

# Using Reflexive Thinking to Establish Rigor in Qualitative Research

Horst Rettke ▼ Manuela Pretto ▼ Elisabeth Spichiger ▼ Irena Anna Frei ▼ Rebecca Spirig

**Background:** Reflexivity can be helpful in developing the methodological rigor necessary to attaining trustworthy qualitative study results.

**Objectives:** The aim of this study was to evaluate strategies of critical reflexive thinking during a qualitative enquiry rooted in a mixed-methods study.

**Methods:** Guided by the questions of Rolfe and colleagues from 2001 (“what,” “so what,” and “now what”), we applied reflexive thinking to all aspects of the investigation.

**Results:** Critical reflexive thinking strongly supported our efforts to establish methodological rigor and helped reveal shortcomings.

**Discussion:** Effective strategical use of reflexive thinking takes concerted effort. Both time and space are essential to applying reflexive thinking throughout the qualitative research process.

**Key Words:** focus groups • methodological rigor • qualitative research • reflexive account

*Nursing Research, November/December 2018, Vol 67, No 6, 490–497*

Establishing methodological rigor in qualitative research is challenging, particularly in studies that generate a large data set managed and analyzed through the application of a particular approach. In this article, the authors describe and reflect upon the processes employed to ensure rigor—a relevant aspect of the trustworthiness of a qualitative study. Trustworthiness, as developed by Lincoln and Guba (1985), is a criterion against which qualitative study procedures and findings can be assessed (Elo et al., 2014). It aims to support the argument that qualitative study findings are “worth paying attention to” (Lincoln & Guba, 1985, p. 290).

The impetus for our research was the introduction of the diagnosis related groups based (as with ‘nursing service context factors’ on this page) reimbursement system in Switzerland. A multicenter research program was established based methodologically on pragmatism, and a mixed-methods design of a sequential explanatory strategy was applied

**Horst Rettke, PhD, RN**, is Clinical Nurse Scientist, Centre for Clinical Nursing Science, University Hospital Zurich, Switzerland.

**Manuela Pretto, MNSc, RN**, is Surgical Clinical Nurse Specialist, Surgery Department, University Hospital Basel, Switzerland.

**Elisabeth Spichiger, PD, PhD, RN**, is Scientific Collaborator and Lecturer, Directorate of Nursing, Medical-Technical and Medical-Therapeutic Areas, Inselspital Bern University Hospital, and Institute of Nursing Science, Medical Faculty, University Basel, Switzerland.

**Irena Anna Frei, PhD, RN**, is Head, Practice Development Unit, Department of Nursing and Allied Health Professions, University Hospital Basel, Switzerland.

**Rebecca Spirig, PhD, RN**, is Director of Nursing and Allied Health Care Professions and Lecturer, Department of Nursing and Allied Health Professions, University Hospital Zurich, and Institute of Nursing Science, Medical Faculty, University Basel, Switzerland.

Copyright © 2018 Wolters Kluwer Health, Inc. All rights reserved.

DOI: 10.1097/NNR.0000000000000307

(Creswell, 2014; Spirig et al., 2014). This pragmatic approach supports the joint use of quantitative and qualitative methods to come to a broader understanding of a problem (Creswell, 2014, p. 273; Onwuegbuzie & Leech, 2015; Patton, 2015, p. 806). The overall aim of our multicenter, mixed-methods research program was to prepare instruments and conduct the initial assessment of nursing service context factors in healthcare institutions prior to the introduction of the new reimbursement system. The aim of the qualitative portion of this program was to provide an in-depth explanation of the quantitative results regarding nursing service context factors by eliciting participants’ own views on them. Moreover, the qualitative portion was designed to contribute to further development of study instruments (Rettke et al., 2015).

Nursing service context factors (e.g., nursing workload, leadership behavior of unit managers, interprofessional collaboration, and job satisfaction) are factors that may affect nurses and nursing care and, thus, nursing-sensitive patient outcomes (Spirig et al., 2014); the underlying literature-based model of nursing service context factors is explained in detail elsewhere (Spirig et al., 2014). A multicenter approach for the program was chosen in order to account for organizational differences. Three university and two cantonal (i.e., state) hospitals in German-speaking Switzerland participated. The research program was supported by the Swiss National Science Foundation. The study protocol was approved by the corresponding cantonal ethics committees. The quantitative data collection was completed in 2011 (Kleinknecht-Dolf et al., 2015). This article focuses solely on the qualitative portion of the research

program, which involved multiple focus-group interviews with nurses at each of the five participating hospitals. The large qualitative data set that was envisioned required specific strategies regarding collecting, analyzing, and reporting data, and the focus of this article is to demonstrate and critically examine the chosen strategies for establishing methodological rigor using reflexive thinking.

