6-22-2021

Using Framework Analysis in Applied Qualitative Research

Laurie J. Goldsmith
GoldQual Consulting and Simon Fraser University, laurie_goldsmith@sfu.ca

Using Framework Analysis in Applied Qualitative Research

Abstract

Framework analysis and applied qualitative research can be a perfect match, in large part because framework analysis was developed for the explicit purpose of analyzing qualitative data in applied policy research. Framework analysis is an inherently comparative form of thematic analysis which employs an organized structure of inductively- and deductively-derived themes (i.e., a framework) to conduct cross-sectional analysis using a combination of data description and abstraction. The overall objective of framework analysis is to identify, describe, and interpret key patterns within and across cases of and themes within the phenomenon of interest. This flexible and powerful method of analysis has been applied to a variety of data types and used in a range of ways in applied research. Framework analysis consists of two major components: creating an analytic framework and applying this analytic framework. This paper details the five steps in framework analysis (data familiarization, framework identification, indexing, charting, and mapping and interpretation) through conducting secondary analysis on this special issue's common dataset. This worked example adds to the existing framework analysis methodology literature both through describing the analysis specifics and through highlighting the importance of multiple considerations of units of analysis. This paper also includes reflection on the myriad reasons that framework analysis is valuable for applied research.

Keywords

analytic framework, applied qualitative research, framework analysis

Creative Commons License

Using Framework Analysis in Applied Qualitative Research

Laurie J. Goldsmith
GoldQual Consulting & Faculty of Health Sciences
Simon Fraser University, Burnaby, British Columbia, Canada

Framework analysis and applied qualitative research can be a perfect match, in large part because framework analysis was developed for the explicit purpose of analyzing qualitative data in applied policy research. Framework analysis is an inherently comparative form of thematic analysis which employs an organized structure of inductively- and deductively-derived themes (i.e., a framework) to conduct cross-sectional analysis using a combination of data description and abstraction. The overall objective of framework analysis is to identify, describe, and interpret key patterns within and across cases of and themes within the phenomenon of interest. This flexible and powerful method of analysis has been applied to a variety of data types and used in a range of ways in applied research. Framework analysis consists of two major components: creating an analytic framework and applying this analytic framework. This paper details the five steps in framework analysis (data familiarization, framework identification, indexing, charting, and mapping and interpretation) through conducting secondary analysis on this special issue's common dataset. This worked example adds to the existing framework analysis methodology literature both through describing the analysis specifics and through highlighting the importance of multiple considerations of units of analysis. This paper also includes reflection on the myriad reasons that framework analysis is valuable for applied research.

Keywords: analytic framework, applied qualitative research, framework analysis

Framework analysis and applied qualitative research can be a perfect match, in large part because framework analysis was developed for the explicit purpose of analyzing qualitative data in applied policy research. In the 1980s, co-creators Jane Ritchie and Liz Spencer drew from multiple methods and traditions in qualitative research to develop "Framework" (capitalization in original), an approach to qualitative data analysis that provides targeted answers about specific populations and ease of application to policy and practice (Ritchie & Spencer, 1994). Framework analysis—also known as "the framework approach," "the framework technique" and "the framework method"—is an inherently comparative form of thematic analysis which employs an organized structure of inductively- and deductively-derived themes (i.e., a framework) to conduct cross-sectional analysis using a combination of data description and abstraction (Ritchie & Spencer, 1994; Spencer, Ritchie, Ormston, et al., 2014). The overall objective of framework analysis is to identify, describe, and interpret key patterns within and across cases of and themes within the phenomenon of interest through being both grounded in and interpreting from the data (Gale et al., 2013; King & Brooks, 2018; Ritchie & Spencer, 1994; Spencer, Ritchie, Ormston, et al., 2014).

