The Role of Qualitative Research Methods in Discrete Choice Experiments: A Systematic Review and Survey of Authors

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Background. The use of qualitative research (QR) methods is recommended as good practice in discrete choice experiments (DCEs). This study investigated the use and reporting of QR to inform the design and/or interpretation of healthcare-related DCEs and explored the perceived usefulness of such methods. Methods. DCEs were identified from a systematic search of the MEDLINE database. Studies were classified by the quantity of QR reported (none, basic, or extensive). Authors (n = 91) of papers reporting the use of QR were invited to complete an online survey eliciting their views about using the methods. Results. A total of 254 healthcare DCEs were included in the review; of these, 111 (44%) did not report using any qualitative methods; 114 (45%) reported “basic” information; and 29 (11%) reported or cited “extensive” use of qualitative methods. Studies reporting the use of qualitative methods used them to select attributes and/or levels (n = 95; 66%) and/or pilot the DCE survey (n = 26; 18%). Popular qualitative methods included focus groups (n = 63; 44%) and interviews (n = 109; 76%). Forty-four studies (31%) reported the analytical approach, with content (n = 10; 7%) and framework analysis (n = 5; 4%) most commonly reported. The survey identified that all responding authors (n = 50; 100%) found that qualitative methods added value to their DCE study, but many (n = 22; 44%) reported that journals were uninterested in the reporting of QR results. Conclusions. Despite recommendations that QR methods be used alongside DCEs, the use of QR methods is not consistently reported. The lack of reporting risks the inference that QR methods are of little use in DCE research, contradicting practitioners’ assessments. Explicit guidelines would enable more clarity and consistency in reporting, and journals should facilitate such reporting via online supplementary materials. Key words: discrete choice experiment; qualitative research; systematic review; survey. (Med Decis Making 2017;37: 298–313)

Discrete choice experiments (DCEs) are a stated preference method that uses a survey to systematically quantify individuals’ preferences. The method is used to understand which characteristics (termed attributes) are liked by consumers, how they balance these attributes, and the relative importance of each attribute in their decision to consume. In a DCE, the respondents are asked to choose their preferred option from a series of hypothetical scenarios called choice-sets. DCEs are underpinned by 2 key economic theories: Random Utility Theory (RUT) and Lancaster’s Theory. The 2 theories combined suggest that DCE respondents choose the option from each choice-set which provides them with the most satisfaction or “utility.” The method has been used to understand people’s preferences in a variety of settings, often when it is challenging to observe consumers making choices in real markets.

In healthcare, decision making may involve careful assessment of the health benefits of an intervention. However, decision makers may wish to go beyond traditional clinical measures and incorporate “non-health” values such as those derived from the process of healthcare delivery. DCEs allow for estimation of an individual’s preferences for both health benefits and non-health benefits and can explain the relative value of the different sources. Systematic reviews of published health-related DCEs have identified that their designs are becoming increasingly complex, with an increase in the number of choice-sets presented and an increase in the number containing attributes that are difficult to...
present and interpret, such as time or risk. The increased complexity of DCE designs raises the potential for anomalous or inexplicable choices. Any increases in the cognitive burden of the task could result in poorer quality data and should be considered carefully. A number of studies have explored the implications for quantitative analyses of anomalous or inexplicable choice data, leading to, for example, the exclusion of respondents whose choices fail tests for monotonicity or transitivity or who exhibit sufficiently high levels of attribute nonattendance.

Qualitative research is increasingly advocated in the field of health economics. The term qualitative research refers to a broad range of philosophies, approaches, and methods used to acquire an in-depth understanding or explanation of people’s perceptions. A key strength of qualitative research methods, in particular, is being able to collate important contextual data alongside quantitative preference data. These potential strengths can be realized only if studies are conducted appropriately and reported with sufficient clarity such that readers can understand the approach used and interpretation of the findings.

There is some evidence that stated preference methods, other than DCEs, have benefited from the use of qualitative research methods in order to provide a deeper understanding of their results. General guidelines advising on best practice for healthcare DCEs state the importance of qualitative research methods in the design of the DCE survey. Some academics have made specific recommendations for the application of qualitative research methods alongside DCEs, paying particular attention to the identification of attributes and levels. However, there has been no explicit investigation of how well these recommendations have been translated into practice or the perceived usefulness of the qualitative methods in this context.

This study aimed to identify studies reporting the use of qualitative research methods to inform the design and/or interpretation of healthcare-related DCEs and explore the perceived usefulness of such methods. The objectives were to 1) identify and quantify the proportion of DCEs using qualitative research methods; 2) investigate the stages in the DCE at which qualitative research methods were used; 3) describe the methods and techniques currently used; 4) evaluate the quality of the reporting of qualitative research when possible; and 5) explore the views of authors of published DCEs about the usefulness of qualitative research methods.

METHODS

This study used systematic review methods combined with a structured online survey.

Systematic Review

The systematic review focused on identifying all published healthcare DCEs within a defined time period (2001 to June 2012). The focus was on DCEs rather than other stated preference methods such as conjoint analysis, which are grounded in different economic theories and are therefore not directly relevant to this review.

