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REVIEW PAPER

# Systematic methodological review: developing a framework for a qualitative semi-structured interview guide

Hanna Kallio, Anna-Maija Pietilä, Martin Johnson & Mari Kangasniemi

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Correspondence to H. Kallio:
e-mail: hannabar@uef.fi

Hanna Kallio MNSc RN
PhD Candidate
Department of Nursing Science, Faculty of Health Sciences, University of Eastern Finland, Kuopio, Finland

Anna-Maija Pietilä PhD
Professor
Department of Nursing Science, Social and Health Care Services, Faculty of Health Sciences, University of Eastern Finland, Kuopio, Finland

Martin Johnson PhD
Professor
School of Nursing, Midwifery, Social Work and Social Sciences, University of Salford, Manchester, UK

Mari Kangasniemi Docent PhD
University Lecturer
Department of Nursing Science, Faculty of Health Sciences, University of Eastern Finland, Kuopio, Finland

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## Abstract

**Aim.** To produce a framework for the development of a qualitative semi-structured interview guide.

**Background.** Rigorous data collection procedures fundamentally influence the results of studies. The semi-structured interview is a common data collection method, but methodological research on the development of a semi-structured interview guide is sparse.

**Design.** Systematic methodological review.

**Data sources.** We searched PubMed, CINAHL, Scopus and Web of Science for methodological papers on semi-structured interview guides from October 2004–September 2014. Having examined 2,703 titles and abstracts and 21 full texts, we finally selected 10 papers.

**Review methods.** We analysed the data using the qualitative content analysis method.

**Results.** Our analysis resulted in new synthesized knowledge on the development of a semi-structured interview guide, including five phases: (1) identifying the prerequisites for using semi-structured interviews; (2) retrieving and using previous knowledge; (3) formulating the preliminary semi-structured interview guide; (4) pilot testing the guide; and (5) presenting the complete semi-structured interview guide.

**Conclusion.** Rigorous development of a qualitative semi-structured interview guide contributes to the objectivity and trustworthiness of studies and makes the results more plausible. Researchers should consider using this five-step process to develop a semi-structured interview guide and justify the decisions made during it.

**Keywords:** interview guide, methodology, nursing, qualitative research, semi-structured interview, systematic review, thematic interview

**Why this review is needed?**

- Semi-structured interviews are a common data collection method in qualitative research and the quality of the interview guide fundamentally influences the results of the study.
- Guidelines for developing qualitative semi-structured interviews are often fragmented and methodological research is sparse.

**What are the key findings?**

- Five phases form a framework for the development of a semi-structured interview guide, providing a practice-based tool that can help researchers achieve rigorous data collection and trustworthiness for their study.
- Presenting the actual interview questions in the study report enables the study results to be assessed in relation to earlier knowledge and makes it possible for other researchers to test and develop the guide further.

**How should the findings be used to influence research?**

- Researchers should consider proceeding systematically using a five-step process to develop a semi-structured interview guide and justify the decisions made during it.

## Introduction

It has been agreed that in a qualitative study, as in research methods in general, rigorous data collection procedures are the main factors that influence quality and trustworthiness (Kitto *et al.* 2008) and critically influence the results of the study (Gibbs *et al.* 2007). Interviews are the most commonly used data collection method (Taylor 2005) and the semi-structured format is the most frequently used interview technique in qualitative research (DiCicco-Bloom & Crabtree 2006) and in a healthcare context (Gill *et al.* 2008). Despite the popularity of this data collection method, there is a lack of uniform, international advice in the literature on how to develop a semi-structured interview guide and the aim of this review was to produce a rigorous tool for this purpose.

### Background

The reason why the semi-structured interview is a popular data collection method is that it has proved to be both versatile and flexible. It can be combined with both individual and group interview methods (DiCicco-Bloom & Crabtree 2006) and the rigidity of its structure can be varied depending on the study purpose and research questions (Kelly 2010). One of the main advantages is that the semi-structured interview method has been found to be successful in enabling reciprocity between the interviewer and participant (Galletta 2012), enabling the interviewer to improvise follow-up questions based on participant's responses (Hardon *et al.* 2004, Rubin & Rubin 2005, Polit & Beck 2010) and allowing space for participants' individual verbal expressions (RWJF (Robert Wood Johnson Foundation) 2008).

The use of semi-structured interviews requires a certain level of previous study in the research topic area (Wengraf 2001, RWJF 2008, Kelly 2010) because the interview questions are based on previous knowledge. The questions are determined before the interview and formulated using the interview guide (Mason 2004, Rubin & Rubin 2005, RWJF 2008). The interview guide covers the main topics of the study (Taylor 2005). It offers a focused structure for the discussion during the interviews but should not be followed strictly. Instead, the idea is to explore the research area by collecting similar types of information from each participant (Holloway & Wheeler 2010), by providing participants with guidance on what to talk about (Gill *et al.* 2008).

The semi-structured interview is often perceived as an easy data collection method (Wengraf 2001). However, the researcher should consider several issues when preparing an interview guide and a central question is the depth of information to be collected. Although the goal of the qualitative researcher is to gain a rich understanding of the study phenomenon (Polit & Beck 2010), it is ethically dubious to collect data that is not completely necessary for the research (Gibbs *et al.* 2007). Several textbooks have focused on designing semi-structured interviews adequately (e.g. Wengraf 2001, Morrow 2005, Rubin & Rubin 2005, Kvale 2007, Galletta 2012). Nevertheless, there have been questions about how user-friendly they are because of their complexity and excessive detail (Gibbs *et al.* 2007). On the contrary, methodological research on the development of semi-structured interviews is sparse. Several editors of scientific publications have highlighted the importance of rigour when conducting and reporting qualitative studies (Salmon 2013, Bell 2014, Cleary *et al.* 2014). This review was conducted to provide a practical tool for researchers developing a semi-structured interview guide as a data collection method.