Framework analysis consists of two major components: creating an analytic framework and applying this analytic framework. These two major components occur through five steps:

(1) *data familiarization*; (2) *identifying a thematic framework*; (3) *indexing* all study data against the framework; (4) *charting* to summarize the indexed data; and (5) *mapping and interpretation* of patterns found within the charts (Ritchie & Spencer, 1994). The hallmarks of framework analysis are found in the last three steps, namely the emphasis on systematic and comprehensive indexing across all the data (in step 3), the intentional organizing of the indexed data into a matrix format (in step 4), and comparative analysis within this matrix format to identify key patterns and abstractions (in step 5).

Framework analysis operates from a pragmatic epistemology and can be applied to a variety of types of data and be employed for a variety of reasons (King & Brooks, 2018; Spencer, Ritchie, Ormston, et al., 2014). Data types used in framework analysis have included in-depth individual interviews, focus groups, observational data, policy documents, online discussion board posts, photographs, and case studies (Johnston et al., 2014; Mason et al., 2018; Ritchie & Spencer, 1994; Roberts, 2000; Robertshaw & Cross, 2019; Struik & Baskerville, 2014; Tallentire et al., 2015; Tishelman et al., 2016). Approaches to framework analysis in applied research have varied from highly deductive analysis of fairly structured data (Pope et al., 2000) to inductively-oriented theory-building work for knowledge users, such as policy makers and health care providers (e.g., Goldsmith et al., 2017; Swallow et al., 2011).

There is growing interest in and use of framework analysis as a method of analysis, particularly in health research (Dixon-Woods, 2011; King & Brooks, 2018; Parkinson et al., 2016; Pope et al., 2019; Ward et al., 2013). One possible reason for framework analysis' popularity is its potential for predictability and efficiency. When paired with a targeted research question and similarly targeted data, framework analysis can be accomplished quickly (Pope et al., 2000). The explicit steps already built into framework analysis can provide clear structure for and boundaries on the analysis. Framework analysis' straightforward and systematic approach can also allow for easy entry for novice researchers and ease of use in multi-disciplinary and mixed-methods research teams (Gale et al., 2013; Parkinson et al., 2016; Ward et al., 2013).

Qualitative researchers use framework analysis for a variety of additional reasons beyond ease of use. Framework analysis can be successfully used for analyzing large, complex qualitative datasets, such as can occur in policy research across multiple jurisdictions or geographies. Framework analysis can be used to methodically describe a population of interest including the notable variation contained within that population. Researchers can also use framework analysis to push beyond a thematic description of a phenomenon to the development of multi-dimensional typologies or theory development. Regardless of the purpose for which framework analysis is employed, systematic movement through the steps of framework analysis naturally provides an explicit audit trail (Parkinson et al., 2016; Smith & Firth, 2011). The methods and results of framework analysis can also be presented in transparent and accessible ways for a variety of audiences, meeting the dependability and credibility needs of applied researchers and applied research funders (Ritchie & Spencer, 1994).

While framework analysis can be simple and straightforward under the right conditions, framework analysis is not inherently simple, quick or undemanding. Researchers undertaking framework analysis, for instance, must be prepared to work both systematically and dynamically (Ritchie & Spencer, 1994). As such, it is helpful for novice and early-career researchers to understand the inner workings of framework analysis projects before taking on the leadership of a framework analysis project. This understanding can be accomplished through participating in framework analysis research led by an experienced qualitative researcher (Gale et al., 2013) and through exposure to detailed examples of research using framework analysis. This paper is an example of the latter form of support.

As is the case with other papers in this special issue, I analyzed the "postnatal care referral behavior by Traditional Birth Attendants in Nigeria" dataset (hereafter abbreviated as

"the TBA dataset"; Chukwuma, Chinyere, et al., 2017). The TBA dataset consists of three focus group transcripts documenting the perspectives of traditional birth attendants, hospital-based health care providers, and women who delivered their babies using traditional birth attendants (hereafter referred to as TBAs, formal health care providers, and TBA clients, respectively). These focus groups explored group members' attitudes around postnatal care and the role of and relationships between TBAs and formal health care providers in prenatal care, delivery, and postnatal care. Below I demonstrate the five steps in framework analysis through working through the data from these three focus groups. This demonstration will include showing how the three groups in the common dataset can be compared and contrasted in framework analysis' final step.