Inclusion and Exclusion Criteria

The primary inclusion criteria were that the empirical study was healthcare related and used a discrete choice (also known as choice-based conjoint analysis) experimental design with no adaptive elements. Other literatures, such as environment, transport, or food, were excluded. Examples of conjoint analysis where respondents were required to rate or rank alternatives were also excluded from the review. Non-English articles and reviews, guidelines, or protocols were not included.
Search Strategy

An electronic search of MEDLINE (Ovid, 1966 to date) was conducted in June 2012. The strategy exactly replicated that of a published systematic review of DCEs. The search terms used were “discrete choice experiment(s),” “discrete choice model(l)ing,” “stated preference,” “part-worth utilities,” “functional measurement,” “paired comparisons,” “pairwise choices,” “conjoint analysis,” “conjoint measurement,” “conjoint studies,” and “conjoint choice experiment(s).”

Screening Process

Screening was conducted by an initial reviewer (C.V.) and duplicated by a second reviewer (K.P.). Following the initial screening, if an article could not be rejected with certainty on the basis of its abstract, the full text of the article was obtained for further evaluation. Papers were reviewed a second time to identify any articles relating to the same piece of research, thus limiting the problem of double counting a single study.

Data Extraction and Appraisal

In line with previous systematic reviews, this review defined qualitative research methods as any exploration of peoples’ thoughts or feelings through the collection of verbal or textual data. The studies were initially categorized into 3 categories: 1) those which reported no qualitative research (none); 2) those which contained basic information by reporting the aims, methods, analysis, or results of the qualitative component (basic); and 3) those which indicated that an extensive qualitative component was conducted by reporting information on the aims, methods, analysis, and results (extensive). Studies in category 3, “extensive,” were deemed to contain sufficient detail for critical appraisal. The categorization of studies was initially conducted by CV and repeated by 2 other researchers (Martin Eden and Eleanor Heather).

Data were extracted from each study, including the country setting, publishing journal, and year of publication. From studies in the “basic” or “extensive” categories, data were extracted about the purpose of the qualitative component, the qualitative research methods used, the approach taken to analyze or synthesize the qualitative data, and any software used in the process.

One researcher (C.V.) extracted data from the studies that reported basic details about the qualitative component of their study. An iterative process of identifying, testing, and critiquing existing appraisal tools with experienced qualitative researchers (Stephen Campbell and Gavin Daker-White) was used to produce a bespoke checklist (Appendix A, available online) for use when reporting qualitative methods used alongside a stated preference study. A separate paper is in preparation that focuses on the development, validation, and suggested use of this bespoke checklist.

Data Synthesis

Microsoft Excel was used to tabulate the extracted data. The data were then summarized and collated into a narrative report describing the findings.

Survey to Authors

An online survey (Appendix C) was designed to determine authors’ experiences and opinions of the following: 1) using qualitative research methods alongside DCEs and 2) communicating the qualitative work they conducted in a journal article. Additional questions included self-assessment of their and coauthors’ expertise in qualitative research, the number of DCEs they had conducted, and whether they agreed with the key findings of the systematic review. A preliminary version of the survey was devised and piloted with researchers (n = 3) experienced with DCEs but was not included in this review (because their DCEs were unpublished or in non-health subjects). All journal articles provided an e-mail address for the corresponding author. Therefore, the most feasible method of contacting authors and eliciting their views was an online survey. Authors were invited to participate via an e-mail (or electronic message) that explained the systematic review and included a brief abstract covering the background, methods, and results of the systematic review. The message also referenced the study included in the systematic review (for authors with multiple articles, this was the one most recently published).

Analysis of the survey responses involved production of descriptive statistics for each of the questions. The authors’ free-text comments were not thematically analyzed because of the limited textual data available (some authors chose not to comment).
RESULTS

In total, 254 empirical studies (some studies were reported in more than one paper) were included in the final review published between 2001 and June 2012. A list of studies included in the review can be found in Appendix B. One hundred and twenty-nine studies were already identified by previous systematic reviews.9,32 The updated search resulted in 501 titles and abstracts since the previous review (2008 onward). Two hundred and eight full papers were retrieved for further assessment, and 148 papers met the inclusion criteria. Figure 1 shows the stages involved in screening and the reasons for rejection of the excluded papers.

Overview of Included DCEs

As shown in Figure 2, there was an increase in the number of DCEs published over time, with over half of the studies (n = 154, 56%) published since 2009. Half of the DCEs identified by this review were published in health services research journals (n = 139, 50%) and a third (n = 88) in specialized medical journals. Over half of the DCEs published were conducted in Europe (n = 186, 56%), and a quarter of the DCEs identified were carried out in the UK (n = 84, 25%). Other popular countries included the US (n = 49, 15%), the Netherlands (n = 38, 11%), Australia (n = 26, 8%), and Canada (n = 19, 6%).

Overall, 111 studies (44%) did not report the use of any qualitative research methods; 114 studies (45%) were rated as “basic,” reporting minimal information on the use of qualitative methods; and 29 studies (11%) reported or explicitly cited extensive use of qualitative methods. A number of studies included in the review that reported no qualitative research went on to discuss the lack of qualitative data as a limitation of their study.33–35 Journals relating to specific disease areas were least likely to contain the qualitative component of the research. In contrast, 70% of the DCE studies reporting the use of qualitative research were published in unspecific medical journals. There were also noticeable patterns, with 90% of the 11 DCE studies conducted in Africa reporting the details of the qualitative component of their research.