## Background

The success of qualitative inquiry depends on a considerable extent of rigorous data collection and a disciplined management process. The importance of collecting and analyzing, interpreting, and reporting qualitative data thoroughly is largely acknowledged (Bradbury-Jones, 2007; Jootun, McGhee, & Marland, 2009; Plummer-D'Amato, 2008; Ryan-Nichols & Will, 2009). Qualitative research is characterized by a wide range of diversity among methods (Ryan-Nichols & Will, 2009, p. 73), which contradicts the notion of a universal set of quality criteria that fits every design in qualitative inquiry (Rolfe, 2006a). Although a wide variety of quality criteria have been proposed (e.g., Lincoln, 1995; Lincoln & Guba, 1985; Smith & Deemer, 2000; Thorne, 2016; Tracy, 2010), most experts agree that the process of qualitative research should be rigorous and systematic and that serious attention must be paid to the potential for bias in collecting, analyzing, and representing qualitative data (Rolfe, 2006a; Ryan-Nichols & Will, 2009; Tobin & Begley, 2004). In qualitative studies, researchers and participants meet and interact during the phase of data collection. Researcher involvement is inherent in qualitative research and renders the researcher part of the research itself (Holloway & Biley, 2011; Sutton & Austin, 2015). In turn, being aware of one's own assumptions, viewpoints, and interests is a prerequisite of qualitative research (Fischer, 2009). If not taken into account, the observer's paradox may apply; researchers' involvement may influence the research environment and data. In addition, researchers begin the analysis and interpretation data from their own perspectives, thus either intentionally or unintentionally influencing the research findings. To reduce such influence, critical reflexive thinking is of paramount importance throughout the entire research process (Fontana, 2004). Furthermore, transparency regarding methods is vital so that readers understand how rigor has been established (Darawsheh, 2014).

To address methodological rigor, the mixed-methods research team adopted reflexivity as the appropriate approach for the qualitative portion of the research program. Reflexivity is considered an integral component of conducting good qualitative research (Newton, Rothlingova, Gutteridge, LeMarchand, & Raphael, 2012, p. 5). Yet, accounts of reflexivity rarely appear in qualitative research publications (Newton et al., 2012). Being reflexive involves continuous self-critique and self-appraisal (Dowling, 2006) throughout the entire research process (Mauthner & Doucet, 2003). According to the model of Rolfe, Freshwater, and Jasper (2001), three critical questions

guide the process of reflexivity: *what, so what, and now what*. Starting on the descriptive level with *what*, we are then able to move on to the theory and knowledge-building level (i.e., the *so what*) and to eventually arrive at an action-oriented, reflexive level of reflection by asking ourselves, *now what*. Research reflexivity involves both thoughts and actions (i.e., thoughts and ideas guiding the design phase and decisions regarding actions taken during the research process), as well as the implications for future investigations (Mauthner & Doucet, 2003; Rolfe, 2006b). The research team in this study decided to use reflexive thinking as the appropriate quality approach for this qualitative inquiry, using Rolfe et al.'s (2001) three critical questions as reflection guides, as illustrated below.

## What

The multicenter, mixed-methods research program provided a solid base in terms of organizational structure and scientific resources for the qualitative inquiry. In the following section, we will describe the decisions made while designing the qualitative study portion (*what*).

**Constituting the Qualitative Study Team** The mixed-methods research program and the research team were created and led by a PhD-prepared nurse with expertise in qualitative and mixed-methods research. As primary investigator (PI), she was involved in all phases of the overall research program. She formed the steering group, made up of experts with a strong background in either quantitative or qualitative research. Thus, the steering group's qualitative researchers (referred to hereafter as *the reflection board*) took the lead in designing the sequential explanatory qualitative study component (Creswell, 2014). All three members of the reflection board, including the PI, were senior researchers holding PhD degrees in nursing with extensive expertise in qualitative research. In addition, their involvement and familiarity with the overarching mixed-methods design ensured theoretical consistency in aligning the qualitative inquiry with the quantitative study portion. The reflection board was supported by the mixed-methods research coordinator who had led the preceding quantitative study. Moreover, the research coordinator managed the project group responsible for study organization and execution at the participating study sites. All project group members were junior researchers educated at the master's level with varied research backgrounds. This same group continued in their role throughout the qualitative study. A PhD-prepared nurse with proven expertise in qualitative research was engaged (first author) as qualitative study coordinator. He led all focus-group interviews and was primary analyst for the interview data. He coordinated with the reflection board on reflexive discussions over the course of the study. In addition, he was supported by all of the project group members acting as local coordinators and comoderators onsite in the study settings. Finally, five master's in nursing science students were

