Valuing quality in mental healthcare: A discrete choice experiment eliciting preferences from mental healthcare service users, mental healthcare professionals and the general population

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ABSTRACT

High and sustained healthcare quality is important worldwide, though health policy may prioritise the achievement of certain aspects of quality over others. This study determines the relative importance of different aspects of mental healthcare quality to different stakeholders by eliciting preferences in a UK sample using a discrete choice experiment (DCE). DCE attributes were generated using triangulation between policy documents and mental healthcare service user and mental healthcare professional views, whilst ensuring attributes were measurable using available data. Ten attributes were selected: waiting times; ease of access; person-centred care; co-ordinated approach; continuity; communication, capacity and resources; treated with dignity and respect; recovery focus; inappropriate discharge; quality of life (QoL). The DCE was conducted online (December 2018 to February 2019) with mental healthcare service users (n = 331), mental healthcare professionals (n = 510), and members of the general population (n = 1018). Respondents' choices were analysed using conditional logistic regression. Relative preferences for each attribute were generated using the marginal rate of substitution (MRS) with QoL as numeraire. Across all stakeholders, being treated with dignity and respect was of high importance. A coordinated approach was important across all stakeholders, whereas communication had higher relative importance for healthcare professionals and service users and ease of access had higher relative importance for the general population. This implies that policy could be affected by the choice of whose preferences (service users, healthcare professionals or general population) to use, since this impacts on the relative value and implied ranking of different aspects of mental healthcare quality.

1. Introduction

Evaluating healthcare quality is important for consumers, healthcare providers, and society. Good mental health is a significant contributor to achieving global development goals (World Health Organisation,) and therefore access to quality and affordable mental healthcare is an important policy area for health decision-makers worldwide. There has been a global rise in the prevalence of mental health conditions during the ongoing global coronavirus pandemic, though the prevalence of mental health problems varies widely across countries (Nochaiwong et al., 2021). A considerable challenge for health policy is to identify how "quality" should be assessed in mental healthcare, and which aspects of quality should be prioritised over others. Policymakers may emphasise the achievement against particular quality measures and targets, but these may not reflect what is important, or what is most important, to other stakeholders, including service users and healthcare professionals.

Economic evaluation using cost-effectiveness analysis is commonly used to inform priority setting in healthcare and healthcare resource allocation. Effectiveness, for example, of an intervention, is typically

measured using the incremental cost per Quality Adjusted Life Year (QALY). The QALY reflects both quantity and quality of life, multiplying life years by quality of life where this is measured on a 1-0 scale (which reflect preferences), where 1 is full health and 0 is dead. The QALY does not capture other aspects of healthcare beyond health or quality of life, and may be just one of many outcomes that may be important to consider for assessments of quality of different healthcare services. The multiple aspects of quality raises the issue of how to compare across different healthcare services or providers, since services may perform well in one aspect and poorly in others. One solution is to determine the relative importance of different aspects of quality, where this importance reflects a stakeholder's opinion, recognising that there are multiple stakeholders who may have different preferences around the relative importance of different aspects of quality.

When asking stakeholders to value different aspects of quality in mental healthcare, one challenge is which aspects ought to be included as relevant. Policy documents summarise what is important to policy makers, but this may not reflect what is important to healthcare professionals, service users, or the general population as future potential users (and funders of the healthcare system in a publicly funded system). The views of these stakeholders are important if services and providers are compared on the basis of these aspects of quality (i.e. what matters to them). Finally, in order to inform policy as well as service improvement, the aspects of quality must be measurable using data that is available across different services or providers.

There is currently no evidence on relative preferences by different stakeholders for different aspects of mental healthcare quality (Larsen et al., 2021), though there is a recent discrete choice experiment (DCE) study assessing quality indicators for psychiatric hospitals from a healthcare inspector viewpoint (van Dijk et al., 2020). This is despite the fact that the need for both priority setting (Mihalopoulos et al., 2013) and performance measurement (Baars et al., 2010) in mental healthcare services, are generally accepted.

The aim of this research was to elicit preferences to assess the relative value of different aspects of quality of mental healthcare across different stakeholders for mental healthcare: mental healthcare professionals; mental healthcare service users and the general population. The attributes of quality stakeholders' valued were sourced by triangulating UK policy documents, undertaking focus groups with service users and healthcare professionals, and available evaluative data in England. This is a novel approach that generates attributes of mental healthcare quality using the views of multiple stakeholders, and further elicits and compares the relative importance of these attributes across different stakeholders. The key contribution of this paper is that it is the first study to provide evidence on relative preferences by different stakeholders for different aspects of mental healthcare quality. If policymakers and healthcare planners were aware of patients' and other stakeholders' mental health-related preferences for different quality attributes, care could be made more effective, more responsive, and better aligned with individuals' preferences.