Basic Qualitative Research Reported

Almost all authors who reported using some qualitative research did so by stating in the methods section of the paper the nature of the qualitative component of their research (n = 113, 99%). Almost all (n = 113, 99%) of the studies that reported basic qualitative research reported using it before the DCE was implemented, in either the design or the piloting phase. Three studies (3%) reported using qualitative research at the end of the DCE to attain additional information on preferences.36–38

Figure 3 illustrates that a variety of applications of qualitative research methods were identified. In the design of the DCE, researchers were most commonly seeking to identify attributes and/or assign levels (n = 70, 61%) or validate attributes and/or levels identified through other methods (n = 31, 27%). Researchers also used qualitative research methods more specifically to check terminology, vignettes, and descriptions (n = 9, 8%) and to confirm translations (n = 2, 2%).

After the design phase, some studies also reported using qualitative research methods in the piloting of the DCE (n = 24, 21%). In the pilot stage,
the methods were specifically used to check for
decision strategies and also to determine an appro-
priate sample for the final DCE. For example, one
study\textsuperscript{39} used interviews to determine an appropri-
ate age range for the final DCE. Another study\textsuperscript{40}
used the qualitative data acquired in the piloting
stage to estimate preference heterogeneity and thus
predict an appropriate model for the choice data,
and another study\textsuperscript{41} used the qualitative research to
predict the signs of the coefficients.

The most popular approach to qualitative data
collection was interviews (\(n = 89, 78\%\)), including
structured and semistructured interviews. Ten stud-
ies (9\%) also used cognitive interviews that
included debriefing questions at the end of the task
as well as a verbal protocol analytical technique
called “think-aloud.” Focus groups were another
popular approach to data collection (\(n = 50, 44\%\)).

The most common populations used in the qual-
itative component were healthcare professionals
(\(n = 21, 18\%\)), patients (\(n = 46, 40\%\)), and experts
(\(n = 11, 10\%\)), although some studies (\(n = 14, 13\%\)) used
a mixture of participants. Of the 114 studies, 71
(62\%) conducted the qualitative research with the
same population as the DCE study and 16 (14\%) did
not. In 23 studies (21\%) it was unclear whether
the populations for the DCE and the qualitative
component were the same. In 4 studies (4\%), the
qualitative sample was the same sample of individ-
uals who completed the DCE survey.

Although a crucial step in drawing reliable and
valid results from the qualitative data, only a minor-
ity of studies described their approach to the analy-
sis of the qualitative data (\(n = 15, 7\%\)). Of these 15
studies, 5 studies reported using content analy-
sis\textsuperscript{36,42–45} and 2 studies (2\%) reported using frame-
work analysis.\textsuperscript{46,47} Other analytical approaches
included the use of grounded theory methods such
as the constant comparative method\textsuperscript{48} and open-
ended coding.\textsuperscript{49} Three studies detailed the use of
specialist qualitative software: 2 studies\textsuperscript{36,50} (2\%)
used NVivo, and 1 study\textsuperscript{51} used Atlas.ti.

**Extensive Qualitative Research Reported**

Seven DCE studies extensively described the use
of qualitative research within the main text of the
paper.\textsuperscript{52–58} Twenty-two further studies were identi-
ced as having conducted extensive qualitative
research by checking the references to the qualita-
tive component of the work. The details tended to
be reported in other peer-reviewed journals (\(n = 17\))
and commissioned reports (\(n = 5\)). The citation of
the qualitative research (either the main text of the

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**Figure 2** Trends in DCE publishing over time. “Overall” includes papers rather than studies. 2012 incomplete due to the year of search.
DCE or a previous publication); the application; the methods used; and the analysis conducted are described in Table 1.

Most of the studies (n = 25, 86%) reported the use of qualitative research methods to identify or validate attributes and/or levels for use in the DCE. Three studies used qualitative research methods to understand more about how respondents completed the choice task presented. Two studies also used the qualitative research to complement the quantitative analysis. Other studies used qualitative research methods to pilot and refine the survey.

The most common data collection approach was interviews (n = 20, 69%). These interviews were mostly semistructured (n = 12, 41%) and face-to-face, although 2 studies used telephone interviews. Of the 3 studies using qualitative research to understand more about how people completed the DCE task, 2 of these used a think-aloud interview approach.

A number of studies also used focus groups (n = 13, 45%), and 4 studies used a combination of focus groups and interviews in their qualitative study. One study used the results of an ethnographic observational study to identify attributes and levels for the DCE and used semistructured interviews to refine the training materials and descriptions.

