

# Qualitative Content Analysis for Concept Elicitation (CACE) in Clinical Outcome Assessment Development

## Authors and affiliations

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## Introduction

- Qualitative data are essential for establishing the content validity of clinical outcome assessments (COAs) including patient-reported outcome (PRO), clinician-reported outcome (ClinRO) and observer-report outcome (ObsRO) measures.
- One-on-one interviews and focus groups are qualitative methods of collecting patient experience data to inform COA development recommended by the FDA<sup>1,2</sup>.
- Qualitative concept elicitation (CE) is commonly used during semi-structured interviews in the development of COAs, to identify sign/symptom, impact, and treatment-related concepts that are relevant and important to assess from the patient perspective<sup>3</sup>.
- The use of open-ended questions and follow-up probes during CE often results in a large qualitative dataset representing a broad set of patient experiences.
  - CE data are often used to develop comprehensive conceptual models of the patient experience to inform COA selection and/or development<sup>4</sup>.
- Multiple methods of qualitative analysis exist and have been used to analyse CE data for COA development.

## Objective

- To identify, assess, and recommend the most appropriate method for analysis of qualitative CE data in COA development.

## Methods

- Two stages of online hand-searches were conducted to identify:
  - Any existing guidance for analysing CE data (via PubMed, Google Scholar and regulatory/industry websites)
  - Published CE studies (via PubMed)
- Identified publications were reviewed to determine the most frequently used qualitative analysis approaches.
- The most frequently reported qualitative analysis methods used were reviewed for appropriateness in analysing CE data for COA development based on the authors' experiences.

## Results

- The ISPOR PRO Good Research Practices Task Force Report<sup>3</sup> notes that the methods used to determine the content validity of a COA measure come from multiple theoretical approaches developed in other contexts such as, phenomenology (or interpretive phenomenology analysis [IPA]), grounded theory, qualitative content analysis (CA) and thematic analysis (TA).
- A brief search for publications indexed on PubMed after the ISPOR Report that used these theoretical approaches identified TA, grounded theory and CA as the predominant methods for CE data analysis, with minor usage of phenomenological methods (Figure 1).

Figure 2. Content Analysis for Concept Elicitation (CACE)