## The review

### Aim

The aim of this systematic methodological review was to produce a framework for developing a qualitative semi-

 

structured interview guide, to improve the trustworthiness of qualitative research. The research question we explored was: 'What are the phases of the development of a qualitative semi-structured interview guide?'

## Design

This study employed a systematic methodological review. The review was conducted by adapting the theory review method (Campbell *et al.* 2014).

## Search methods

We carried out systematic literature searches (Campbell *et al.* 2014), exploring empirical and theoretical scientific methodological papers or research reports that focused on the development of semi-structured interview guides. There were no restrictions on study type and as this was a methodological review, we decided to include papers that synthesized evidence that focused on the development of semi-structured interview guides. We acknowledge that it is unusual to include evidence syntheses and primary studies in a review. Checks were made to ensure that studies were not double-counted by inclusion in evidence syntheses and inclusion as primary studies. We conducted searches using the PubMed, CINAHL, Scopus and Web of Science electronic databases. Searches were initially limited to papers that were peer-reviewed and published in scientific journals, in English, between 1 October 2004–30 September 2014. We chose the search terms based on preliminary searches on the methodological literature and also consulted an information specialist. MeSH terms were not applicable and, as a result, free words were used. Due to the general nature of the methodological terms, we adjusted the year limitations and the field options of *title* or *abstract*. When the search result on all fields within the 10-year period was too high, with each database search resulting in thousands of papers, we limited it to 5 years. If the result was still too high, we limited the search to abstracts during the 10-year period and then reduced it to a 5-year period if necessary. If the result was still too high, we limited the search to titles, but in this case, we did not use any year limitations. That is why two papers from 1994 were included in our findings. This search method provided 2,703 papers.

We selected papers in two stages (Figure 1), using predefined inclusion and exclusion criteria (Campbell *et al.* 2014). Because of the vague nature of the titles, we conducted the first-stage selection by reading both the titles and abstracts. During this stage, our inclusion criteria were that the title or abstract mentioned methodological question(s) in relation to a semi-structured interview guide. We excluded studies if they focused on the other types of interviews, such as structured and open or diagnostic and clinical interviews. The first-stage selection was conducted independently by two of the authors (HK, MK) and resulted in 21 full texts. During the second stage, we selected papers based on full texts and redefined our inclusion criteria, so that the full text had to focus explicitly on the development of a semi-structured interview guide. The exclusion criterion was that the study focused on the other phases of the semi-structured interview, such as the selection of participants. The second-stage selection eventually resulted in 10 papers and was based on the consensus between all of the authors.

## Search outcome

The 10 papers we selected were published between 1994–2015 (Table 1) and were theoretical, methodological papers. One paper was originally defined as a discussion paper (Barriball & While 1994) and one as a conceptual paper (Cridland *et al.* 2015). The methods used were not specified in eight papers. Seven of the studies were published in journals covering health sciences and three in a journal that focused on qualitative research methods. Three studies were conducted in the UK, three in the USA and one each in Australia, Canada, Finland and Malaysia. The phases of the semi-structured interview guide development were described in two papers (Barriball & While 1994, Krauss *et al.* 2009), while other papers focused on semi-structured interview questions (Åstedt-Kurki & Heikkinen 1994, Dearnley 2005, Whiting 2008, Turner 2010, Chenail 2011, Rabionet 2011, Cridland *et al.* 2015) and semi-structured interview guide development (Baumbusch 2010).

## Quality appraisal

All the selected papers were theoretical and the quality appraisal criteria for methodological studies were not available. However, during the selection process, it was crucial to consider the quality of papers (Campbell *et al.* 2014) to make sure that we only selected scientific methodological papers or research reports. We only selected papers that were structured as scientific methodological articles, based on scientific and relevant references and published in peer-reviewed journals.

## Data abstraction

During the first phase of the analysis, we read papers several times to gain an overall understanding of the content.