invited to work with the qualitative study coordinator on the research project. In all, nine researchers and five students were involved at various stages in the qualitative study. The number of persons involved were partly to have board members who were able to conceptualize the study (senior researchers) or manage the multisite format (mixed-methods research, qualitative study, and local study coordinators), as well as to be able to engage in reflexivity (reflection board). The team size also created learning opportunities for the junior researchers and students. In addition, the number of persons increased diversity of thinking that would serve to challenge the evaluation of data collection and analysis processes, thereby improving the quality of the reflexivity.

**Selecting Methods for Data Collection and Analysis** The aim of the qualitative inquiry was to elicit participants' views and experiences regarding quantitative study results of the following nursing service context factors: interprofessional collaboration with physicians, leadership of unit managers, nursing workload, and job satisfaction (Rettke et al., 2015). The reflection board decided upon focus-group interviews and knowledge mapping as the appropriate methods for qualitative data collection and analysis. The decision to use focus groups was based on our belief that focus-group interviews were most suited to research questions applicable to a collective context (Jayasekara, 2012). In focus-group interviews, participant input might stimulate other group members to develop new and different views on the topic in question, thus adding to the discussion. This process is regarded as preferable to single-person interviews (Pelz, Schmitt, & Meis, 2004; Stewart, Shamdasani, & Rook, 2007). In our view, listening to each other and contributing to each other's accounts would enable focus-group participants to reflect on their own experiences and positions.

Because there was no consensus on a gold standard for analyzing focus-group data (Jackson, 1998; Onwuegbuzie, Dickinson, Leech, & Zoran, 2009; Plummer-D'Amato, 2008), the reflection board opted to use knowledge mapping, a technique for aggregating, structuring, and communicating individual or shared knowledge (Hellström & Husted, 2004). The basic principle of knowledge mapping is simple: The themes and concepts of the topic of the discussion are depicted as central nodes in a network with their relationships depicted as connections (O'Donnell, Dansereau, & Hall, 2002; Wiegmann, Dansereau, McCagg, Rewey, & Pitre, 1992). Mapping interview statements requires summarizing their content and reducing similar statements down to key terms. This procedure is comparable to the procedure of Mayring's (2010) qualitative content analysis. However, in knowledge mapping, the analytical steps taken have a greater capacity to reduce the interview data, albeit in just as diligent and careful a manner. As such, knowledge mapping promised to be an efficient but robust method of analyzing focus-group interview data when

systematically combined with reflexive thinking sessions. The reflection board also decided to apply knowledge mapping concurrently to the process of data collection with the aim of visualizing the core contents of all interview statements made. Visualizing had a twofold benefit: participants were able to check how their contributions fit with the knowledge map and to supplement, amend, or correct where needed (Pelz et al., 2004). This created an opportunity for all participants to reflect on how well they formulated their positions. In the subsequent analysis, the map was then compared to the audio recording for completeness and possible amendments.

**Getting Prepared** Although most of the qualitative study team members were familiar with focus-group interview techniques, the students were not. In addition, knowledge mapping was new to almost everyone except the PI. Therefore, a half-day workshop was held to introduce both techniques. In the subsequent evaluation, challenges were acknowledged and discussed. In a follow-up session, the qualitative study coordinator met with the students to reinforce the training, including a pretest focus-group session with representative interview questions and concurrent knowledge mapping, followed by a session reflecting on the experience. These activities helped clarify the upcoming tasks, allowing for reflection on individual roles and providing some familiarity with the study methods and procedures.

**Getting Ready** Because the project group members of the mixed-methods research program would function as local study coordinators, they again assisted the qualitative study coordinator in developing a timeline for the focus-group discussions at each study site. Together with the qualitative study coordinator and one of the students, each local study coordinator formed the onsite study team and functioned as comoderator at their study site. The students who were scheduled to assist during the interviews at the various study sites were supervised by the qualitative study coordinator. The students' tasks included taking field notes during focus-group interviews, contributing their views during onsite reflections following the interview, taking part in discussions with the reflection board, and validating focus-group results at one particular study site.