Most studies simply stated in the paper that they used thematic analysis (n = 10, 34%) or content analysis (n = 5, 17%) to categorize the qualitative data collected. One study reported the use of a "latent" content approach to discover underlying themes. One study reported using thematic synthesis, a type of thematic analysis that...
| Authors, Country, Cited Research | Methods            | Context                                                                 | Analysis                  |
|----------------------------------|--------------------|-------------------------------------------------------------------------|---------------------------|
| Baker et al.50 (UK)              | Focus groups       | To identify attributes and levels                                       | Thematic analysis         |
| Bridges et al.51 (multi-country) | Open-ended interviews | To identify attributes and levels                                       | Frequency analysis and IPA |
| Bridges et al.52 (Germany)       | Unstructured interviews | To understand how respondents complete the choice task (trading behavior) | Thematic analysis         |
| Cheraghi-Sohi et al.54,87 (UK)   | Think-aloud interviews | To understand how respondents complete the choice task (trading behavior) | Coded using a literature-derived framework |
| Fitzpatrick et al.70 (US)        | Semistructured interviews | To identify attributes and levels                                       | Constant comparative method in Atlas.ti and “open-coding” |
| Grindrod et al.64 (Canada)       | Focus groups        | To identify attributes and levels                                       | Thematic analysis         |
| Hall et al.92 (Australia)        | Semistructured interviews | To identify attributes and levels                                       | IPA content analysis      |
| Haughney et al.94 (multi-country) | Semistructured interviews | To identify attributes and levels                                       | Thematic analysis         |
| Herbild et al.96 (US)            | Focus groups        | To identify attributes and levels                                       | Thematic analysis         |
| Hsieh et al.65 (US)              | Focus groups        | To identify attributes and levels                                       | Content analysis using Atlas.ti |
| Lagarde et al.66 (Ghana)         | Semistructured interviews | To identify attributes and levels                                       | Content analysis using NVivo |
| Lloyd et al.63 (UK)              | Focus groups        | To validate attributes and levels                                       | Content analysis          |
| Mark and Swait101 (US)           | Focus groups        | To identify attributes and levels                                       | Thematic analysis         |
| Morton et al.103 (Australia)     | Semistructured interviews | To identify attributes and levels                                       | Thematic synthesis        |
| Naik-Panvelkar et al.104 (Australia) | Semistructured interviews | To identify attributes and levels                                       | Thematic analysis         |
| Payne et al.59 (UK)              | Semistructured interviews | To identify attributes and levels                                       | Constant comparative analysis |
| Pitchforth et al.49 (UK)         | Focus groups        | To identify attributes and levels                                       | Constant comparative analysis |
| Potoglou et al.106 (UK)          | Interviews          | To identify attributes and levels                                       | Thematic analysis         |

(continued)
| Authors, Country, Cited Research | Methods | Context | Analysis |
|--------------------------------|---------|---------|----------|
| Poulos et al.60 (Vietnam) | Interviews | Focus groups | To identify attributes and levels | Theme-based codebook in NVivo |
| See also Nghi et al.108 | | | | |
| Richardson et al.61 (UK) | Focus groups | Semistructured interviews | To identify attributes and levels | Framework analysis |
| See also Kennedy et al.109 | | | | |
| Roux et al.55 (UK) | Focus groups | Interviews | To identify attributes and levels | Thematic analysis |
| Ryan et al.57 (Australia) | | | | Content analysis |
| See also Netten et al.130 | | | | |
| Ryan et al.53 (UK) | Think-aloud interviews | | To understand how respondents complete the choice task (trading behavior) | Charting approach |
| Scotland et al.67 (UK) | Group interviews | | To identify attributes and levels | Latent content analysis |
| See also Cheyne et al.111 | | | | Open coding |
| Tappenden et al.58 (Australia) | Semistructured interviews | Semistructured interviews (telephone) | To identify attributes and levels | |
| See also Bryan et al.112 | | | | |
| Turner et al.71 (UK) | Semistructured interviews | | To identify attributes and levels | Open coding |
| See also Baker et al.113 | | | | |
| Van Empel et al.69 (multi-country) | Focus groups | | To identify attributes and levels | Constant comparative content analysis with a coding tree |
| See also Dancet et al.114 | | | | Coding in NVivo |
| Vujicic et al.52 (Vietnam) | Semistructured interviews | Focus groups | To identify attributes and levels | |
| See also Witter et al.115 | | | | |

“See also” directs readers to the qualitative study. IPA = interpretative phenomenological analysis.
involves a more explicit refinement of themes (possibly from multiple studies) and is an approach in line with reducing the qualitative data to develop a few attributes and levels.

Other analytical approaches included framework analysis (n = 3, 10%)63,64,71 and a related analysis called charting.56 Seven studies used some constant comparative analysis (n = 5, 17%)52,59,62,72,73 or open-coding (n = 3, 10%)61,73,74 at least in the initial stages. Two studies54,67 used interpretative phenomenological analysis (IPA), which often takes an open-coding approach rather than relying on preexisting themes or frameworks. The type of software used was not always reported, but the most commonly reported packages were NVivo59,63,65,69 (n = 4, 14%) and Atlas.ti59,68,73 (n = 3, 10%).

Survey Results

A total of 114 studies reported at least basic use of qualitative research methods, and all authors of these studies were invited to complete the survey. As some corresponding authors had multiple studies included in the review, 91 individual authors were sampled. After the first e-mail sent on 1 May 2013, 38 authors completed the survey. Four authors declined to take part (for reasons such as one author had not practiced in the field for a few years so could not sufficiently recall his or her experiences; another was a statistician who had only been involved with the DCE analysis). The questionnaire closed on the 30 June 2013, with a total of 53 completed or partially complete responses, resulting in an overall response rate of 58%.