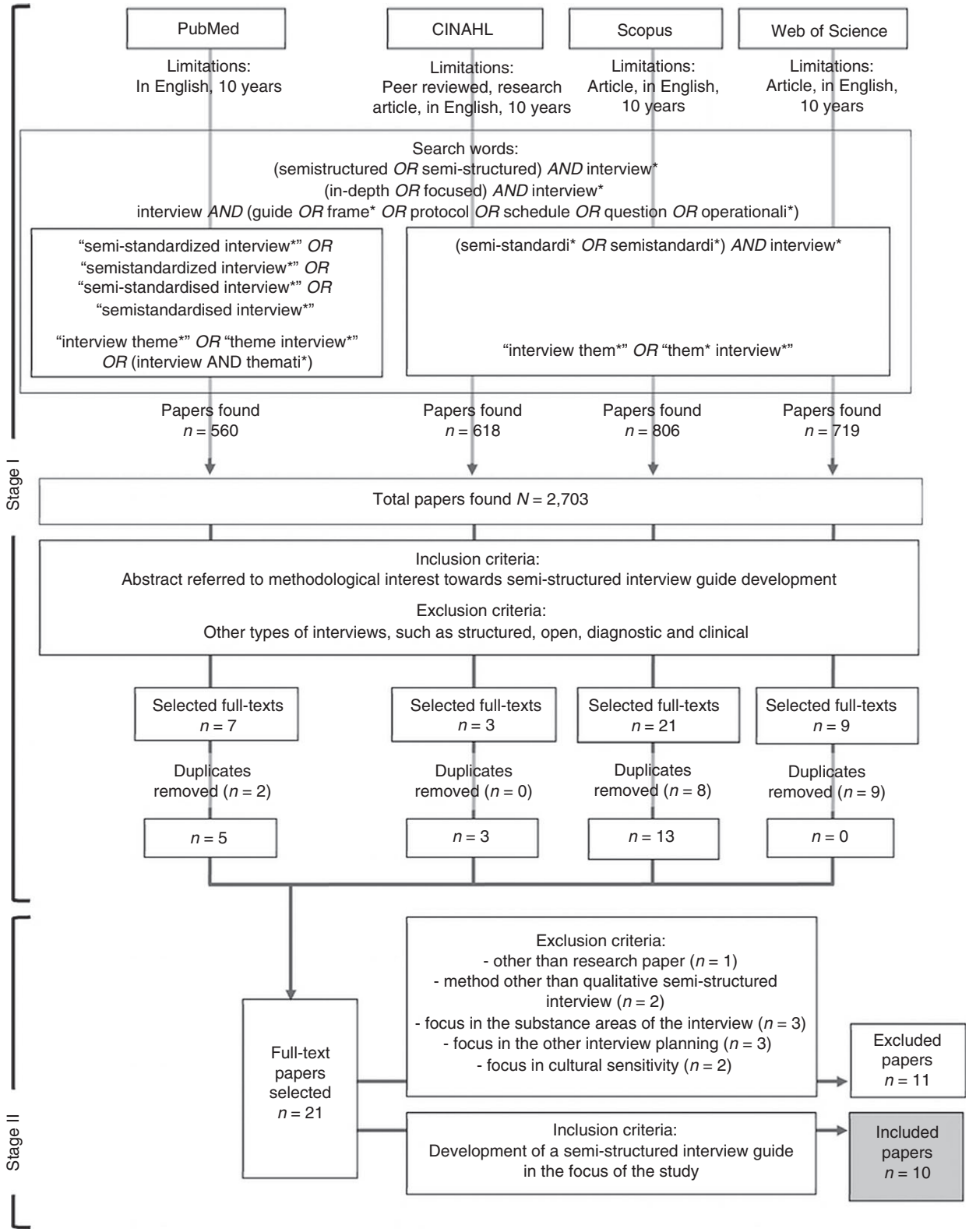


**Figure 1** Flow chart of the literature searches and selection of original studies.

**Table 1** Description of the selected papers.

| Authors (year) (country) | Aim | Method (data) | Content of the paper (Content relevant to our study is underlined) |
|---|---|---|---|
| Barriball and While (1994) (UK) | To address the issues of validity and reliability in a semi-structured interview* | Theoretical, methodological A discussion paper (literature) | Validity and reliability in a semi-structured interview. Describing the process of developing an interview schedule. |
| Baumbusch (2010) (Canada) | To describe semi-structured interviewing style for specialists in paediatric nursing | Theoretical, methodological (literature) | Designing the interview guide and conducting a semi-structured interview. Describing the structure and stages of a semi-structured interview guide. |
| Chenail (2011) (USA) | To describe the approach of interviewing the investigator for addressing instrumentation and researcher bias in qualitative research* | Theoretical, methodological (literature) | Tools for addressing bias in qualitative research. Describing the features of discovery-oriented interview questions. |
| Cridland *et al.* (2015) (Australia) | To provide reflections and recommendations on all stages of the qualitative research process* | Theoretical, methodological A conceptual paper (literature) | Experiences of conducting qualitative research with families living with autism spectrum disorder. Describing the structure and type of questions in a semi-structured interview guide. |
| Dearnley (2005) (UK) | To offer a reflective insight into using semi-structured interviews as a method of data collection* | Theoretical, methodological (literature) | A reflective insight into using semi-structured interviews as a data collection method. Describing the features of semi-structured interview questions. |
| Krauss *et al.* (2009) (Malaysia) | To assist qualitative researchers by illustrating in detail one approach for developing a useful and relevant interview guide | Theoretical, methodological (literature) | Describing the development of a semi-structured interview guide as a seven-step process. |
| Rabionet (2011) (USA) | To summarize a researcher's personal journey in crafting an interview protocol* | Theoretical, methodological (literature) | The required stages to be followed in conducting a semi-structured interview study. Briefly describing the development of interview questions. |
| Turner (2010) (USA) | To explore the effective way to conduct in-depth qualitative interviews for novice investigators by employing a step-by-step process for implementation | Theoretical, methodological (literature) | Qualitative interview designs, suggestions for conducting qualitative interviews. Describing research question construction. |
| Whiting (2008) (UK) | To prepare nurses for conducting semi-structured interviews | Theoretical, methodological (literature) | Semi-structured interviews as a research tool and a process. Describing types of questions in semi-structured interviews. |
| Åstedt-Kurki and Heikkinen (1994) (Finland) | To consider the applicability of a thematic interview and narrative method for nursing research | Theoretical, methodological (literature) | Thematic interview and narrative method as a data collection method. Briefly describing the idea of interview themes. |

*Due to a lack of information in the original papers, these descriptions have been formulated by the authors based on the full text.

After that, the data were extracted (Campbell *et al.* 2014) and tabulated based on the titles, aims, methods and the main results. We extracted information concerning the phases of the development of a semi-structured interview guide. In original papers, this information was presented in the sections called introduction, results or discussion.