2. Methods

2.1. Preference elicitation technique

A DCE using pairwise comparisons was selected to elicit preferences since it allows different aspects of quality to be considered simultaneously. Online administration was selected as an appropriate mode for DCE data as it is commonly used (Soekhai et al., 2019), and enabled cost and time-effective data collection of a large number of participants across different populations and geographical locations.

2.2. Selection of attributes and levels

Attributes for the DCE were generated using a five-step process: 1) review of policy documents; 2) conduct of six focus groups; 3) analysis of

focus groups to generate themes and sub-themes; 4) examination of existing datasets collecting quality data for different healthcare providers; 5) feedback on attribute wording and appropriate refinement.

First, a review of policy documentation was undertaken (in October 2017), examining aspects of quality of mental healthcare from UK policy documents and available quality metrics in the UK policy domain, to inform a topic guide for qualitative investigation (NHS England, 2014; NHS England and NHS Improvement, 2016a, 2016b). Second, six focus groups were conducted, three focus groups involved mental healthcare service users (total n = 14, 4–5 per group) and three involved mental healthcare professionals (total n = 8, 2–3 per group), recruited via an NHS mental health trust in England (a Trust generally serves a specific geographical area). Focus group participants were opportunity sampled in response to email and poster advertisements at the NHS Trust. The focus groups were led using a semi-structured topic guide involving open-ended questions around what participants thought were important aspects of quality in mental healthcare. Prompts were used from the aspects of quality identified in the review of policy documents. Third, the focus groups were transcribed verbatim and analysed using framework analysis (Ritchie and Spencer, 1994) to classify the concepts raised into themes and sub-themes (Gale et al., 2013). Fourth, existing available administrative and other national datasets for different healthcare providers (NHS Trusts) in England were searched and examined to determine whether and how the themes and sub-themes identified in the focus groups could be meaningfully measured for different mental healthcare providers using existing available data. Potential aspects of quality were selected to form the attributes and severity levels for use in a DCE. Fifth, feedback on the wording of selected attributes was sought (and implemented) from people with experience of mental health

Table 1
DCE attributes.

Aspect of quality	Attribute	Levels	Coding in regression analysis
Waiting times	The time you wait to receive healthcare is appropriate for your needs	Yes, No	Waiting time = 1,0
Ease of access	The healthcare you receive is provided in your local area	Yes, No	Ease of access = 1,0
Person-centred care	You are involved as much as you want to be in agreeing what care you receive	Yes, No	Person centred care = 1,0
Co-ordinated approach	The person or people you see organise the care and services you need well	Yes, No	Coordinated approach = 1,0
Continuity	You are able to see the same person or people throughout your healthcare	Yes, No	Continuity = 1,0
Communication, capacity and resources	The person or people you see listen carefully to you and give you enough time to discuss your needs and treatment	Yes, No	Communication = 1,0
Treated as a person	You are treated with dignity and respect	Yes, No	Treated as a person = 1,0
Recovery focus	You are supported to do the things in your life that you want to do	Yes, No	Recovery focus = 1,0
Inappropriate discharge	You are not discharged before you are ready	Yes, No	Inappropriate discharge = 1,0
Quality of life	For your next year of life you will have:	20%, 50%, 80% quality of life	Quality of life = 0.2,0.5,0.8

problems and their carers, to enable refinement of the wording to ensure it was appropriate. This process generated ten attributes, summarised in Table 1.

2.3. DCE scenarios

The pairwise comparison DCE described two scenarios of mental healthcare, and respondents were asked 'Which do you think is best?'. An example DCE task is shown in Fig. 1. Text for each attribute was displayed and for each scenario green ticks and red crosses were used to indicate 'yes' or 'no' for each attribute for each scenario, respectively.

2.4. DCE design

A full factorial design would generate too many choice sets for inclusion in a survey. Profiles were selected using a D-optimality algorithm (Carlsson and Martinsson, 2003; Kuhfeld, 2005) in Stata and the true model specified in such a way as to allow for both interaction effects

that were deemed important by the research team and all main effects. The design algorithm selected profiles subject to the constraint that 5 of the 10 attributes were fixed for any choice set to make the choice tasks cognitively easier. In total the DCE design included 32 choice sets divided into 4 blocks of 8 pairs of profiles. Each respondent also completed an additional choice task selected to examine whether respondents correctly chose the dominant profile that was either the same or better than the other profile across all attributes.

2.5. The samples

The survey was administered to three separate populations in December 2018 to February 2019: general population; mental healthcare professionals; and mental healthcare service users. The UK general population sample was recruited using a market research agency via a panel of people signed up to answer online surveys, and participants were sampled to be representative of the UK adult population in terms of age (18 and over) and gender. Mental healthcare professionals included

Fig. 1. Example of DCE task (dominance question).

mental health service clinicians, allied health professionals or people responsible for secondary mental healthcare services, and were recruited via seventeen National Health Service (NHS) regional mental health trusts in England using emails, flyers and newsletters (targeted at staff). The mental healthcare service user sample was recruited using three methods: 1) via the same seventeen NHS regional trusts in England using emails, flyers and research nurses in clinics, newsletters and twitter tweets (targeted at service users); 2) twitter tweets and retweets from three charities (McPin Foundation, Sheffield Flourish, Mental Health Foundation); and 3) email to staff at the University of (*information redacted*), UK, who are signed up as willing to volunteer in research. Participants for the DCE service user sample were defined as: adults (age 18 and over) who are subscribed to mental health care charities; and/or adults who are accessing mental health services in a secondary setting; and/or adults with a (self-reported) mental health condition. The target sample size for each sample (n ≥ 300) was selected to ensure that each choice task was completed at least 20 times (Lancsar and Louviere, 2008) and a power calculation was also used to inform this decision (using recommendations from de Bekker-Grob et al. (2015)).