Table 2 provides a summary of the authors’ responses to each of the survey questions and examples of free-text comments provided by authors. These free-text comments are presented to illuminate the quantitative findings.

Of the respondents who answered the question enquiring whether qualitative research methods added value to their DCE, all (n = 50, 100%) stated that it did. Authors also reported that the use of qualitative research methods added value to their experience of conducting DCEs in general, with 74% (n = 31) stating that it made a “substantial improvement” to the study. However, one respondent offered this comment, which suggests some antipathy toward the use of qualitative research methods:

*Qualitative methods often require a subjective component that doesn’t fit well with economics or quantitative methods. I am not convinced that qualitative work is always needed.* (Author ID40)

A key finding of the systematic review was poor reporting of qualitative research in journal articles. The majority of survey respondents (n = 42, 79%) agreed with this finding that the qualitative component was only briefly described in their DCE paper. Some respondents (n = 11, 16%) stated that qualitative research would not be of interest to their peers, and 22 (44%) felt it was not of interest to journals. Other respondents (n = 4, 8%) reported that they did not believe qualitative research was important to funders.

Three-quarters of the respondents (n = 40, 75%) stated that they had no expertise in qualitative research methods. Some respondents (n = 31, 58%) did have a qualitative researcher as part of their team, but others (n = 8, 15%) did not. As described in Table 2, one author commented on the lack of guidance on reporting standards for the qualitative research conducted alongside a DCE.

DISCUSSION

Existing systematic reviews of healthcare DCEs9,11,75 have not focused on the role of qualitative research, and there has been no direct contact with authors to determine whether the results detailed in their papers were subject to reporting bias. The review identified that 89% (n = 225) of identified DCEs did not report the qualitative component of the study in detail. A variety of reasons for the lack of detail in reporting, and complete omission in 44% (n = 111) of studies, were identified from the survey to authors. One potential reason for the paucity in reporting could be a lack of explicit reporting guidelines for qualitative research methods alongside DCEs.

Numerous guidelines exist for conducting and appraising qualitative research in general.76–82 However, in the context of DCEs, detailed guidelines on the use of qualitative research methods only exist for the identification of attributes and levels.27,28 It was difficult to ascertain the degree to which these guidelines were followed due to the lack of detail reported in published DCEs. The systematic review found that the most common application of qualitative research was to select attributes and levels for use in the DCE; other applications, for which guidelines do not exist, were also identified.
### Table 2  Surveyed Authors’ Responses

| Survey Question                                                                 | n | %  | Key Quotes from Free-text                                                                 |
|---------------------------------------------------------------------------------|---|-----|-----------------------------------------------------------------------------------------|
| How many DCEs in healthcare have you published, either as the first author or as a coauthor? |   |     | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 1                                                                               | 9 | 17  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 2                                                                               | 10| 19  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 3                                                                               | 9 | 17  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 4                                                                               | 0 | 0   | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 5-9                                                                             | 16| 30  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| 10+                                                                             | 9 | 17  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Why do you think there is this apparent absence/limited reporting of qualitative research methods? Some possible reasons are listed below, please tick all which apply. Qualitative research in DCEs . . . |   |     | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is not of interest to most of my peers.                                          | 11| 22  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is not of interest to journals.                                                  | 22| 44  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is not of interest to funders.                                                   | 4 | 8   | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is not important in the design of health DCEs.                                   | 3 | 6   | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Does not affect the study outcomes.                                              | 2 | 4   | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is too complicated to report in detail.                                          | 26| 52  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Is too time consuming to conduct properly.                                       | 10| 20  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Other reasons                                                                    | 28| 56  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| For this question, please think about the study mentioned in the invitation e-mail. Was a member of the research team an expert in qualitative research? |   |     | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Yes, I have expertise in qualitative research.                                   | 13| 25  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Yes, a member of the research team had expertise in qualitative research.         | 31| 58  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| Do not know.                                                                    | 1 | 2   | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
| No, there was no expert in qualitative research in the research team.            | 8 | 15  | Reporting these details could cause criticism by the reviewers and compromise acceptance of publication. (Author ID27) |
Table 2  (continued)

| Survey Question                                                                 | n  | %  | Key Quotes from Free-text                                                                 |
|--------------------------------------------------------------------------------|----|----|------------------------------------------------------------------------------------------|
| Do you think the paper accurately reflected the amount of qualitative research undertaken in the study? |    |    | I have suggested to editors to incorporate a material section in the webpage including transcripts of the focus groups, and in general all the qualitative work. (Author ID36) |
| Yes                                                                             | 26 | 50 |                                                                                          |
| No                                                                              | 24 | 46 |                                                                                          |
| Don’t know                                                                      | 2  | 4  |                                                                                          |
| A key finding of my systematic review of DCEs in healthcare was that many studies report either limited or no qualitative research methods. Does this finding agree with your experience of reading or conducting healthcare DCEs? |    |    | The most important step: identifying and reporting the methods for selecting attributes and their levels in a consistent manner has received less attention. (Author ID11) |
| Yes                                                                             | 42 | 79 |                                                                                          |
| No                                                                              | 11 | 21 |                                                                                          |
| Do you feel that the qualitative research completed as part of this healthcare DCE added value? |    |    | The subjects were asked WHY they made that choice. This yielded wonderful insight into the beliefs and misconceptions behind prevention choices. (Author ID22) |