### Synthesis

We analysed the content of the papers (Campbell *et al.* 2014) according to the research question using the qualitative content analysis method (Elo & Kyngäs 2008). All the information about the semi-structured interview method

and its phases were identified, grouped and named inductively as sub-categories based on their similarities and differences. After that sub-categories were grouped together and allocated to the main categories, which covered the various phases of the study methods. (Elo & Kyngäs 2008.)

## Results

In the 10 selected papers, the method was named as 'semi-structured interviews' in seven papers, 'thematic interviews' in one study (Åstedt-Kurki & Heikkinen 1994) and qualitative interviews in two studies (Turner 2010, Chenail 2011). The form of interview questions was called an 'interview guide' in four papers and there was one each called an 'interview schedule' (Barriball & While 1994), an 'interview framework' (Dearnley 2005), an 'interview protocol' (Rabionet 2011) and 'instrumentation' (Chenail 2011). Concepts also varied in relation to interview questions. The main themes were called 'general questions' (Krauss *et al.* 2009), 'guiding questions' (Baumbusch 2010), 'themes' (Åstedt-Kurki & Heikkinen 1994), 'topics' (Barriball & While 1994, Cridland *et al.* 2015) and just 'questions' (Dearnley 2005, Whiting 2008, Chenail 2011, Rabionet 2011, Cridland *et al.* 2015). In addition, concepts varied in relation to 'follow-ups' (Turner 2010, Chenail 2011), 'prompts' (Whiting 2008, Baumbusch 2010) and 'probe' questions (Barriball & While 1994, Whiting 2008, Krauss *et al.* 2009, Baumbusch 2010, Turner 2010, Rabionet 2011).

Based on our results, the semi-structured interview guide development included five phases: (1) identifying the prerequisites for using semi-structured interviews; (2) retrieving and using previous knowledge; (3) formulating the preliminary semi-structured interview guide; (4) pilot testing the interview guide; and (5) presenting the complete semi-structured interview guide.

### Identifying the prerequisites for using semi-structured interviews

The first phase was to identify the prerequisites for using semi-structured interviews. The aim of this phase was to evaluate the appropriateness of the semi-structured interview as a rigorous data collection method in relation to the selected research question(s). According to the selected studies, the researcher needed to be able to determine some areas of the phenomenon based on previous knowledge before the interview (Turner 2010). In relation to the research topics, the semi-structured interview method was suitable for studying people's perceptions and opinions or complex (Barriball & While 1994) or emotionally sensitive issues (Barriball & While 1994, Åstedt-Kurki & Heikkinen 1994). The method was also appropriate when participants had a low level of awareness of the subject or when there were issues that participants were not used to talking about, such as values, intentions and ideals (Åstedt-Kurki & Heikkinen 1994). In a semi-structured interview, it was possible to focus on the issues that were meaningful for the participant, allowing diverse perceptions to be expressed (Cridland *et al.* 2015).

### Retrieving and using previous knowledge

The second phase of the development was retrieving and using previous knowledge. The aim of this phase was to gain a comprehensive and adequate understanding of the subject, which required critical appraisal of previous knowledge and the possible need for complementary empirical knowledge. Previous knowledge created a predetermined framework for the interview (Barriball & While 1994, Turner 2010). It was based on pre-interview preparations (Turner 2010) and it was important for the researcher to have a good grasp of the substance of the research (Rabionet 2011). The critical appraisal of previous knowledge could be conducted by carrying out an extensive literature review (Barriball & While 1994, Krauss *et al.* 2009) focused on the purpose of the study (Krauss *et al.* 2009). Thus, previous knowledge created a conceptual basis for the interview (Åstedt-Kurki & Heikkinen 1994).

In the case of sparse or fragmented knowledge in the literature, empirical knowledge could be used to complement and deepen the theoretical background. Consulting experts was one way of gaining the empirical knowledge to seek understanding of the study phenomenon (Krauss *et al.* 2009, Rabionet 2011). Consulting could be conducted using focus group interviews comprising participants who were experts in their field and could freely describe the study phenomenon. Fragmented previous knowledge could also be supplemented with one or more workshops with research team members. (Krauss *et al.* 2009). In addition, methodological guidance and feedback from the other qualitative researchers could be used (Rabionet 2011).

### Formulating the preliminary semi-structured interview guide

The third phase of the development was formulating the preliminary semi-structured interview guide. The aim of this phase was to formulate an interview guide as a tool for interview data collection, using previous knowledge on structural, logical and coherent forms. An interview guide

 

has been defined as a list of questions (Whiting 2008, Krauss *et al.* 2009), which directs conversation towards the research topic during the interview (Åstedt-Kurki & Heikkinen 1994, Krauss *et al.* 2009, Cridland *et al.* 2015). The quality of the interview guide affects the implementation of the interview and the analysis of the collected data (Barriball & While 1994, Krauss *et al.* 2009, Rabionet 2011, Cridland *et al.* 2015). The form of a semi-structured interview guide was considered loose (Åstedt-Kurki & Heikkinen 1994, Dearnley 2005) and flexible (Dearnley 2005, Turner 2010), which allowed dialogue during an interview (Whiting 2008, Cridland *et al.* 2015), the opportunity to change the order of the questions (Dearnley 2005) and easy movement from question to question (Åstedt-Kurki & Heikkinen 1994).