In collaboration with the mixed-methods research coordinator, the qualitative study coordinator developed an initial draft of interview questions. He then presented them to the reflection board to evaluate for relevance and feasibility. Eventually, four main interview questions were chosen; each question addressed a specific quantitative study outcome, for example, nursing workload: "What are the reasons that nursing interventions are sometimes not executed, although they were explicitly planned or deemed as indispensable?" Two separate reflection board meetings were held to evaluate the interview questions for usefulness and feasibility following

the first series of interviews. After three series of interviews were completed, the reflection board reviewed the interview guide to revise the interview questions based on preliminary study results (see Table 1).

**Getting Started** All five hospitals that had participated in the quantitative study were scheduled to participate in the qualitative inquiry in the summer of 2012. Our target sample was nurses working in various in-patient specialties and functions who had participated in the earlier quantitative study. The reflection board considered a group size of 10 as being sufficient to bring out diversity in viewpoints and statements while, at the same time, small enough for participants not to impede each other in contributing to the discussion (Plummer-D'Amato, 2008). In forming the focus groups, we considered the individual working environment (specialty) and job function as essential criteria to be taken into account. The specialty was thought to potentially influence the quality or extent to which nursing service context factors might apply. For example, nurses might experience the interprofessional collaboration with oncologists differently from collaboration with surgeons. Workload could also potentially be perceived differently, for example, intensive care units as opposed to medical wards. To include a range of working environments, nurses working in a variety of in-patient settings were included according to the participating hospital's specialty structure. In addition, the functions performed by nurses potentially shape the view of a nursing service context factor. That is, clinical nurse specialists might develop a different view of interprofessional collaboration than bedside nurses. Similarly, bedside nurses might assess job satisfaction differently than unit managers. In summary, the quest for diversity and commonality in the forming of focus groups was critical (Plummer-D'Amato, 2008). Each local study coordinator organized recruitment at his or her site. They provided all unit managers with a recruitment flyer for posting on the units' notice board. Unit managers were also asked to encourage their staff to consider taking part.

**On the Go** Purposive sampling was chosen (Higginbottom, 2007) to ensure that each focus group was formed in such a way as to reflect the hospital's specialty structure. In total, 20 focus-group interviews were planned, with four interviews at each study site. In the first series of interviews, bedside nurses were interviewed at each of the five study sites; in the second series, unit managers were interviewed; in the third series, clinical nurse specialists of all sites discussed the identical interview questions; and in the fourth series, a new sample set of bedside nurses discussed a revised set of interview questions arising from the preliminary data analysis of the interview Series 1-3 (see Table 1).

### So What

Because the reflection board considered reflexivity as the key instrument for achieving rigor (Dowling, 2006), time was set

aside to allow for reflexive thinking in distinct phases throughout the qualitative research project. In this section, we will reflect on the actions taken within the research process (*so what*).

**Reflexivity at All Project Levels** The reflection board met with the qualitative study coordinator to evaluate study procedures, monitor progress, and discuss study findings. Those meetings allowed for reflexivity on a meta level (i.e., from the primary perspective). The project group met with the qualitative study coordinator to organize focus-group interview sessions and participate in data collection; this established close on-site collaboration. Monthly project group meetings offered ample opportunities to discuss and plan the qualitative research procedures and reflect on the progress of the study (Mauthner & Doucet, 2003) beyond the individual study site. This served as a platform for reflexive thinking on a meso level (i.e., from the executive perspective). Moreover, the mixed-methods research coordinator and the qualitative study coordinator shared a common employer. Their proximity enabled frequent formal and informal exchanges in all phases of the qualitative study. After each interview was completed, the qualitative study coordinator, the local study coordinator, and the student attending that interview reflected on the process of focus-group discussion and its dynamics and content. In this way, reflexive thinking was interwoven into the research actions taken in the field on a micro level.

**Reflexivity in Rolling Out the Study** In total, 146 nurses participated in the qualitative focus groups. Each of the 20 interviews lasted 90 minutes; interviews opened with a short presentation focusing on the topics under discussion and illustrating the quantitative results that were associated with the interview questions. All interviews, with one exception, were conducted by the qualitative study coordinator to ensure consistency. The onsite research teams (qualitative study coordinator, local study coordinator, student) maintained the reflexive approach over the course of the interviews. This involved reflecting critically on the statements contributed in the interviews as well as on the mode of contribution (i.e., group dynamics). Although the interview questions set the itinerary, the qualitative study coordinator moderated the interview's flow and pace. Reflexive thinking also served as a barrier to undue influence being exerted on the study participants. The interview questions provided the principal scheme for the local study coordinator's knowledge mapping. However, his or her reflexive stance allowed interview statements or subjects under discussion to stand out if further clarification was necessary.