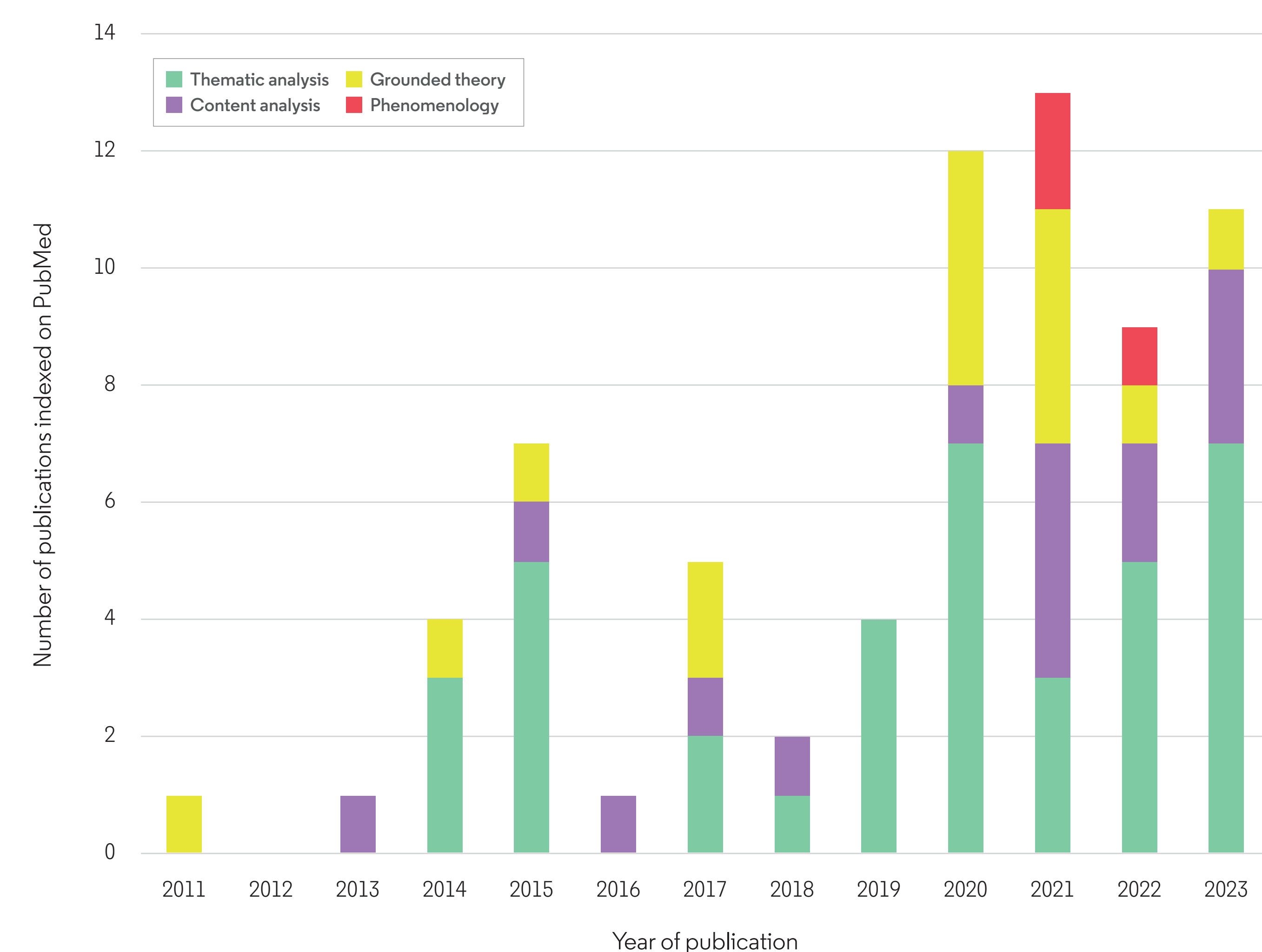


- TA, grounded theory and phenomenology approaches are based on specific principles, which may be applicable to CE analysis and the COA environment, but were not created with COA selection/development in mind.
  - Some principles of these approaches therefore conflict with the goals of CE and regulatory advice on COA development, as summarised in Table 1.
- Qualitative CA, however, encompasses a more flexible set of principles<sup>12,13</sup> and more closely aligns with the goals of CE in the context of COA selection, development and validation, including:
  - Flexibility to code both deductively and inductively, using qualitative analysis plans and codebooks if necessary
  - Flexibility to report concepts and domains (instead of themes/theories)
  - Flexibility to report all relevant concepts (regardless of quantity)
  - Flexibility to report counts/frequencies as necessary (generally discouraged in other qualitative approaches)
  - Flexibility to adhere to patient language instead of encouraging deeper interpretation
  - No restrictions on evaluating intercoder reliability or data saturation
- As qualitative CA is a broad and flexible set of methods, the principles were adapted into Content Analysis for Concept Elicitation (CACE) to establish a specific CE analysis method for COA selection, development and validation.
- CACE consists of five steps based on the experience of the authors and their colleagues (Figure 2), who have >14 years experience in the COA research field.

## Conclusion

Although there are many published methods for analysis of large qualitative datasets, CACE is a patient-centred approach that can be used to analyse CE data in the context of COA development, while adhering to regulatory and wider industry guidance.

Figure 1. Summary of frequently used analysis approaches in CE



Searches used the terms "concept elicitation" and "thematic analysis", "content analysis", "grounded theory" or "phenomenology"

Table 1. Overview of conflicts between relevant principles of analysis methods and CE goals

Method	Relevant principles	Conflicts with CE goals
Thematic analysis <sup>5,7</sup>	<ol style="list-style-type: none"> <li>Researchers are encouraged to interpret the data, and not create themes which are simply topic summaries.</li> <li>Discourages the use of data saturation as a method of determining appropriate sample sizes.</li> <li>Results should be reduced to a small number of significant themes.</li> <li>Commonly encourages a single coder who can acknowledge and reflect on their subjective interpretation of the data.</li> </ol>	<ol style="list-style-type: none"> <li>Topic summaries are needed capture the entire patient experience, often using patient-centred language, which is key to selecting/developing appropriate COA items.</li> <li>The FDA and ISPOR recommend assessing data saturation to confirm appropriate sample sizes in qualitative studies.</li> <li>All aspects of the patient experience should be considered and reported to develop comprehensive conceptual models and COA measures.</li> <li>Multiple coders are often required to analyse large datasets within the timelines required for regulatory submissions.</li> </ol>
Grounded theory <sup>8,9</sup>	<ol style="list-style-type: none"> <li>Hypotheses should not be formulated in advance of data collection.</li> <li>Researchers are encouraged not to read the wider literature to avoid bringing preconceived ideas to the study.</li> <li>Data analysis is reviewed from a bottom-up iterative perspective, with no prior expectations or plans.</li> </ol>	<ol style="list-style-type: none"> <li>Research questions and objectives should be clear before data collection begins so these can be tested.</li> <li>Researchers should understand the existing literature and be aware of study objectives to ensure analysis answers research questions (e.g. whether additional CE data is necessary in the context of interest).</li> <li>Initial review of data may be guided by existing knowledge and/or a qualitative analysis plan (QAP) to identify known concepts, with additional concepts added as they are identified.</li> </ol>
Phenomenology (IPA) <sup>10,11</sup>	<ol style="list-style-type: none"> <li>Does not intend to produce generalisable results.</li> <li>Researchers must suspend existing knowledge.</li> <li>Requires deep interpretation of the data and reflection on the position of the researcher.</li> </ol>	<ol style="list-style-type: none"> <li>CE data is intended to provide a generalised description of the patient experience in a particular context.</li> <li>Researchers may use existing literature to inform interview guides and study results (e.g. conceptual model).</li> <li>Data should be reported in a way that adheres to how it was initially shared by the patients who have been interviewed.</li> </ol>

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