The questions in the interview guide were described, to achieve the richest possible data (Turner 2010). Well-formulated questions in the guide were participant-oriented (Barriball & While 1994) and not leading, and also clearly worded (Åstedt-Kurki & Heikkinen 1994, Turner 2010), single-faceted (Cridland *et al.* 2015, Baumbusch 2010) and open-ended (Dearnley 2005, Whiting 2008, Krauss *et al.* 2009, Turner 2010, Chenail 2011). The aim of the guide was to generate answers from participants that were spontaneous, in-depth (Dearnley 2005, Baumbusch 2010), unique (Krauss *et al.* 2009) and vivid (Dearnley 2005). This meant that the answers reflected the interviewees' personal feelings (Whiting 2008) and stories (Rabionet 2011) and the interview guide could produce data allowing new concepts to emerge (Dearnley 2005, Krauss *et al.* 2009). Descriptive answers could be encouraged by starting questions with words like *what, who, where, when* or *how* (Chenail 2011). In some cases, the word *why* could also be used (Turner 2010).

A semi-structured interview guide consisted of two levels of questions: main themes and follow-up questions. The main themes covered the main content of the research subject and within them participants were encouraged to speak freely about their perceptions and experiences. Every participant would usually be questioned on the main themes (Åstedt-Kurki & Heikkinen 1994). The order of the main themes could be progressive and logical (Krauss *et al.* 2009). They could be used as a warm-up to break the ice and create a relaxed environment (Whiting 2008, Krauss *et al.* 2009, Rabionet 2011, Cridland *et al.* 2015). These questions could be about issues that were familiar to the participant yet central to the study subject (Whiting 2008). After that the order of the main themes could move from the lighter ones to more emotional and in-depth ones (Whiting 2008, Baumbusch 2010, Cridland *et al.* 2015) and then end on lighter themes again (Baumbusch 2010).

Follow-up questions were used to make the main themes easier for the participant to understand (Turner 2010) and to direct conversation towards the study subject (Baumbusch 2010). The aim was to maintain the flow of the interview (Whiting 2008) and gain accurate (Barriball & While 1994, Whiting 2008, Baumbusch 2010, Rabionet 2011) and optimal information (Turner 2010). Follow-up questions could be pre-designed (Whiting 2008, Rabionet 2011) or spontaneous based on the participant's answer (Whiting 2008, Turner 2010, Chenail 2011). Pre-designed follow-up questions could be beneficial in increasing the consistency of the subjects covered by interviews carried out by different interviewers (Krauss *et al.* 2009). As a spontaneous follow-up question, the interviewer could ask participants to expand on some particular point that came up in the interview, by asking for more information (Whiting 2008) or an example of the issue (Dearnley 2005).

Verbal and non-verbal probing techniques could be used as follow-up questions. Examples of verbal probes included repeating the participant's point, expressing interest with verbal agreement (Whiting 2008, Turner 2010) or giving the impression that the interviewer was aware of certain information. Non-verbal probing referred to remaining silent and allowing the participant to think aloud (Whiting 2008).

### Pilot testing of the interview guide

The fourth phase of the development was pilot testing the semi-structured interview guide. The aim of this phase was to confirm the coverage and relevance of the content of the formulated, preliminary guide and to identify the possible need to reformulate questions and to test implementation of it. By testing the interview guide, it was possible to make informed changes and adjustments to the interview questions (Barriball & While 1994, Chenail 2011) and improve the quality of data collection (Chenail 2011). Testing could also produce useful information about research integrity and improve the pre-assessment of research ethics and the researcher's ability to conduct data collection (Chenail 2011). Based on our analysis, the pilot test of the interview guide could be conducted using three different techniques: internal testing, expert assessment and field-testing.

*Internal testing* referred to the evaluation of the preliminary interview guide in collaboration with the investigators in the research team (Barriball & While 1994, Chenail 2011). This technique could provide critical information about the interview guide in general, for instance removing ambiguities and inappropriate leading questions (Barriball & While 1994) and highlighting any possible interviewer

 

bias (Chenail 2011). Researchers might also assume the role of the participant and be interviewed themselves by another researcher. Gaining an insight into how it felt to be interviewed, promoted the ethical and responsible way that the research was conducted around sensitive issues. This technique could also be useful if other types of pilot test were not possible (Chenail 2011).

*Expert assessment* referred to exposing the preliminary interview guide to a critique by specialists outside the research team. Assessment by external specialists was particularly beneficial in assessing the appropriateness and comprehensiveness of the interview guide contents in relation to the aims and the subjects of the study. It allowed the interviewing researcher to discuss the relevance of the questions and gain valuable guidance about the wording and the arrangement of the questions (Barriball & While 1994).

*Field-testing* referred to a technique where the preliminary interview guide was tested with the potential study participants. This form of testing was the most commonly used in the development of a semi-structured interview process (Barriball & While 1994, Krauss *et al.* 2009, Turner 2010). Field-testing simulated the real interview situation (Barriball & While 1994, Chenail 2011) and provided crucial information about the implementation of the interviews (Turner 2010). Testing the preliminary guide with potential participants could be used to assure intelligibility (Barriball & While 1994, Chenail 2011), make the questions more relevant (Krauss *et al.* 2009, Chenail 2011) and determine whether they truly elicited the participants' varied perceptions and experiences (Barriball & While 1994, Chenail 2011). Based on field-testing, the order and form of the questions could be re-formulated to be more practical. The effectiveness of the questions could also be assessed and follow-up questions could be refined to improve the coverage of the interview guide (Krauss *et al.* 2009). Field-testing was also beneficial as it enabled the interviewer to decide how much time was needed for each session (Chenail 2011, Cridland *et al.* 2015) or if there were some other flaws or limitations in the design (Turner 2010, Chenail 2011).