| In this DCE | In DCEs generally |
|-------------|-------------------|
| n  | %  | n  | %  |
| It made a substantial improvement. | 29  | 58  | 31  | 74  | A necessary component of doing high quality DCE studies. (Author ID1) |
| It added a little value. | 21  | 42  | 11  | 26  |
| None, it did not add any value at all. | 0  | 0  | 0  | 0  |
| No, it hindered the study and had a negative role. | 0  | 0  | 0  | 0  |
Qualitative research was frequently used for pre-testing or piloting the DCE survey and for refining or checking terminology. The review also found some studies using qualitative research methods in other applications: for example, to predict preference heterogeneity, to select and specify a regression model, to identify the motives behind “irrational responses,” or to specifically test for breaks in the key axioms that support DCEs as a method. In light of these broad-ranging applications, it is apparent that qualitative research methods are being used in many ways. Best practice guidelines exist for many important steps in a DCE study, such as the experimental design and analysis of choice data. There is a need for similar guidelines covering the broad range of applications for qualitative research methods. Best practice guidelines may help improve both the quality and the reporting of qualitative research conducted alongside healthcare DCEs.

The author survey was sent to researchers who had regular experience in designing and/or analyzing DCEs, with most of the respondents publishing more than one DCE. This indicates that the sample was knowledgeable and was likely to include experienced researchers whose views are probably representative of the wider research area. This survey provided evidence that researchers designing and analyzing DCEs regarded using qualitative research methods as beneficial in a health DCE study. The lack of reporting of a beneficial and informative component to a research study could be rectified by clear and explicit reporting guidelines for all applications of qualitative research methods in the context of DCEs and the use of online appendices, particularly in word-restrictive journals. Maintained underreporting may otherwise erroneously imply that qualitative research is not useful in healthcare DCEs.

An updated rapid-review was conducted that covered all healthcare DCEs published between 1990 and February 2016 identified through a systematic search of the Medline database. The full-text of the 626 healthcare DCEs was then searched for key terms relating to qualitative research identified from a review of qualitative research in contingent valuation studies. Further details of the update to the review can be found in Appendix D. The results of the updated review were consistent with this systematic review: Few DCEs studies report the qualitative component of their research, and few details are provided about the analytical approaches used to interpret the textual data.

Limitations

A limitation of the systematic review was the focus on papers recorded in one database, MEDLINE. This search strategy was chosen because it updated a previously published review by De Bekker-Grob and others and replicated their study. The authors of the review chose MEDLINE, as other databases such as Pubmed or Embase identified duplicate papers rather than missing studies. Another limitation of the systematic review was the reliance on what was reported in the published paper; this was partially remedied with a survey to authors. However, the reliance on reporting was a particular challenge when assessing the analytical methods used by authors. For example, “content analysis” can refer to multiple approaches to the interpretation of qualitative data. It was often unclear whether the authors had used numerical (summative) quantification of themes or had taken a more conventional approach of developing themes either from the text or from an initial framework.

Arguably, a more in-depth account of authors’ views and experiences could have been collected (possibly through one-to-one interviews), and thorough thematic analysis of the free-text comments could have provided more robust results. The survey sampled only authors who reported using qualitative research methods. Authors who did not report the qualitative component of their DCE study may have excluded details because the research did not add value, possibly creating bias in the survey results. However, the results of the questionnaire helped to explain the key findings of the systematic review, such as the drivers behind the lack of detail, and it is unlikely that further analysis or review would have highlighted anything that would significantly alter the findings.

An emerging type of DCE called a best-worst scaling (BWS) DCE is becoming an increasingly popular form of preference elicitation. In a BWS experiment, the respondents select their most and least preferred items, arguably revealing more about the respondents’ strength of preference in a survey containing fewer choice-sets. BWS-DCE studies were not included in this systematic review because the search strategy, chosen to maintain methodological consistency with the previous DCE review, was not designed to capture these types of choice studies.

Another limitation of this study was the original focus on papers published between 2001 and 2012. To remedy this, a rapid update to the review was
CONCLUSION

The results of the systematic review and survey of authors identified that qualitative research methods were being used by DCE researchers to answer multiple research questions and that these methods add value to DCE studies. However, the review demonstrated there was a paucity of detail about the qualitative component of most DCE articles. This lack of reporting could cause researchers to infer that qualitative research is not an important component of a DCE study. Authors and journal editors should make provisions for reporting the details of the qualitative component of their research, perhaps through the use of online appendices. Further research is required to develop guidelines for the reporting of qualitative research methods in stated preference studies, particularly for uses other than the identification of attributes and levels, which are not covered by current guidelines.

ACKNOWLEDGMENTS

The authors thank Martin Eden and Eleanor Heather for their help with screening papers included in this review. We also thank Dr. Gavin Daker-White and Professor Stephen Campbell for their assistance in developing the bespoke appraisal tool. We are grateful to Gene Sim, who assisted with an update to the review. We would like to acknowledge the discussions with colleagues who attended a seminar that presented preliminary results of the review and survey at the Health Economics Unit, University of Birmingham. In particular, we thank Dr. Emma Frew for her considered suggestions at this seminar.

