparison of two population surveys in 2001 and 2013. *Soc Sci Med*. 2017;195:83–89.
5. Behavioural Insights Team. Behavioural insights into patient motivation to make a claim for clinical negligence. NHS Resolution. https://resolution.nhs.uk/resources/behavioural-insights-into-patient-motivation-to-make-a-claim-for-clinical-negligence/. Accessed March 4, 2021.
6. Soekhai V, de Bekker-Grob EW, Ellis AR, Vass CM. Discrete choice experiments in health economics: past, present and future. *Pharmacoeconomics*. 2019;37(2):201–226.
7. Mulhern B, Norman R, Street D, Viney R. One method, many methodological choices: a structured review of discrete-choice experiments for health state valuation. *Pharmacoeconomics*. 2019;37(1):29–43.
8. Department of Health UK. *Making Amends: a consultation paper setting out proposals for reforming the approach to clinical negligence in the NHS*. London: DoH; 2003.
9. Fenn P, Gray A, Rickman N, Vencappa D. Funding clinical negligence cases Access to justice at reasonable cost? Nuffield Foundation. http://www.nuffieldfoundation.org/sites/default/files/files/Funding_clinical_negligence_cases_Fenn_v_FINAL.pdf. Accessed April 1, 2020.
10. Huycke LI, Huycke MM. Characteristics of potential plaintiffs in malpractice litigation. *Ann Intern Med*. 1994;120(9):792–798.
11. Managing the costs of clinical negligence in trusts. National Audit Office. https://www.nao.org.uk/wp-content/uploads/2017/09/Managing-the-costs-of-clinical-negligence-in-trusts.pdf. Accessed April 1, 2020.
12. NRLS national patient safety incident reports. NHS Improvement. https://improvement.nhs.uk/documents/2543/NAPSIR_commentary_FINAL_data_to_December_2017.pdf. Accessed April 1, 2020.
13. Vincent C, Phillip A, Young M. Why do people sue doctors? A study of patients and relatives taking legal action. *Lancet*. 1994;343(8913):1609–1613.
14. Carlsson F, Martinsson P. Design techniques for stated preference methods in health economics. *Health Econ*. 2003;12(4):281–294.
15. Hole AR. DCREATE: Stata Module to Create Efficient Designs for Discrete Choice Experiments. Statistical Software Components, Boston College Department of Economics. https://econpapers.repec.org/software/bocbocode/s458059.htm. Accessed March 4, 2021.
16. British Social Attitudes. https://www.bsa.natcen.ac.uk/. Accessed April 1, 2020.
17. Lambert BL, Centomani NM, Smith KM, et al. The "Seven Pillars" response to patient safety incidents: effects on medical liability processes and outcomes. *Health Serv Res*. 2016;51(suppl 3):2491–2515.