### Presenting the complete semi-structured interview guide

The fifth and last phase of the development process was presenting the complete semi-structured interview guide in the study paper. The aim was to produce a clear, finished and logical semi-structured interview guide for data collection. The guide that was presented was based on and reflected the previous phases of the development process (Krauss *et al.* 2009). It provided a useful mechanism for responding to the aims of the study (Barriball & While 1994) and was universal so that other researchers could also use it (Krauss *et al.* 2009).

## Discussion

Based on our findings, previous studies concerning the development of a semi-structured interview guide were sparse and fragmented. In our study, we produced new synthesized knowledge of semi-structured interview guide development and formulated the aims and content for each phase of the process (Figure 2). According to our findings, the inter-related phases of the development process were: (1) identifying the prerequisites for using semi-structured interviews; (2) retrieving and using previous knowledge; (3) formulating the preliminary semi-structured interview guide; (4) pilot testing the interview guide; and (5) presenting the complete semi-structured interview guide. Developing a semi-structured interview guide rigorously contributes to the trustworthiness of the semi-structured interview as a qualitative research method.

According to our findings, the phases of the development process were inseparable. The five phases were inter-related, as each phase contributed to the preparation and success of the next. The development process started with a critical scrutiny of whether the study purpose and question(s) can be answered by the semi-structured interview method. If the prerequisites of using the method were achieved, the researcher proceeded to the second phase, using the previous knowledge as a basis for formulating the preliminary interview guide. The literature review offered an essential basis for mapping previous knowledge. It was noteworthy, however, that a diversely composed, comprehensive semi-structured interview guide often required complementing theoretical background with empirical information using the knowledge of experts in the subject and other researchers.

Having retrieved and mapped the previous knowledge, the researcher proceeded to the third phase, which was formulating the preliminary interview guide. There are many things to consider during this phase when it comes to formulating an interviewee- and interviewer-friendly guide. One of them is how to achieve balance between the main themes and follow-up questions, which differs depending on the purpose of the interview. To avoid leading the participant's responses, the main themes usually dominate the interview pattern and the only necessary follow-up questions are 'gentle nudges' that are used if the participant has difficulties, for example in understanding the main theme (Smith & Osborn 2008). However, in some cases, it might be beneficial to only have a couple of main questions

 

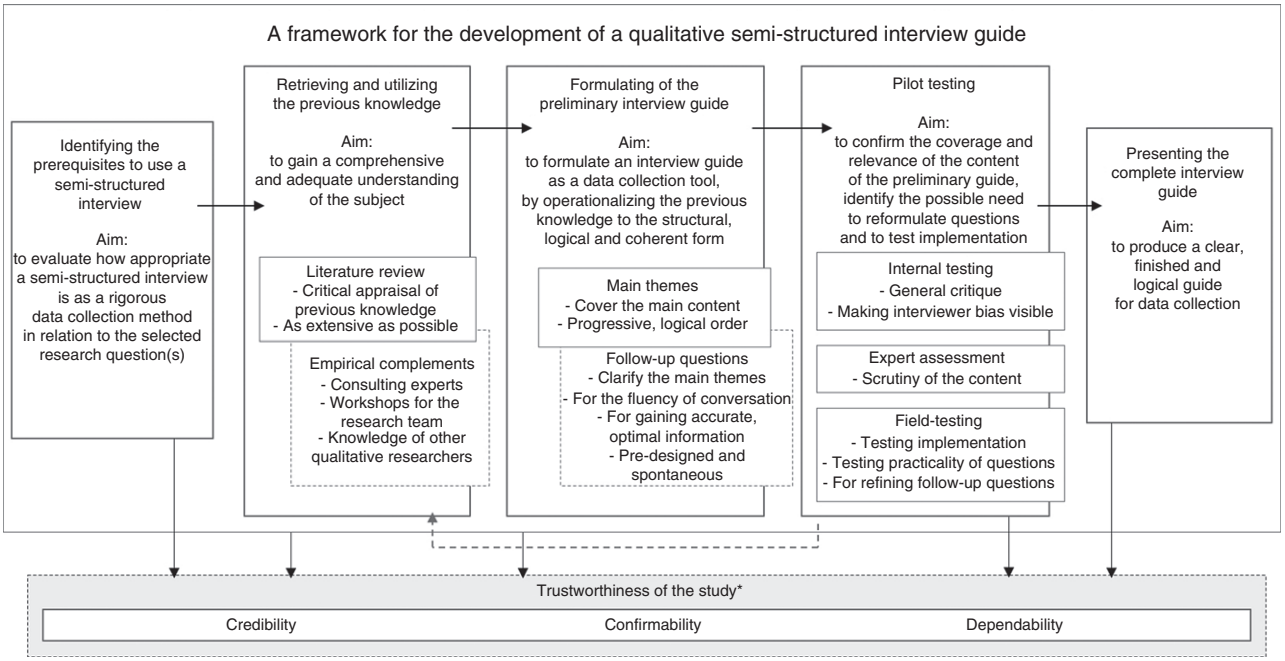


**Figure 2** The phases of a semi-structured interview guide development based on the synthesis/review (*added based on the section of discussion).

supported by several follow-up questions. For example, when the aim of the study is concept clarification, follow-up questions are used to approach different nuances of the concept (Rubin & Rubin 2005), to provide 'funnelling' towards specific questions of particular concern (Smith & Osborn 2008). Ethical considerations related to the research process are also highlighted in this phase. While formulating effective interview questions, the researcher has to make sure that the questions do not cause harm for the participants. Spontaneous follow-up questions can also create an ethical dilemma, as some ethical review boards want to assess every interview question in advance (Kvale 2007).