2.6. The survey

The survey was administered online on the SurveyEngine platform. Respondents read an information page and gave informed consent. First, respondents answered questions about their sociodemographic and health characteristics. Second, respondents read a short introduction explaining the DCE tasks, and completed one practice question (with a dominant choice) which involved a "feedback screen" that explained their choice and gave respondents the option to change their mind. Respondents then completed nine DCE questions, one of which was a dominant choice (different to the practice question). Finally, respondents answered questions about the difficulty to understand and answer the questions. Respondents were randomly allocated to different blocks, and the dominant choice and eight choice sets were randomly ordered for each respondent.

Members of the general population were thanked for their participation with a nominal amount of vouchers that can be accumulated and exchanged for goods in line with the usual amount offered by the market research agency. Mental healthcare service users were able to choose to enter a prize draw (for a £50 shopping voucher (approximately $70)). Mental healthcare professionals were thanked for participating but were not offered any incentive.

The DCE wording and presentation received feedback from FAST-R (Feasibility and Acceptability Support Team for Researchers), which seeks the review and input of people with experience of mental health problems and their carers, who have been specially trained to advise on research proposals and documentation.

The study was approved by NHS North East Newcastle and North Tyneside Research Ethics Committee. The reference number for the study is: 240,427.

2.7. Analysis of data

Sociodemographic and health characteristics for the samples were summarised and compared. Participant understanding of the survey was assessed using the proportion of participants choosing the dominant choice in the practice question and dominance question, and self-reported difficulty in answering the DCE questions. Health was assessed using generic EQ-5D-5L (cross-walked to EQ-5D-3L UK value set (van Hout et al., 2012)) and ReQoL-UI, a preference-based recovery-focussed quality of life measure for mental health service users (Keetharuth et al., 2021).

The DCE data was modelled using a conditional logit regression, based on a random utility theory (RUT) framework (Luce, 1959; McFadden, 1974) where the utility, U_{ij} that an individual i derives from choosing healthcare option j, is specified as:

$$U_{ij} = X'_{ij}\beta + \varepsilon_{ij} \quad (1)$$

where X_{ij} is a vector of design attributes, β is a vector of coefficients to be estimated and ε_{ij} is an unobservable error term, which is assumed to be an independently and identically distributed type 1 extreme value. All of the design attributes are dummy coded (variable definitions in Table 1) with the exception of quality of life that is treated as continuous. The assumption that the quality of life variable is linear and continuous was assessed by modelling this as a categorical variable and plotting the coefficients (Payne et al., 2011). Models were also estimated including interaction effects deemed important by the research team and as specified in the DCE design.

Model performance was assessed using the log-likelihood, Rho-squared, Akaike Information Criterion (AIC) and the Schwarz Bayesian Information Criterion (BIC) (Schwarz, 1978). Models are preferred with higher log likelihood, larger Rho-squared and lower AIC and BIC.

Preference heterogeneity was explored in two ways. First, by including interaction terms (health and sociodemographic characteristics with main effects) to determine whether the sociodemographic and health characteristics of respondents impact on their preferences using a pooled sample. Second, by estimating a latent class model on a sample pooled across all participants. To test for preference heterogeneity across subsamples a heteroscedastic conditional logit model, which allows for scale heterogeneity across the samples, was estimated, and coefficients compared to the standard models for the three samples using a log-likelihood test (see, for example, Vass et al. (2018)). The robustness of the results was examined by re-estimating models on sub-samples for respondents who may not have understood the DCE tasks by each excluding respondents who: did not correctly answer the practice question; did not correctly answer the dominance question; found DCE questions difficult to answer; found DCE questions difficult to understand.

2.8. Estimating the marginal rate of substitution

The marginal rate of substitution (MRS) was used to indicate the value of improvements in each attribute in terms of QALYs, by using quality of life as a common denominator (as the quality of life attribute is quality of life of the next year, coded as 0.2, 0.5 and 0.8 QALYs). The MRS is given by the ratio of the marginal utilities, e.g.:

$$MRS^{Continuity} = -MU_{Continuity}\bigg/MU_{Quality\ of\ life}$$

$$= -\frac{\partial U}{\partial Continuity}\bigg/\frac{\partial U}{\partial Quality\ of\ life} \quad (3)$$

where $MU_{Continuity}$ represents the increase in utility as a result of improved continuity of care and $MU_{Quality\ of\ life}$ represents the utility of an additional QALY.