During the audio recording, the local study coordinator drew knowledge maps. The discussion of each interview question was summarized visually on a separate flip chart, producing four knowledge maps at the end of each interview. Then the local study coordinator presented the knowledge maps



**TABLE 1. Study Procedures With Reflection Activities**

	Data collection				Data analysis		Report
	Site A	Site B	Site C	Site D	Site E	1st Level of aggregation	
<i>Reflection Board meeting for suitability of interview guideline and procedures</i>							
Identical interview guideline throughout interview Series 1–3							
1st Series bedside nurses	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	→ KM topics 1–4 (all sites)→	KM topic 1 (Series 1–3) → KM topic 2 (Series 1–3) → KM topic 3 (Series 1–3) → KM topic 4 (Series 1–3) →
<i>Reflection Board meeting for feasibility and suitability check of interview guideline and procedures</i>							
2nd Series ward nurses	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	→KM topics 1–4 (all sites) →	Thick description ▲
3rd Series clinical nurse specialists	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	KM topics 1–4	→KM topics 1–4 (all sites)→	
<i>Reflection Board meeting to identify new topics based on preliminary study findings</i>							
Adapted interview guideline with new topics arising from the interview Series 1–3							
4th Series bedside nurses (new sample)	KM topics 5–8	KM topics 5–8	KM topics 5–8	KM topics 5–8	KM topics 5–8	→KM topics 5–8 (all sites)	
<i>Reflection Board meeting to discuss final study results and to evaluate study procedures</i>							

Note. Topics in interview series: 1: Interprofessional collaboration with physicians; 2: Leadership by ward nurses; 3: Nurses' workload/quality of care; 4: Job satisfaction; 5: Nurses' assertiveness in interprofessional collaboration; 6: Decision-making process related to prioritization in patient care; 7: Quality of care in periods of increased versus reduced workload; 8: Patient care team composition. KM = knowledge map.

to the focus-group participants for validation by a process of verbally summarizing the statements of the preceding discussion. In general, participants approved of the verbal summary and the maps. In a very few instances, participants supplemented or reinforced their statements. After ending the interview session, the onsite research team reflected on the group dynamics, interview contents, and their own roles during the focus-group interview. Here, the students' observations and field notes served to amend the reflexive evaluation. Their thoughts were helpful as they added an external view for evaluating group dynamics related to the process of moderating the focus group. The maps were then photographed. As soon as the first interview series was completed, the qualitative study coordinator met with the reflection board. They reviewed and discussed the interview questions for feasibility and appropriateness; adaptations were not needed. Focus-group dynamics were a crucial point of discussion. Here again, students attending the reflection board meetings participated in the reflexive process.

Following each interview, the qualitative study coordinator converted the photographs of the knowledge maps into a digital map. He checked the resulting map for accuracy and completeness while listening carefully to each audiotape. Wherever necessary, he completed or amended the map. He added quotations to illustrate the summarized statements where appropriate. He then aggregated knowledge maps from the first three interview series with bedside nurses, unit managers, and clinical nurse specialists in order of interview topics (e.g., interprofessional collaboration) into four individual maps. At that point, the qualitative study coordinator discussed the resulting set of findings with the reflection board. In the study results, the entire group collectively looked for similarities that would provide a clearer view of the identified themes. The attempt to understand the themes in light of literature-based concepts challenged the discussion. All persons present (i.e., reflection board members, the qualitative study coordinator and students) were invited to present their views and to reflect on alternative interpretations.

Through the process of open discussions and reflexive thinking, new topics were identified, and the interview questions were revised accordingly for the fourth and final series. These results were once again consolidated into four individual knowledge maps (one per interview question). Finally, the qualitative study coordinator wrote a detailed account describing all study results, augmented with interview quotations. The account was a rich description, enabling others to assess whether the study results would be transferable to other contexts (White, Oelke, & Friesen, 2012).