REFERENCES

1. Naik Panvelkar P, Armour C, Saini B. Community pharmacy-based asthma services—what do patients prefer? J Asthma. 2010;47:1085–93.
2. Lancaster KJ. A new approach to consumer theory. J Polit Econ. 1966;74:132–57.
3. McFadden D. Conditional logit analysis of qualitative choice behaviour. In: Zarembka P, ed. Frontiers in Econometrics. New York: Academic Press; 1974. p 105–42.
4. Hensher D. An exploratory analysis of the effect of numbers of choice sets in designed choice experiments: an airline choice application. J Air Transp Manag. 2001;7:373–9.
5. Smyth RL, Watzin MC, Manning RE. Investigating public preferences for managing Lake Champlain using a choice experiment. J Environ Manage. 2009;90:615–23.
6. De Bekker-Grob EW, Ryan M, Gerard K. Discrete choice experiments in health economics: a review of the literature. Health Econ. 2012;21:145–72.
7. Harrison M, Rigby D, Vass C, Flynn T, Louviere J, Payne K. Risk as an attribute in discrete choice experiments: a critical review. Patient. 2014;7:151–70.
8. Ryan M, Gerard K. Using discrete choice experiments to value health care programmes: current practice and future research reflections. Appl Health Econ Health Policy. 2003;2:55–64.
9. Flynn TN, Bilger M, Malhotra C, Finkelstein EA. Are efficient designs used in discrete choice experiments too difficult for some respondents? A case study eliciting preferences for end-of-life care. Pharmacoeconomics. 2015;34:273–84.
10. Hall J, Viney R, Haas M, Louviere J. Using stated preference discrete choice modeling to evaluate health care programs. J Bus Res. 2004;57:1026–32.
11. Lancsar E, Louviere J. Deleting “irrational” responses from discrete choice experiments: a case of investigating or imposing preferences? Health Econ. 2006;15:797–811.
12. Lagarde M. Investigating attribute non-attendance and its consequences in choice experiments with latent class models. Health Econ. 2012;22:554–67.
13. Coast J. The appropriate uses of qualitative methods in health economics. Health Econ. 1999;8:345–53.
14. Coast J, McDonald R, Baker R. Issues arising from the use of qualitative methods in health economics. J Health Serv Res Policy. 2004;9:171–6.
15. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3:77–101.
16. Corbin J, Strauss A. Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. 3rd ed. Thousand Oaks, CA: Sage Publications; 2008.
17. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res. 2005;15:1277–88.
18. Pope C, Mays N. Qualitative Research in Health Care. 3rd ed. Oxford, UK: John Wiley & Sons, 2008.
19. Baker R, Robinson A, Smith R. How do respondents explain WTP responses? A review of the qualitative evidence. J Socio Econ. 2008;37:1427–42.
20. Chilton SM, Hutchinson WG. A qualitative examination of how respondents in a contingent valuation study rationalise their WTP responses to an increase in the quantity of the environmental good. J Econ Psychol. 2003;24:65–75.
21. Baker R, Robinson A. Responses to standard gambles: are preferences “well constructed”? Health Econ. 2004;13:37–46.
22. Bridges JF, Hauber AB, Marshall D, Lloyd A, Prosser L, Regier DA, Johnson F, Mauskopf J. Conjoint analysis applications in health-a checklist: a report of the ISPOR Good Research Practices for Conjoint Analysis Task Force. Value Health. 2011;14:403–13.
23. Lancsar E, Louviere J. Conducting discrete choice experiments to inform healthcare decision making: a user's guide. Pharmacoconomics. 2008;26:661–77.  
24. Coast J, Al-Janabi H, Sutton E, Horrocks SA, Vosper J, Swancutt DR, Flynn T. Using qualitative methods for attribute development for discrete choice experiments: issues and recommendations. Health Econ. 2012;21:730–41.  
25. Coast J, Horrocks SA. Developing attributes and levels for discrete choice experiments using qualitative methods. J Health Serv Res Policy. 2007;12:25–30.  
26. Kleijaard M, Bech M, Segard R. Designing a stated choice experiment: the value of a qualitative process. J Choice Model. 2012;5:1–18.  
27. Centre for Reviews and Dissemination (CRD). Systematic Reviews. CRD’s Guidance for Undertaking Reviews in Health Care. Heslington, UK: University of York; 2008.  
28. Louviere J, Flynn T, Carson RT. Discrete choice experiments are not conjoint analysis. J Choice Model. 2010;3:57–72.  
29. Naik-Panvelkar P, Armour C, Saini B. Discrete choice experiments in pharmacy: a review of the literature. Int J Pharm Pract. 2013;21:3–19.  
30. McTaggart-Cowan HM, Shi P, Fitzgerald JM, Anis A, Kopec JA, Bai TR, Soon JA, Lynd LD. An evaluation of patients’ willingness to trade symptom-free days for asthma-related treatment risks: a discrete choice experiment. J Asthma. 2008;45:630–8.  