According to our findings, in the fourth phase, pilot testing, the researcher exposed the preliminary interview guide to critique and scrutiny to see if changes were needed. Pilot testing is often understood to be testing the study feasibility by collecting data using a small sample of participants who are similar to the actual study participants (Maxwell 2013). Our results showed that interview techniques and content perspectives could also be expanded by consulting other researchers and experts on the subject. Combining all the pilot test forms most certainly resulted in diverse perception of the preliminary interview guide but could be burdensome and too time-consuming compared with the study purpose. Thus, based on the earlier development phases, the researcher has to determine which areas of the preliminary guide need particular scrutiny and choose the appropriate pilot test form(s). It is worth mentioning that the interview guide and questions can also be modified based on the actual research interview experiences (Taylor 2005, Holloway & Wheeler 2010).

In the fifth and last phase of the development, the researcher presented the finished interview guide. Presenting the actual interview questions in the study paper enabled the study results to be assessed in relation to earlier knowledge. This made it possible for other researchers to test and develop the guide further. Thus, the interview guide should be prepared so that other researchers could use it as well. For instance, excluding international study results from the literature review in the second phase of the development process could have hindered the universal use of the interview guide.

Developing a rigorous semi-structured interview guide enhances the trustworthiness of qualitative research in several ways. Observing the principles of Lincoln and Guba (1985), several phases of the interview guide development process contribute to the credibility, confirmability and dependability of the study (Figure 2). *Credibility* refers to accurate recording of the phenomena under scrutiny (Shenton 2004). Thus, appropriate and successful selection of the data collection methodology in the first phase is an essential basis for the credibility of the study results (Jensen 2008a). Instead of this, the third phase highlights the communication of the central concepts and the interview questions,

 

indicating the success of how the research subject was operationalized. In addition, presenting the connection between the study phenomena and interview questions in the last phase allows reader to evaluate if the study actually measured what was intended (Shenton 2004). *Confirmability* of the study refers to the researcher's objectivity (Lincoln & Guba 1985), something that a rigorous development process also contributes to in many ways. The subjective role of the researcher can be reduced using systematically collected literature-based and empirical previous knowledge. In addition, criticism gained through pilot testing contributes to the objective development of an interview guide. When a researcher writes a study report and presents a complete interview guide, they can express confirmability by making the research process as transparent as possible and by describing how the data were collected (Jensen 2008b). *Dependability* refers to repeating the study in the same conditions (Shenton 2004). Thus, presenting the complete interview guide in the last phase of the development process is linked to the dependability of the study, allowing availability of the data collection tool for the other researchers.

### Limitations

The limitations of our study concerned the review method and the data collection process. As a review method for theoretical studies was not available, we adapted a review method for theories (Campbell *et al.* 2014). Due to the general nature of the search terms and the widely used method of semi-structured interviews, the identification and limitation of search terms was challenging. Because of the way that scientific databases are currently structured, it was impossible to focus literature searches on the methodological literature. Based on the classical strategy of literature searches – using a 10-year time period, searching all fields and using MeSH terms – we produced 143,919 results, which was too many to manage rigorously. Therefore, to identify a reasonable number of papers ($N$ = 2,703), unusual limitations in the literature searches were used. Because it was not possible to limit the search in the databases to methodological papers, we had to manually separate the methodological papers from the empirical ones. This may have risked excluding some relevant papers from the review.

## Conclusion

Our study shows that rigorous development of a qualitative semi-structured interview guide contributes to the objectivity and trustworthiness of studies and makes the results more plausible. However, this process has rarely been described in scientific papers, which hinders opportunity to assess the success of the study methodology. Researchers should consider proceeding systematically using five-step process in developing a semi-structured interview guide and justify the decisions made during it. Further research is needed to clarify: (1) how to collect empirical knowledge to complement previous literature-based knowledge, (2) how to formulate a preliminary guide and (3) how to derive the results from pilot testing into the form of a presentable, completed semi-structured interview guide.

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## Conflict of interest

The authors have no conflicts of interest to declare.

## Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

## References

Åstedt-Kurki P. & Heikkinen R.-L. (1994) Two approaches to the study of experiences of health and old age: the thematic interview and the narrative method. *Journal of Advanced Nursing* **20**, 418–421. doi:10.1111/j.1365-2648.1994.tb02375.x

Barriball K.L. & While A. (1994) Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing* **19**(2), 328–335. doi:10.1111/j.1365-2648.1994.tb01088.x

Baumbusch J. (2010) Semi-structured interviewing in practice-close research. *Journal for Specialists in Pediatric Nursing* **15**(3), 255–258. doi:10.1111/j.1744-6155.2010.00243.x

Bell E. (2014) Rethinking quality in qualitative research. *Australian Journal of Rural Health* **22**(3), 90–91. doi:10.1111/ajr.12119

Campbell M., Egan M., Lorenc T., Bond L., Popham F. & Fenton C. (2014) Considering methodological options for reviews of theory: illustrated by a review of theories linking income and health. *Systematic Reviews* **3**, 114. doi:10.1186/2046-4053-3-114

 

Chenail R.J. (2011) Interviewing the Investigator: strategies for addressing instrumentation and researcher bias concerns in qualitative research. *The Qualitative Report* **16**(1), 255–262.