**Reflexivity in Disseminating the Results** Data on all nursing service context factors were presented to and discussed with workshop audiences at a national conference in the autumn of 2012. Workshops concerning nursing service context

factors were prepared and led by two research team members each. The audiences supported the results in general and participated in in-depth discussions on key components and mechanisms. For example, regarding the context factor "nursing workload," the audience discussed whether nurses' compliance with indicated nursing interventions—indicated in times of short resources—should be taken for granted. In contrast, the alternative view was that leaders should explicitly acknowledge nurses' compliance and subsequently address the shortage of resources. This feedback confirmed the corresponding interview results and augmented their interpretation.

Shortly thereafter, the qualitative study coordinator drafted a manuscript with the qualitative study results. The draft was reviewed by all reflection board members, the mixed-methods research coordinator, and one local study coordinator. The process of drafting and reviewing provided a final opportunity for reflexive thinking on the meta level. The authors questioned whether the core themes had been grasped, described appropriately, and contributed their thoughts for discussion. Concurrent with manuscript submission, the results were presented at each study site. At the conclusion of the qualitative project, the discussions with and feedback from audiences provided an opportunity to evaluate the reflexive thinking results as they related to the perspectives expressed by the participants.

## Now What

Arriving at the final level of reflexivity, we will now evaluate the implications of our reflexive thinking processes for future research (*now what*). The research team employed reflexivity to guide the conceptualization, execution, and evaluation of the entire research process. In doing so, two objectives were pursued. The goal was to learn from the process itself while striving to make a scientifically sound contribution to the body of knowledge. As Newton et al. (2012) argue, qualitative research publications have not provided adequate evidence regarding reflexivity. Therefore, our aim also included providing a reflexive account to the research community.

Despite some challenges to the research project, there were ample learning opportunities. The research team—which included both experienced and novice researchers—was highly committed to the work. Each member of the group engaged to ensure the quality of the entire data management process. Including students in the endeavor had the benefit of causing the team to reflect carefully on each step and explain each course of action. This reinforced our critical and reflexive thinking. In addition, wherever and whenever involved, students were invited and strongly encouraged to express their ideas, thoughts, and experiences; they were well supported by the qualitative study coordinator in this regard. Several of the students had taken the opportunity to write a master's thesis on one of the study topics, which added to the overall study results. The fact that nurses with a wide range of expertise and functions were involved in generating the data and

that multiple sites were included allowed for wide-ranging perspectives and added to the credibility of the results.

All research team members were thoroughly familiar with the content and context (acute care setting) of the research. In addition, the local study coordinators had inside knowledge of the organizational structures and processes at their respective study sites. This was helpful in the organization of the focus-group interviews, which also lent a better understanding of individual accounts when mapping the interview content. In addition, local knowledge was useful in the subsequent collective reflection on the content of the interviews and the focus-group dynamics.

### Potential Limitations

The PI had taken the lead in the overall research program and was, in addition, a member of the reflection board. Despite her dual role, the team never addressed hierarchy. In retrospect, this important aspect should have been part of our reflexivity in order to address whether and to what extent hierarchy might have influenced decisions.

The qualitative study coordinator's careful planning and documentation of the qualitative study portion provided excellent guidance for the team and could have undergone an external audit. However, no external audit was conducted. Furthermore, no reflexive diary was kept to systematically document all thoughts, ideas, and decisions throughout the research process (Mauthner & Doucet, 2003; Rolfe, 2006a), which would have offered even more learning opportunities.

For future work, we would recommend having two moderators to conduct the focus-group interviews. This would improve consistency in data collection, help guide group dynamics, and, in particular, facilitate awareness of discussion details of group discussions. In addition, it would be preferable to do data analysis in pairs, which would challenge understanding and interpreting interview accounts at an early stage. Finally, an external audit would be helpful in determining trustworthiness (Tobin & Begley, 2004).

### DISCUSSION

With this publication, our intent was to demonstrate how the research team strived to establish rigor throughout a qualitative study. Engward and Davis' (2015, p. 1530) work supports our strategy noting that reflexivity is viewed as an essential means to developing and demonstrating rigor in all qualitative research and a way to achieve high-quality research (de la Cuesta Benjumea, 2015). Being reflexive involves continuous self-critique and self-appraisal (Dowling, 2006) without descending into self-indulgence, as described by Doyle (2013).

### Conclusion

The research team made time available for reflection throughout the qualitative research process, resulting in the reflexive

account reported here. This reflective process was both rewarding and challenging, but it is one that we would recommend for future studies.

Accepted for publication March 30, 2018.

The authors acknowledge this discussion paper refers to a larger mixed-methods research program, "Assessing the impact of diagnosis related groups (DRGs) on patient care and professional practice: An interdisciplinary approach," which was funded by The Swiss National Science Foundation (SNF; CRSII3\_132786/1).