3. Results

3.1. The data

In total 1,869 respondents completed the online survey: 1,018 members of the general population, 510 mental healthcare professionals, and 331 mental healthcare service users. All respondents completed all DCE questions and were included in the main analysis. The sociodemographic and health characteristics vary across the samples, particularly for gender, age, marital status, employment status, education, home ownership and income (see Table 2). Ethnicity is similar across the samples. Time taken on the survey differs across the three samples, with the general population sample being quickest (which may be a reflection that the sample were recruited from an existing panel who are accustomed to answering online surveys),

Table 2
Sample socio-demographic characteristics.

	General population	Mental healthcare professionals	Mental healthcare service users
	N = 1018	N = 510	N = 331
Male	47.84%	26.86%	38.67%
Age 18-44	42.63%	50.78%	57.40%
45-64	32.51%	43.53%	35.95%
65+	22.40%	1.18%	3.93%
Married/partner	58.64%	73.14%	43.81%
Employed	51.87%	100%	38.97%
Retired	24.85%	0%	6.65%
Long term sick	5.50%	–	26.59%
Have degree	51.67%	92.55%	53.17%
Education continued past minimum school age	76.03%	95.10%	81.57%
Own home outright or with a mortgage	64.83%	76.47%	42.60%
Household income			
Up to £5,199	5.01%	0%	7.25%
£5,200 and up to £10,399	7.17%	0%	9.67%
£10,400 and up to £15,599	9.82%	0.78%	12.08%
£15,600 and up to £20,799	11.89%	1.57%	9.37%
£20,800 and up to £25,999	11.79%	6.67%	8.76%
£26,000 and up to £31,199	9.43%	8.43%	7.25%
£31,200 and up to £36,399	8.15%	10.59%	3.63%
£36,400 and up to £51,999	13.75%	24.31%	6.34%
£52,000 and above	14.34%	38.43%	12.99%
Prefer not to say	8.64%	9.22%	22.66%
Ethnicity			
White	89.29%	88.24%	88.22%
Asian/Asian British	4.62%	4.51%	5.14%
Black/African/Caribbean/Black British	2.55%	4.12%	3.02%
Mixed/Multiple ethnic groups	1.77%	1.37%	1.81%
Other ethnic group	0.88%	0.78%	0.91%
Prefer not to say	0.88%	0.98%	0.91%
Consider yourself to have a mental health condition?			
No	74.36%	79.02%	6.95%
Yes	24.36%	18.63%	89.73%
Prefer not to say	1.28%	2.35%	3.32%
If yes, how long have you had this condition?			
Less than 5 years	23.39%	25.26%	15.49%
5–9 years	21.77%	16.84%	16.16%
10–19 years	22.98%	28.42%	26.94%
20–29 years	10.89%	15.79%	19.87%
30 years or more	16.94%	11.58%	20.54%
Prefer not to say	4.03%	2.11%	1.01%
If yes, have you ever accessed services for your mental health condition?			
Yes	82.66%	83.16%	97.64%
No	16.94%	16.84%	1.68%
Prefer not to say	0.49%	0%	0.67%
In general, would you say your health is:			
Excellent	10.41%	11.96%	3.93%
Very good	32.91%	40.39%	14.5%
Good	30.26%	35.88%	27.79%
Fair	18.66%	10.2%	33.84%
Poor	7.76%	1.57%	19.94%

Table 2 (*continued*)

	General population	Mental healthcare professionals	Mental healthcare service users
	N = 1018	N = 510	N = 331
ReQoL-UI, mean (s.d.)	0.845 (0.174)	0.907 (0.097)	0.747 (0.207)
EQ-5D-5L, mean (s.d.)	0.740 (0.269)	0.827 (0.147)	0.593 (0.270)
Selected dominant choice in practice question	93.12%	98.82%	92.75%
Selected dominant choice in dominance question	92.14%	96.86%	95.17%
DCE difficulty to answer			
Very difficult to answer	3.74%	12.55%	14.55%
Quite difficult to answer	22.32%	48.63%	35.15%
Neither difficult nor easy to answer	20.85%	18.24%	22.12%
Fairly easy to answer	31.76%	16.47%	21.21%
Very easy to answer	21.34%	4.12%	6.97%
DCE difficulty to understand			
Very difficult to understand	1.87%	8.3%	13.37%
Quite difficult to understand	14.29%	35.77%	27.05%
Neither difficult nor easy to understand	19.90%	23.72%	18.54%
Fairly easy to understand	36.45%	25.49%	28.88%
Very easy to understand	27.49%	6.72%	12.16%
Median time taken on survey (seconds)	556	700	827
IQR for time taken on survey (seconds)	404–762	539–920	566–1252

followed by mental healthcare professionals and service users (see Supplementary Materials).