Undertaking Framework Analysis

Step 1: Data Familiarization

As the first step in the analysis, data familiarization provides the researcher with an initial, purposeful understanding of the data. Through immersion in the data and making notes about key ideas, the researcher begins to understand major themes in the data. Items that could be major themes include topics or issues that relate to the research question(s) and recur across the data. The data familiarization step continues until the researcher feels they have arrived at a reasonable initial understanding of the data, including the breadth of variation within the data (Spencer, Ritchie, O'Connor, et al., 2014).

If the research dataset is small—such as in this special issue's shared dataset of three focus groups—it is possible for the data familiarization step to include all study data. It is more often, however, that the dataset volume or study timelines require purposeful sampling from the study dataset for the data familiarization step (Ritchie & Spencer, 1994). ("Purposeful sampling" in the data familiarization step is not in reference to the sampling strategy employed in primary data collection but rather refers to choosing from among the already collected data, regardless of the sampling strategy used to collect the initial data.) Had the TBA dataset consisted of multiple focus groups with each stakeholder group, for example, the data familiarization step might be accomplished through immersion with the richest focus group from each stakeholder group.

To conduct the data familiarization step with the TBA dataset, I first reviewed all three focus group transcripts looking for key ideas associated with postnatal care referral behavior by TBAs—the stated focus of the original research (Chukwuma, Chinyere, et al., 2017; Chukwuma, Mbachu, et al., 2017). I did not identify many key themes on this topic for large portions of existing data as much of the focus group discussions in all three stakeholder groups were about other aspects of the birth process (e.g., prenatal care and delivery, use of health centres and hospitals, comparisons between TBAs and formal health care providers). In other words, my first review of the data suggested that the focus groups contained more information than multiple stakeholder perspectives on postnatal care referral behaviors of TBAs. I then reset my expectations for the data and conducted a second data review simply looking for key ideas around the experience of the birth process, the use of various types of providers for the birth process, and how these various types of providers do and do not work together.

Coding can be a part of the data familiarization process, but it is not required. Some researchers like to immediately start working with preliminary codes linked to data at this early stage, even if they are later deleted or heavily reworked. Other researchers prefer to take notes about their thoughts about and understanding of the data without explicitly linking these thoughts to portions of the data. Understanding major themes in the data—the desired outcome of the data familiarization stage—is not dependent on coding at this stage. For the TBA dataset,

I accomplished data familiarization through making some notes by hand in the margins of a printed version of the focus group transcripts and in an overall memo about what I was seeing in the data. Key themes from the data familiarization step are shown in Table 1. This table also include sample associated text by stakeholder group for a few of key themes to help the reader understand the process.

Table 1

Data Familiarization (Step 1) in the TBA Dataset: Key themes and sample associated text for a few key themes by stakeholder group for understanding the work and value of TBAs and formal health care providers in the birth process

Key Themes	TBAs	Formal health care providers	TBA clients
Barriers to care during the birth process	"The people that usually go to the TBAs are the indigent people, or the people who have tried the medications from the health facility and they are still not fine, then probably they were asked to try the medication of the TBA." "Sometimes, they do not go [to the health centre] because of financial constraints. In that case, you seek for means to help her to go to the health center."	"[Women who have given birth] also have the right to go for postnatal care at the TBA homes where they put to bed [i.e., gave birth], because some of them actually go to the TBAs to deliver because they do not have the money, so telling the person to pay transport to go to the health facility, the person may not accept with the excuse of the health facility collecting money from her."	"Some people live very far from the health facility, and not everybody is mobile. Not having means of mobility can also make the woman not to go for postnatal care coupled with unavailability of money to transport themselves to the place."
Role of TBA in prenatal care			
Role of TBA during birth			
Role of TBA during postnatal care			
Problems with TBA care	"Some of them here [other TBAs] saying that they do refer to the health center do not actually do that. The woman will be dying in pains and they will still insist on trying different concoction on her till the situation is irredeemable before she	"There was a woman that gave birth at the TBA and she started having issues, but by the time they could bring her here, she has died." "The TBA used the same tools she used for the HIV positive	"A woman might have bleeding after delivery at a TBA's, and they don't have injections to give the woman to stop and before they will call the doctor to come and do that, the woman's problem will intensify. So it is better to deliver in the hospital."