31. Bhatt M, Currie GR, Auld MC, Johnson DW. Current practice and tolerance for risk in performing procedural sedation and analgesia on children who have not met fasting guidelines: a Canadian survey using a stated preference discrete choice experiment. Acad Emerg Med. 2010;17:1207–15.  
32. Hundley V, Ryan M. Are women’s expectations and preferences for intrapartum care affected by the model of care on offer? BJOG. 2004;111:550–60.  
33. Ashcroft DM, Seston E, Griffiths CE. Trade-offs between the benefits and risks of drug treatment for psoriasis: a discrete choice experiment with UK dermatologists. Br J Dermatol. 2006;155:1236–41.  
34. Caldwell J, Bond CM, Ryan M, Campbell NC, Miguel FS, Kiger A, Lee A. Treatment of minor illness in primary care: a national survey of patient satisfaction, attitudes and preferences regarding a wider nursing role. Health Expect. 2007;10:30–45.  
35. Kruk ME, Johnson JC, Gyakobo M, Agyei-Baffour P, Asabir K, Kotha SR, Kwansah J, Nakua E, Snow RC, Dzodzomenyo M. Rural practice preferences among medical students in Ghana: a discrete choice experiment. Bull World Health Organ. 2010;88:333–41.  
36. Gyrd-Hansen D, Slothuus U. The citizen’s preferences for financing public health care: a Danish survey. Int J Health Care Finance Econ. 2002;2:25–36.  
37. Kjaer T, Gyrd-Hansen D. Preference heterogeneity and choice of cardiac rehabilitation program: results from a discrete choice experiment. Health Policy. 2008;85:124–32.  
38. Bech M. Politicians’ and hospital managers’ trade-offs in the choice of reimbursement scheme: a discrete choice experiment. Health Policy. 2003;66:261–75.  
39. Hanson K, McPake B, Nakamba P, Archard L. Preferences for hospital quality in Zambia: results from a discrete choice experiment. Health Econ. 2005;14:687–701.  
40. Johnson F, Özdemir S, Manjunath R, Hauber AB, Burch SP, Thompson TR. Factors that affect adherence to bipolar disorder treatments: a stated-preference approach. Med Care. 2007;45:545–52.  
41. Mangham LJ, Hanson K. Employment preferences of public sector nurses in Malawi: results from a discrete choice experiment. Trop Med Int Heal. 2008;13:1433–41.  
42. Schwappach DL, Mulders V, Simic D, Wilm S, Thurmann PA. Is less more? Patients’ preferences for drug information leaflets. Pharmacoepidemiol Drug Saf. 2011;20:987–95.  
43. Porteous T, Ryan M, Bond CM, Hannaford P. Preferences for self-care or professional advice for minor illness: a discrete choice experiment. Br J Gen Pract. 2006;56:911–7.  
44. Burr J, Kilonzo M, Vale L, Ryan M. Developing a preference-based Glaucoma Utility Index using a discrete choice experiment. Optom Vis Sci. 2007;84:797–808.  
45. Gidman W, Elliott RA, Payne K, Meakin GH, Moore J. A comparison of parents and pediatric anaesthesiologists’ preferences for attributes of child daycase surgery: a discrete choice experiment. Paediatr Anaesth. 2007;17:1043–52.  
46. Lim MK, Bae EY, Choi S-E, Lee EK, Lee T-J. Eliciting public preference for health-care resource allocation in South Korea. Value Health. 2012;15:S91–4.  
47. Lim JNW, Edlin R. Preferences of older patients and choice of treatment location in the UK: a binary choice experiment. Health Policy. 2009;91:252–7.  
48. Hodgkins P, Swinburn P, Solomon D, Yen L, Dewilde S, Lloyd A. Patient preferences for first-line oral treatment for mild-to-moderate ulcerative colitis: a discrete-choice experiment. Patient. 2012;5:33–44.  
49. Pitchforth E, Watson V, Tucker J, Ryan M, van Teijlingen E, Farmer J, Ireland J, Thomson E, Kiger A, Bryers H. Models of intrapartum care and women’s trade-offs in remote and rural Scotland: a mixed-methods study. BJOG. 2008;115:560–9.  
50. Baker R, Bateman I, Donaldson C, Jones-Lee M, Lancsar E, Loomes G, Mason H, Odejar M, Pinto Prades JL, Robinson A, et al. Weighting and valuing quality-adjusted life-years using stated preference methods: preliminary results from the Social Value of a QALY Project. Health Technol Assess. 2010:14:1–162.  
51. Bridges JF, Gallego K, Kudo M, Okita K, Han K-H, Ye S-L, Blauvelt BM. Identifying and prioritizing strategies for comprehensive liver cancer control in Asia. BMC Health Serv Res. 2011;11:298.  
52. Bridges JF, Kinter ET, Schmeding A, Rudolph I, Muhlbacher A. Can patients diagnosed with schizophrenia complete choice-based conjoint analysis tasks? Patient. 2011;4:267–275.  
53. Ryan M, Watson V, Entwistle V. Rationalising the ‘irrational’: a think aloud study of a discrete choice experiment to identify patients’ priorities. Ann Fam Med. 2008;6:107–15.  
54. Roux L, Ubach C, Donaldson C, Ryan M. Valuing the benefits of weight loss programs: an application of the discrete choice experiment. Obes Res. 2004;12:1342–51.