Ninety percent of the service users consider themselves to have a mental health condition, in comparison to 24% and 19%, respectively, of the general population and healthcare professional samples. Of these respondents, 19% of the general population and healthcare professionals have accessed services for their mental health condition. A small proportion of the service user sample state that they do not have a mental health condition (7%), and of those who do, 2% state they have not accessed services for their mental health condition. A larger proportion of the service user sample is in fair or poor health (54%) in comparison to the general population (26%) and healthcare professionals samples (12%). Mean utilities generated using EQ-5D-5L and ReQoL-UI also indicate that the healthcare professionals have higher utilities than the general population, and service users have the lowest utilities.

3.2. Understanding

The majority of respondents correctly chose the dominant choice in the practice question and the dominance question randomly ordered in the main DCE tasks, though the proportion was highest for the healthcare professionals (99% and 97%) and similar across the general population and service user samples (varying from 92% to 95%). Contrary to this, a large proportion of respondents stated that the DCE tasks were quite or very difficult to understand and to answer and this was largest for the healthcare professionals' sample (44% and 61% respectively, in comparison to 16% and 26% for the general population sample and 40% and 50% for the service user sample).

3.3. Modelling DCE data

Across all models (see Table 3), all main effects variables had a positive and significant coefficient (with the exception of waiting time in

Table 3
Models for general population, mental healthcare professionals and mental healthcare service users (all responses).

	Standard model			Including interaction effects		
	General population	Mental healthcare professionals	Mental healthcare service users	General population	Mental healthcare professionals	Mental healthcare service users
Waiting time	0.179***	0.196***	0.161**	0.165***	0.155*	0.058
	(0.000)	(0.002)	(0.019)	(0.003)	(0.064)	(0.512)
Ease of access	0.516***	0.387***	0.414***	0.495***	0.328***	0.338***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Person centred care	0.260***	0.417***	0.199***	0.431***	0.656***	0.444***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)
Coordinated approach	0.591***	0.677***	0.439***	0.588***	0.657***	0.428***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Continuity	0.349***	0.373***	0.383***	0.318***	0.209**	0.403***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.020)	(0.000)
Communication	0.386***	0.621***	0.510***	0.268***	0.638***	0.317***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.009)
Treated as a person	0.508***	0.746***	0.679***	0.400***	0.632***	0.724***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Recovery focus	0.299***	0.523***	0.250***	0.271***	0.503***	0.228***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inappropriate discharge	0.401***	0.479***	0.392***	0.413***	0.492***	0.448***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Quality of life	2.882***	2.964***	2.110***	2.862***	2.919***	2.090***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Communication x Person centred care				−0.154**	−0.373***	−0.134
				(0.012)	(0.000)	(0.196)
Communication x Treated as a person				0.360***	0.224*	0.346**
				(0.000)	(0.087)	(0.022)
Communication x Continuity				0.034	0.131	0.159
				(0.598)	(0.168)	(0.129)
Person centred care x Treated as a person				−0.149**	−0.079	−0.252**
				(0.021)	(0.401)	(0.018)
Waitng time x Ease of access				0.009	0.056	0.134
				(0.872)	(0.519)	(0.165)
Continuity x Treated as a person				0.011	0.094	−0.165
				(0.864)	(0.320)	(0.126)
Observations	16,288	8,160	5,296	16,288	8,160	5,296
Log likelihood	−4107	−1979	−1443	−4094	−1968	−1433
Rho-squared	0.272	0.300	0.214	0.275	0.304	0.219
AIC	8234.824	3977.525	2906.414	8219.785	3967.872	2897.79
BIC	8304.875	4040.663	2965.229	8331.866	4068.894	2991.895

Notes: For coefficients p values are in parentheses. For the marginal rate of substitution standard errors are in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

the model including interaction effects for the service user sample), indicating that respondents preferred profiles meeting each aspect of quality and with higher quality of life. Only one interaction term, *communication x treated as a person*, was significant across all samples, where it was positive, indicating a larger preference for profiles with both of these aspects of quality. Models assessing the linearity of the quality of life variable confirmed that it was appropriate to treat quality of life as a continuous variable.

3.3.1. Comparison of model performance

AIC, log likelihood and Rho-squared select the models including interaction effects. However, few interaction effects were significant, and only one or none of six interaction coefficients were significant at the 1% level across the samples. BIC, which penalises additional variables more than AIC, selects the standard models with no interaction effects. For this reason, we prefer the standard models.

3.4. Robustness of results and preference heterogeneity

The consequences of excluding the following were examined: respondents who answered the practice question incorrectly; respondents who answered the dominance question incorrectly; respondents who found DCE questions difficult to answer; respondents who found DCE questions difficult to understand (see Supplementary Materials). The exclusions impacted the magnitude of coefficients and marginal rates of substitution, but not their significance (with the exception that the only

insignificant coefficient became significant) or general pattern.