	will send her to the health facility."	mother to deliver the other woman, and the baby contaminated it from there."	
Problems with formal health care provider care	[no relevant text]	[no relevant text]	"The reason while most women do not like going to the hospital is that a health worker there can even walk pass you even while you are there shouting in pains." "The TBAs do not give the women those unnecessary tear that the health workers usually give to the women in the hospital."
Current working relationship between TBAs and formal health care providers			
Recommendations for future working relationship between TBAs and formal health care providers			

Step 2: Framework Identification

This second step moves the analysis from concrete descriptions of themes in the data to the identification of more abstract concepts, with the objective of providing a framework, or a structure for the analysis and the resulting interpretation. This framework or analytic structure is usually built from a combination of a priori and emergent concepts and themes (Ritchie & Spencer, 1994). These themes and concepts are then grouped, ranked, or otherwise ordered in a way that helps the researcher address the focus of the study. Typically, frameworks are composed of major themes and concepts (hereafter called components), which are supported by other themes and concepts elaborating on or sub-dividing the major themes and concepts (hereafter called sub-components). Like many other forms of qualitative analysis, the typical framework structure can be thought of as a tree with many branches.

Also like many other types of qualitative analysis, the identifying the framework step is an iterative process. An initial framework is tested against a manageable portion of the data and refined as necessary to move from simple description to conceptual abstractions (Ritchie & Spencer, 1994). Refinements can include renaming components, identifying new components, deleting components, collapsing components, and reordering components. Similar refinements can also occur at the sub-component level.

To identify the framework for the TBA dataset, I first reflected on the second, larger lens I had used in the data familiarization step. I considered what the framework could look like given the data at hand and the themes I had identified from my second data familiarization

exercise. I decided that I would be able to build a framework which could use all three stakeholder group perspectives to comment on an understanding of the work and value of TBAs and formal health care workers in the birth process such that birth outcomes will be improved. I opted to create the initial framework components using pen and paper as I was already working that way in the previous data familiarization step.

The left column of Table 2 shows the initial framework components, which included a rough ordering from practice inputs (i.e., women's use of each type of provider) to reflections on actual practice for both types of providers, considered first within a provider type and then in combination in some way between the two provider types. Notice there are no sub-components to this initial framework as I did not yet have a good enough understanding of the data.

Table 2

Framework Identification (Step 2) in the TBA Dataset: Initial and revised framework for understanding the work and value of TBAs and formal health care providers in the birth process

Initial Framework	Revised Framework

Reasons why women use TBAs rather than formal health care providers	Reasons why women use TBAs rather than formal health care providers
	    • TBAs more easily affordable than health center
	    • TBAs local while health center can be far away
	    • TBA practice preferred over formal health care providers practice
	    • Formal health care providers' treatment has not worked

Reasons why women use formal health care providers rather than TBAs	Reasons why women use formal health care providers rather than TBAs • Delivery too complex for TBA
Concerns about TBA practice	Concerns about TBA practice
Concerns about formal health care provider practice	Concerns about formal health care provider practice

Characteristics of positive work relationships between TBAs and formal health care providers	Characteristics of positive work relationships between TBAs and formal health care providers
	    • Cooperation between TBAs and formal health care providers
	    • TBAs supported by formal health care providers

Characteristics of negative work relationships between TBAs and formal health care providers	Characteristics of negative work relationships between TBAs and formal health care providers
	    • TBAs and health care providers working against each other
	    • Women not supporting the two provider groups working together
	Suggestions for improving working relationships
	Characterization of provider roles
	    • Jointly caring for women, with needed care happening at appropriate place and provider
	    • TBAs are a less skilled and less knowledgeable alternative to formal health care providers