Ethical approval from Cantonal Ethics Committee Zurich, Switzerland (KEK-ZH-2011-0091/0).

The authors declare no conflicts of interest to report.

Corresponding author: Horst Rettke, PhD, RN, Centre for Clinical Nursing Science, University Hospital Zurich, Raemistrasse 100 (SHM26 B 6), CH-8091 Zurich, Switzerland (e-mail: horst.rettke@usz.ch).

### REFERENCES

- Bradbury-Jones, C. (2007). Enhancing rigour in qualitative health research: Exploring subjectivity through Peshkin's I's. *Journal of Advanced Nursing*, 59(3), 290–298. doi:10.1111/j.1365-2648.2007.04306.x
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Darawshch, W. (2014). Reflexivity in research: Promoting rigour, reliability and validity in qualitative research. *International Journal of Therapy and Rehabilitation*, 21(12), 560–568. doi:10.12968/ijtr.2014.21.12.560
- de la Cuesta Benjumea, C. (2015). The quality of qualitative research: From evaluation to attainment. *Text Context Nursing*, 24(3), 883–890. doi:10.1590/0104-070720150001150015
- Dowling, M. (2006). Approaches to reflexivity in qualitative research. *Nurse Researcher*, 13(3), 7–21. doi:10.7748/nr2006.04.13.3.7.c5975
- Doyle, S. (2013). Reflexivity and the capacity to think. *Qualitative Health Research*, 23(2), 248–255. doi:10.1177/1049732312467854
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, R., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, January–March, 1–10. doi:10.1177/2158244014522633
- Engward, H., & Davis, G. (2015). Being reflexive in qualitative grounded theory: discussion and application of a model of reflexivity. *Journal of Advanced Nursing*, 71(7), 1530–1538. doi:10.1111/jan.12653
- Fischer, C. T. (2009). Bracketing in qualitative research: conceptual and practical matters. *Psychotherapy Research*, 19(4–5), 583–590. doi:10.1080/10503300902798375
- Fontana, J. S. (2004). A methodology for critical science in nursing. *ANS Advances in Nursing Science*, 27(2), 93–101. doi:10.1097/00012272-200404000-00003
- Hellström, T., & Husted, K. (2004). Mapping knowledge and intellectual capital in academic environments. A focus group study. *Journal of Intellectual Capital*, 5(1), 165–180.
- Higginbottom, G. M. (2007). Sampling issues in qualitative research. *Nurse Researcher*, 12(1), 7–19.
- Holloway, I., & Biley, F. C. (2011). Being a qualitative researcher. *Qualitative Health Research*, 21(7), 968–975. doi:10.1177/1049732310395607
- Jackson, P. (1998). Focus group interviews as a methodology. *Nurse Researcher*, 6(1), 72–84. doi:10.7748/nr.6.1.72.s7
- Jayasekara, R. S. (2012). Focus groups in nursing research: methodological perspectives. *Nurs Outlook*, 60(6), 411–416. doi:10.1016/j.outlook.2012.02.001