The null hypothesis of preference homogeneity across samples was rejected at the 1% significance level using the formal test of differences in preferences across the samples. Exploration of preference heterogeneity using models with interaction effects indicated that preferences were significantly different for some aspects of quality across respondents with some mental health characteristics and sociodemographic characteristics (particularly being male, high income, home owner) (see Supplementary Materials). Exploration of preference heterogeneity using a latent class model across the pooled sample indicated a 3-class model with: one class with strong preference for the quality of life attribute (which leads to small MRS), one class with similar preferences to the standard models though with a larger preference for the waiting time attribute than observed in the standard models; a final smaller class with many insignificant coefficients including the quality of life attribute (see Supplementary Materials). The probability of class membership differs across general population, service users and healthcare professionals.

3.5. Marginal rates of substitution

The MRS (Table 4) was calculated for each sample using the modelled results estimated using all respondents in each sample for the standard model (see Table 3 and Fig. 2). The size and relative ordering of the MRS across the aspects of quality differ across the samples, and in general MRS are lower for the general population. Across all samples

Table 4
Marginal rates of substitution (all responses, generated using the standard model).

	Standard model		
	General population	Mental healthcare professionals	Mental healthcare service users
Waiting time	0.062	0.066	0.076
	(0.015)	(0.021)	(0.033)
Ease of access	0.179	0.131	0.196
	(0.014)	(0.019)	(0.031)
Person centred care	0.090	0.141	0.094
	(0.014)	(0.019)	(0.031)
Coordinated approach	0.205	0.228	0.208
	(0.012)	(0.017)	(0.028)
Continuity	0.121	0.126	0.181
	(0.014)	(0.019)	(0.031)
Communication	0.134	0.210	0.242
	(0.013)	(0.019)	(0.031)
Treated as a person	0.176	0.252	0.322
	(0.012)	(0.018)	(0.031)
Recovery focus	0.104	0.176	0.118
	(0.013)	(0.018)	(0.029)
Inappropriate discharge	0.139	0.162	0.186
	(0.014)	(0.020)	(0.032)

Notes: Standard errors calculated using the delta method are in parentheses.

"being treated as a person (with dignity and respect)" was important, and was the most important aspect for mental healthcare professionals (0.252) and mental healthcare service users (0.322) (and 0.176 for the general population). A "coordinated approach (person or people you see organise the care and services you need well)" was important across all samples (0.228 for professionals and 0.208 for service users), and was the most important aspect for the general population (0.205). "Communication (being listened to carefully and given enough time to discuss your needs and treatment)" was important for healthcare professionals (0.210) and service users (0.242) but less important for the general population (0.134). The general population placed larger relative importance on "ease of access (whether healthcare you receive is provided in your local area)" (0.179) than the other two samples (0.131 for professionals and 0.196 for service users). Across all samples the least important aspect was "waiting time (whether the time you wait to receive healthcare is appropriate for your needs)" (0.062–0.076).

4. Discussion

This study assessed the relative value of different aspects of quality of mental healthcare across different stakeholders: mental healthcare professionals; mental healthcare service users; and the general population. The relative value and ordering of the aspects of quality of mental healthcare differ across the samples representing these stakeholders. The health and sociodemographic profiles of the samples also differ, meaning that some of these differences are likely due to differences in the underlying sociodemographic and health profiles of the different stakeholders. Differences in sample composition are inherent in these groups, for example all healthcare professionals are necessarily employed, educated and of working age, and therefore we argue against adjusting for these characteristics in the main DCE analyses. The modelled results can be applied to new and existing data to generate health benefit for different mental healthcare providers (Anonymous, in submission).