I then worked through the three focus group transcripts, attaching text in the transcripts to the draft framework using a computer-assisted qualitative data analysis software (CAQDAS) program. I created new framework components when I encountered text that did not fit the draft framework yet would be helpful for understanding the two provider types and the birth process. I also created sub-components where I felt it would be helpful to develop a more nuanced understanding of the data for this step. This approach resulted in the addition of sub-components throughout the framework plus two additional framework components (right column of Table 2). I considered whether I should reorder the components from the initial framework but did not see an obvious new order. I also knew that I could revisit the consideration of reordering through the next step.

Coding is a common part of the framework identification stage, although it is possible to arrive at a well-functioning framework without having engaged in explicit coding work. The emphasis at this stage is on completing the framework—the identification of the important themes and concepts and the conceptual relationship they have to each other—rather than an emphasis on how the important themes and concepts play out in the data. For identifying the framework in the TBA dataset, I chose to engage in explicit coding as I wanted a stronger handle on the data and the patterns within. I also chose to initiate this coding with a CAQDAS program rather than via pen and paper as I expected I would want the flexibility to quickly reorder, collapse, and split codes as my understanding of the data deepened. Had I been involved in the study design and data collection phases of the TBA study, I might have started the framework identification step with a strong grasp of the data and opted to complete the entirety of this step using pen and paper and without much explicit coding work.

Step 3: Indexing

Once a reasonable framework has been identified, the next step in framework analysis is to systematically apply the framework to all of the study data (Ritchie & Spencer, 1994). This process is called indexing as it resembles the process used to create the index of a book (Spencer, Ritchie, O'Connor, et al., 2014). The linking of study data and framework components can be accomplished using any approach with which the researcher is comfortable for coding data (e.g., pen and paper, using the comment function in a word processing program, or a CAQDAS program). Many researchers with access to a CAQDAS program will opt to use it at this stage to facilitate the data manipulation required in framework analysis' subsequent steps.

Before indexing can begin, the researcher must determine the appropriate way to link framework components with applicable study data. There is no standard linking structure to rely on like the page numbers in a book index. Rather, the study data are linked to framework components via the appropriate units of analysis—namely, the entities or items which are the focus of the study framework. For some frameworks, the data collection sampling units can also be used as the units of analysis. Other frameworks operate at a different altitude with respect to the study topic than was the case during the study's initial design or data collection phases, necessitating using units of analysis which differ from the data collection sampling units. (See Goldsmith et al., 2017 for an example of framework analysis using units of analysis which differ from the data collection sampling units.)

With respect to the TBA dataset, I indexed the data using two units of analysis: the stakeholder group and the individual providers and clients. The stakeholder group was an obvious unit of analysis as the framework emphasized understanding stakeholder group perspectives. The data collection choice to hold separate focus groups for each stakeholder group also meant for straightforward indexing by stakeholder group. Indexing the data by individual providers and clients was more of an opportunistic choice as individuals were

explicitly identified within each focus group and I could simultaneously index using both units of analysis. If indexing using these two units of analysis could not have happened concurrently, I likely would have only indexed the data by stakeholder group due to the emphasis on stakeholder groups within the data and the framework.

The TBA dataset is an example where the units of analysis were identical to the data collection sampling units as there was a similar focus between data collection and the resulting framework. In contrast, had each focus group's discussion concentrated on particular birth stories, I might have decided that the birth stories were the appropriate unit of analysis to use for the indexing step.

The indexing step also provides an important opportunity for framework revision as applying the framework to all study data simultaneously necessitates assessing how well the framework works with and for the study data. Framework testing and revision tasks in the indexing step consist of affirming and amending the definitions and boundaries of each framework component and sub-component and adding to framework sub-components to accommodate new variation. The researcher may even encounter data in the indexing step for which the framework does not work, requiring revisiting the overall structure and contents of the framework. Regardless of what revisions are made, framework indexing and revision must continue in an iterative process until all data are indexed on the final framework.