- Jootun, D., McGhee, G., & Marland, G. R. (2009). Reflexivity: promoting rigour in qualitative research. *Nursing Standard*, 23(23), 42–46. doi:10.7748/ns.23.23.42.s50
- Kleinknecht-Dolf, M., Spichiger, E., Frei, I. A., Müller, M., Martin, J. S., & Spirig, R. (2015). Monitoring von Pflegekontextfaktoren: Erste deskriptive Studienresultate der schweizerischen DRG Begleitforschung Pflege vor Einführung der SwissDRG. *Pflege*, 28(2), 93–107. doi:10.1024/1012-5302/a000411
- Lincoln, Y. S. (1995). Emerging criteria for quality in qualitative and interpretive research. *Qualitative Inquiry*, 1, 275–289.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Mauthner, N., & Doucet, A. (2003). Reflexive accounts and accounts on reflexivity in qualitative data analysis. *Sociology*, 37(3), 413–431.
- Mayring, P. (2010). Qualitative Inhaltsanalyse. In G. Mey & K. Mruck (Eds.), *Handbuch Qualitative Forschung in der Psychologie* (pp. 602–613). Wiesbaden: VS Verlag für Sozialwissenschaften.
- Newton, B. J., Rothlingova, Z., Gutteridge, R., LeMarchand, K., & Raphael, J. H. (2012). No room for reflexivity? Critical reflections following a systematic review of qualitative research. *Journal of Health Psychology*, 17(6), 866–885. doi:10.1177/1359105311427615
- O'Donnell, A. M., Dansereau, D. F., & Hall, R. H. (2002). Knowledge maps as scaffolds for cognitive processing. *Educational Psychology Review*, 14(1), 71–86.
- Onwuegbuzie, A. J., Dickinson, W. B., Leech, N. L., & Zoran, A. G. (2009). Toward more rigor in focus group research: A new framework for collecting and analyzing focus group data. *International Journal of Qualitative Methods*, 8(3), 1–21.
- Onwuegbuzie, A. J., & Leech, N. L. (2015). On becoming a pragmatic researcher: the importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology: Theory & Practice*, 8, 375–387. doi:10.1080/13645570500402447
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (Vol. 4). Los Angeles, CA: Sage.
- Pelz, C., Schmitt, A., & Meis, M. (2004). Knowledge mapping als methode zur auswertung und ergebnispräsentation von fokusgruppen in der markt- und evaluationsforschung. *Forum Qualitative Sozialforschung*, 5(2).
- Plummer-D'Amato, P. (2008). Focus group methodology. Part 2: Considerations for analysis. *International Journal of Therapy and Rehabilitation*, 15(3), 123–129. doi:10.12968/ijtr.2008.15.3.28727
- Rettke, H., Frei, I. A., Horlacher, K., Kleinknecht-Dolf, M., Spichiger, E., & Spirig, R. (2015). Pflege im Vorfeld von SwissDRG—Erfahrungen von Pflegenden mit interprofessioneller Zusammenarbeit, Führungsverhalten, Arbeitslast und Arbeitszufriedenheit. *Pflege*, 28(3), 133–144. doi:10.1024/1012-5302/a000421
- Rolfe, G. (2006a). Validity, trustworthiness and rigour: quality and the idea of qualitative research. *Journal of Advanced Nursing*, 53(3), 304–310. doi:10.1111/j.1365-2648.2006.03727.x
- Rolfe, G. (2006b). Commentary: Encouraging the use of reflexivity in the writing up of qualitative research. *International Journal of Therapy and Rehabilitation*, 13(5), 215.
- Rolfe, G., Freshwater, D., & Jasper, M. (2001). *Critical reflection for nursing and the helping professions: A user's guide*. Basingstoke, United Kingdom: Palgrave Macmillan.
- Ryan-Nichols, K. D., & Will, C. I. (2009). Rigour in qualitative research: mechanisms for control. *Nurse Researcher*, 16(3), 70–85.
- Smith, J. K., & Deemer, D. K. (2000). The problem of criteria in the age of relativism. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2 ed. pp. 877–896). Thousand Oaks, CA: Sage.
- Spirig, R., Spichiger, E., Martin, J. S., Frei, I. A., Müller, M., & Kleinknecht, M. (2014). Monitoring the impact of the DRG payment system on nursing service context factors in Swiss acute care hospitals: Study protocol. *German Medical Science*, 12, Doc07. doi:10.3205/000192
- Stewart, D. W., Shamdasani, P. N., & Rook, D. W. (2007). *Focus groups. Theory and practice* (Vol. 20). Thousand Oaks, CA: Sage.
- Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy*, 68(3), 226–231.
- Thorne, S. (2016). *Interpretive description: Qualitative research for applied practice* (2 ed.). New York, NY: Routledge.
- Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48(4), 388–396. doi:DOI 10.1111/j.1365-2648.2004.03207.x
- Tracy, S. J. (2010). Qualitative quality: Eight «Big-Tent» criteria for excellent qualitative research. *Qualitative Inquiry*, 16, 837–851. doi:10.1177/1077800410383121
- White, D. E., Oelke, N. D., & Friesen, S. (2012). Management of a large qualitative data set: Establishing trustworthiness of the data. *International Journal of Qualitative Methods*, 11(3), 244–258. doi:10.1177/160940691201100305
- Wiegmann, D. A., Dansereau, D. F., McCagg, E. C., Rewey, K. L., & Pitre, U. (1992). Effects of knowledge map characteristics on information processing. *Contemporary Educational Psychology*, 17, 136–155.

### **Read Updated Reviewer Guidelines**

Nursing Research posts the Reviewer Guidelines on the publisher's website here:  
<http://journals.lww.com/nursingresearchonline/Pages/reviewerguidelines.aspx>.