Cleary M., Horsfall J. & Hayter M. (2014) Qualitative research: quality results? *Journal of Advanced Nursing* **70**(4), 711–713. doi:10.1111/jan.12172

Cridland E.K., Jones S.C., Caputi P. & Magee C.A. (2015) Qualitative research with families living with autism spectrum disorder: recommendations for conducting semistructured interviews. *Journal of Intellectual & Developmental Disability* **40**(1), 78–91. doi:10.3109/13668250.2014.964191

Dearnley C. (2005) A reflection on the use of semi-structured interviews. *Nurse Researcher* **13**(1), 19–28. doi:10.7748/nr2005.07.13.1.19.c5997

DiCicco-Bloom B. & Crabtree B.F. (2006) The qualitative research interview. *Medical Education* **40**(4), 314–321. doi:10.1111/j.1365-2929.2006.02418.x

Elo S. & Kyngäs H. (2008) The qualitative content analysis process. *Journal of Advanced Nursing* **62**(1), 107–115. doi:10.1111/j.1365-2648.2007.04569.x

Galletta A. (2012) *Mastering the Semi-structured Interview and Beyond: From Research Design to Analysis and Publication*. New York University Press, New York.

Gibbs L., Kealy M., Willis K., Green J., Welch N. & Daly J. (2007) What have sampling and data collection got to do with good qualitative research? *Australian and New Zealand Journal of Public Health* **31**(6), 540–544. doi:10.1111/j.1753-6405.2007.00140.x

Gill P., Stewart K., Treasure E. & Chadwick B. (2008) Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal* **204**(6), 291–295. doi:10.1038/bdj.2008.192

Hardon A., Hodgkin C. & Fresle D. (2004) *How to Investigate the Use of Medicines by Consumers*. World Health Organization and University of Amsterdam. Retrieved from http://apps.who.int/medicinedocs/en/d/Js6169e/on 30 September 2015.

Holloway I. & Wheeler S. (2010) *Qualitative Research in Nursing and Health Care*, 3rd edn. Wiley-Blackwell, Chichester, Ames, Iowa.

Jensen D. (2008a) Credibility. In *The SAGE Encyclopedia of Qualitative Research Methods* (Given L., ed.), SAGE, Los Angeles, CA, pp. 139–140.

Jensen D. (2008b) Confirmability. In *The SAGE Encyclopedia of Qualitative Research Methods* (Given L. ed.), SAGE, Los Angeles, CA, pp. 113.

Kelly S.E. (2010) Qualitative interviewing techniques and styles. In *The SAGE Handbook of Qualitative Methods in Health Research* (Bourgeault I., Dingwall R. & De Vries R., eds), SAGE, London, pp. 307–327.

Kitto S.C., Chesters J. & Grbich C. (2008) Quality in qualitative research. *Medical Journal of Australia* **188**(4), 243–246.

Krauss S.E., Hamzah A., Omar Z., Suandi T., Ismail I.A. & Zahari M.Z. (2009) Preliminary investigation and interview guide development for studying how Malaysian farmers form their mental models of farming. *The Qualitative Report* **14**(2), 245–260.

Kvale S. (2007) *Doing Interviews*. SAGE, Los Angeles, London.

Lincoln Y.S. & Guba E.G. (1985) *Naturalistic Inquiry*. SAGE, Newbury park.

Mason J. (2004) Semistructured interview. In *The SAGE Encyclopedia of Social Science Research Methods* (Lewis-Beck M.S., Bryman A. & Futin Liao E., eds), SAGE, Thousand Oaks, London, pp. 1021–1022.

Maxwell J.A. (2013) *Qualitative Research Design. An Interactive Approach*, 3rd edn. Thousand Oaks, SAGE.

Morrow S.L. (2005) Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology* **52**(2), 250–260.

Polit D.S. & Beck C.T. (2010) *Essentials of Nursing Research. Appraising Evidence for Nursing Practice*, 7th edn. Lippincott-Raven Publishers, Philadelphia.

Rabionet S.E. (2011) How I learned to design and conduct semi-structured interviews: an ongoing and continuous journey. *The Qualitative Report* **16**(2), 563–566.

Rubin H.J. & Rubin I.S. (2005) *Qualitative Interviewing: The Art of Hearing the Data*, 2nd edn. SAGE, Thousand Oaks, CA.

RWJF (Robert Wood Johnson Foundation) (2008) Semi-structured Interviews. Retrieved from http://www.qualres.org/HomeSemi-3629.html on 16 April 2015.

Salmon P. (2013) Assessing the quality in qualitative research. *Patient Education and Counseling* **90**(1), 1–3. doi:10.1136/bmj.320.7226.50

Shenton A.K. (2004) Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information* **22**(2), 63–75.

Smith J.A. & Osborn M. (2008) Interpretative Phenomenological Analysis. In *Qualitative Psychology: A Practical Guide to Research Methods*, 2nd edn (Smith A., ed.), SAGE, Los Angeles, CA, London, pp. 53–80.

Taylor M.C. (2005) Interviewing. In *Qualitative Research in Health Care* (Holloway I., ed.), McGraw-Hill Education, Maidenhead, England, pp. 39–55.

Turner D.W. (2010) Qualitative interview design: a practical guide for novice researcher. *The Qualitative Report* **15**(3), 754–760.

Wengraf T. (2001) *Qualitative Research Interviewing: Biographic Narrative and Semi-structured Methods*. SAGE, London.

Whiting L.S. (2008) Semi-structured interviews: guidance for novice researchers. *Nursing Standard* **22**(23), 35–40.