The results indicate that waiting time was the least important aspect of mental healthcare across all samples, despite being a key target in the UK National Healthcare Service (NHS England, 2014). This may be surprising, since waiting times are often raised as an important concern in many countries worldwide, though a recent OECD report also did not find that waiting times were an important concern in mental healthcare
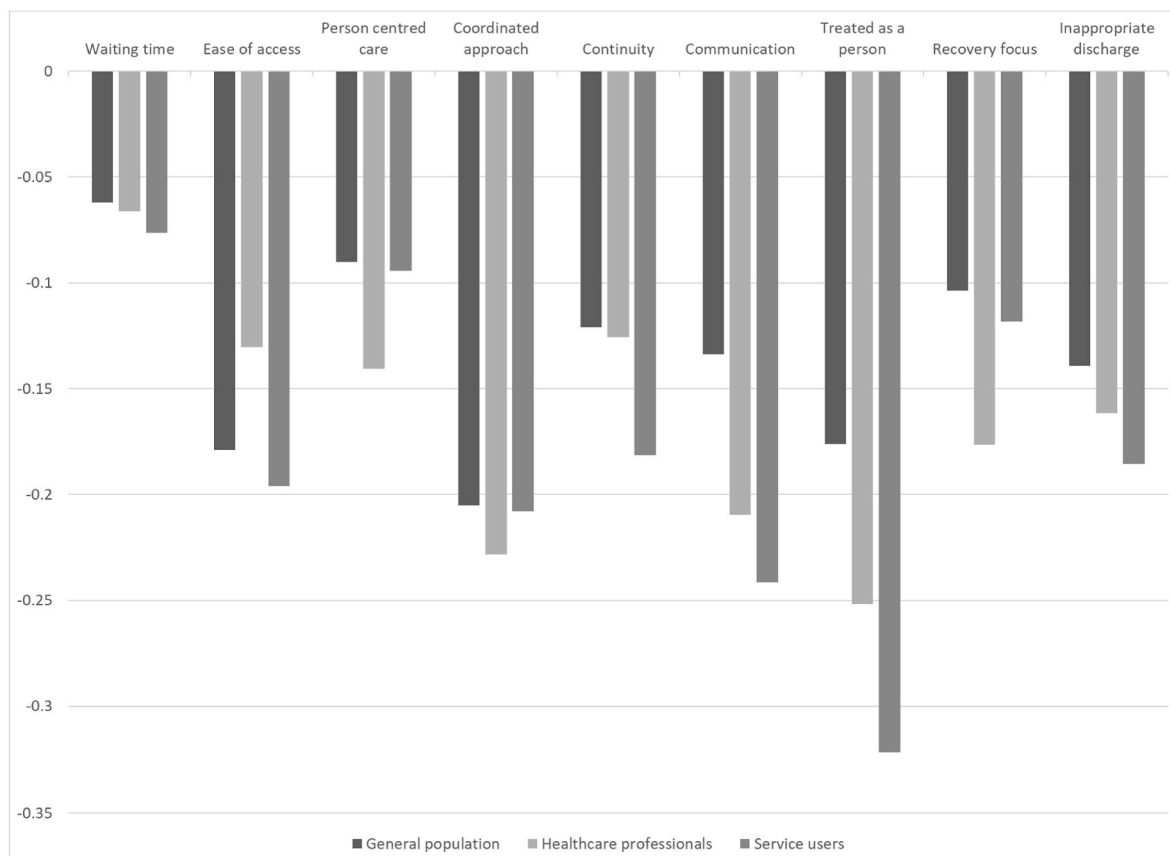

Fig. 2. Comparison of marginal rate of substitution across population (generated using the standard model).

in the UK (OECD, 2020). Waiting time had more importance for one class in the latent class models than the standard models, suggesting its importance for some survey participants. For mental healthcare professionals and mental healthcare service users this class had the highest probability of membership across the three classes.

The most important aspects across all samples were: being treated with dignity and respect (treated as a person); the person or people you see organise the care and services you need well (coordination); being listened to carefully and given enough time to discuss your needs and treatment (communication); and healthcare you receive is provided in your local area (ease of access). Being treated with dignity and respect was the most important aspect for healthcare professionals and service users, whereas for the general population the most important aspect was whether the person or people you see organise the care and services you need well.

Whilst there is general agreement across the aspects of quality that were more important and least important, there are differences in both the ordering and size of MRS across each of the samples. This is in agreement with a recent systematic review that found that the majority of DCE studies assessing patient and healthcare professional preferences (28 of 38 papers) had evidence of mixed concordance and discordance in preferences (Harrison et al., 2017). The choice of whose preferences – mental healthcare service users, mental healthcare professionals or the general population – impacts on the relative value and implied ranking of the different aspects of mental healthcare quality. This raises the issue of whose preferences should be selected (since only one set of preferences can be used in main analyses) if these results were used to inform policy. Service user preferences can be argued for on the grounds that mental healthcare services should meet the wants of those accessing and requiring the services, and further that service users have a good understanding of the services provided. Mental healthcare professional preferences can be argued for on the grounds that they understand the services, but can also judge what is important for service user requirements (even if this is contrary to their wants). General population preferences can be argued for on the grounds that they are voters (and in a publicly funded healthcare system taxpayers) who determine (and fund) the healthcare system, and are ultimately potential future users of the service, but may have no experience and little understanding of mental healthcare services. The selection of whose preferences is a normative question, and in the absence of guidance to inform the decision, analyses could be calculated separately using the preferences for each sample and compared.

The results of the DCE have been used to develop composite performance indicators of mental healthcare providers, by providing a value for the relative weighting of mental healthcare quality attributes (paper being submitted to SSM, information redacted). For that purpose, analyses were conducted separately using general population and service user preferences since important arguments can be made for either group, and the differences in results are compared. Mental healthcare professional preferences in that instance were not used, on the basis that performance indicators were compared from the service user or general population perspective rather than from a professional perspective. However, the selection of whose preferences are used, is expected to differ depending on the research question and specific application of the weights.

One strength of this study is that the aspects of quality of mental healthcare included in the DCE survey were identified by triangulating policy documents, service user and healthcare professional views and existing datasets measuring quality of healthcare. This approach ensures that the aspects included reflect those that are important to a range of different stakeholders in mental healthcare.

A few study limitations were identified. First is the assumption that the healthcare is affordable for participants. Since data collection was undertaken in the UK, where mental healthcare is publicly provided, the issue of affordability was not explored, but in other countries affordability of mental healthcare is an issue (see, for example, affordability in

the US (Osborn et al., 2016) and Indonesia (Tristiana et al., 2018). Second is the differences in sample sizes across the different populations. This was in part due to the challenges of recruiting service users and the ease of recruiting a general population sample, but it does mean that the results from the mental healthcare service user sample are based on a sample size that is roughly one third of the size of the general population sample. However, the coefficients in the standard models for each group of respondents are precisely estimated, which suggests that the sample sizes were sufficient. The general population sample has a large proportion of people with a mental healthcare condition (24%), and this is likely due to self-selection as those interested in the topic may have been more likely to complete the survey. However, this means that the general population sample may not be truly representative in this regard. Third, whilst input on wording and presentation of the DCE was sought and feedback implemented, no formal pilot study involving qualitative pre-testing of the survey was conducted prior to launch, and this is something we would recommend in future studies.

The quality of life attribute (for your next year of life you will have 20%/50%/80% quality of life over the next year of life) was used as the denominator in the marginal rates of substitution, and an assumption made that this is indicative of QALYs. This assumption can be questioned, since it is only varying quality of life and not quantity of life. The description of quality of life was simplified using percentages, which some respondents may find challenging, meaning that it is possible that participants may not have interpreted these correctly. To ensure that the levels of quality of life were placed in context, in the DCE task introduction, health state examples were provided of 20% and 80% quality of life using REQoL-UI mental health states, a preference-based recovery-focussed quality of life measure for mental health service users derived from ReQoL-10 and ReQoL-20 (Keetharuth et al., 2021). Further research could assess whether the results are affected by changing the duration of quality of life, amending the description of the quality of life variable, or amending the percentages included as levels for the quality of life attribute in the DCE.

Understanding in the DCE was examined using a rationality test in the DCE, via a dominant option in the practice question and dominance DCE question, and via self-report questions. The findings from these two ways of capturing understanding differed, but overwhelmingly, respondents across all samples correctly selected the dominant option in the practice and dominance DCE questions. In contrast, a large proportion of respondents reported that the DCE tasks were difficult to answer or understand. The former finding is reassuring, since this implies that respondents were able to make logical choices. The latter finding however is concerning, since this could indicate that respondents may have had difficulty engaging with the DCE, and task engagement was not explicitly assessed. However, robustness analyses excluding these respondents did not indicate that this impacted on the overall study findings. Difficulty of the DCE tasks may have been in part due to the large number of attributes included in the survey. Furthermore, the online administration of the survey meant that respondents did not have the option to obtain advice or ask questions about the tasks during the survey. Pearce et al. (2021) identified three components of DCE understanding: 1) the specific task/scenario; 2) making a choice; 3) willingness to engage. Our examination of understanding across these three components could have been enhanced through qualitative pre-testing of the survey and assessment of task engagement to better ensure and understand respondent engagement with the task and the concept of making a choice (see Pearce et al. (2021) for an overview of techniques used in the literature). .

The service user sample was recruited via multiple routes, and this approach was used to ensure a sufficiently large sample. However, the majority of the service user sample (254 of the 331 respondents) was recruited via existing mental healthcare providers (NHS mental health trusts), and separate models estimated on this subsample generated similar results. In the service user sample 7% of respondents did not consider themselves to have a mental health condition, yet this was an

explicit criteria for respondents to be invited to the service user survey and to receive the survey link. Whilst it is possible that some of these respondents may not have a mental health condition, it is feasible that they are accessing mental health services but do not regard themselves as having a condition or a diagnosis at the present time.

This study determined the relative value of different aspects of quality of mental healthcare across mental healthcare professionals, mental healthcare service users and the general population. The marginal rates of substitution indicate both the relative value and rank ordering of these aspects for the different aspects of quality of mental healthcare across samples of mental healthcare professionals, mental healthcare service users and the general population. Overwhelmingly being treated with dignity and respect was deemed of high importance, waiting times were deemed least important, and the relative importance of other aspects of mental healthcare quality varied across the samples. Further research is encouraged exploring whether and how the relative value of different aspects of quality of mental healthcare is impacted by the affordability of healthcare. Further research could assess whether the aspects of quality that are important differ across different types of healthcare services, between mental and physical health, or across publicly funded, privately funded and mixed healthcare systems.

Credit author statement

Donna Rowen: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Philip A. Powell**: Conceptualization, Methodology, Formal analysis, Investigation, Writing – review & editing. **Arne Risa Hole**: Conceptualization, Methodology, Formal analysis, Writing – review & editing. **Maria-Jose Aragon**: Conceptualization, Methodology, Writing – review & editing. **Adriana Castelli**: Conceptualization, Methodology, Writing – review & editing. **Rowena Jacobs**: Conceptualization, Methodology, Writing – review & editing, Funding acquisition.

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Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2022.114885.

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