With respect to the TBA dataset, the small volume of data meant that indexing was already accomplished through the previous two steps. By this point in time, I knew that the framework worked for all the data and I made no revisions to the framework. This is an unusual situation and readers should more often expect that indexing will be accomplished as a distinct step after framework identification and the framework is likely to be refined during the indexing step.

Step 4: Charting

The next step in framework analysis is a process of ordering and abstracting the now-indexed study data such that the data can be examined systematically and in totality. This is accomplished through creating one or more charts summarizing the study data. The chart(s) are organized in a matrix form, using ordered rows and columns populated by the units of analysis and the framework components. Although charting is primarily focused on summarizing the study data, charting is also dependent on the work done in the earlier steps of framework analysis. The act of charting is an opportunity to revisit and enhance earlier decisions around the appropriate units of analysis, the order of units of analysis and framework components, the appropriate level of data abstraction, and the adequacy of the framework for the data at hand.

With respect to revisiting and enhancing decisions around the appropriate units of analysis, charting the indexed study data may make it obvious that it is not possible to carry forward one or more of the units of analysis from the indexing step. For example, although I had been able to simultaneously index the TBA dataset by two units of analysis (i.e., by individual stakeholders and by stakeholder group), I moved to a single unit of analysis—the stakeholder group—for the charting step. Retaining the individual as a unit of analysis risked much missing data on framework components, as not every participant answered every question in the focus groups. (Not having every participant answer every question is a standard approach to focus groups and this observation is therefore not a criticism of the original research team's approach. Rather, this observation illustrates the importance of fit between the data and the analytic method and the reader is reminded that every dataset/analysis pairing has areas of better and worse fit.)

Had the TBA dataset contain more data about the focus of the framework and had there been more than one focus group per stakeholder group, I might have considered continuing using the individual stakeholder as a second unit of analysis. This approach would be more challenging, particularly around designing and reconciling one or more charts using two units of analysis. This challenge might still be worth taking on as I could conduct more complex analyses. With two units of analyses, I could compare and contrast charting patterns within individual stakeholders, across individuals within the same focus group and stakeholder group, and across stakeholder groups.

With respect to revisiting and enhancing the order of units of analysis and framework components, charting demands an explicit order to the layout of rows and columns. The researcher may not have needed to be concerned about imposing order on the units of analysis before now—data may have been indexed in the order that individuals were interviewed, for instance. And while framework components are more likely to already have order suggested by the earlier framework identification and indexing steps, the act of charting can still push the researcher to enhance the order of framework components. Regardless of the state of order of units of analysis and framework components prior to this step, the researcher uses the research questions and the developing analysis to ensure there is explicit and sufficient order to the units of analysis and framework components on the chart(s). Imposing order can be simple, such as grouping units of analysis by key characteristics. If the TBA dataset included multiple focus groups for each stakeholder group, for instance, all focus groups for TBA clients could be grouped together. Alternatively, imposing order can be more complex. For example, the order used in charting can reflect structure and process, such as the order of the TBA dataset's framework components carried forward from the previous steps. These framework components reflect the work of each type of health care provider in isolation followed by collaboration between TBAs and formal health care providers.

Once the charting structure of the rows and columns is established, the researcher can move onto populating the interior cells of the chart(s). This requires reviewing the data in its indexed form (Spencer, Ritchie, O'Connor, et al., 2014) and determining or revisiting the appropriate level of abstraction for the data. Some frameworks would have already demanded data abstraction in the indexing step that can be appropriately carried forward into the charting step. This can be the case when there are complex or voluminous data about framework components or units of analysis. In contrast, when earlier steps have not already demanded abstraction, the indexed study data are often too unwieldy to be used as-is for populating the interior cells of the chart(s). Such data need to be summarized to ensure the data are more graspable in chart form (Ritchie & Spencer, 1994). In the case of transcripts from individual interviews or focus groups, for instance, all textual data associated with the intersection of a row and column are summarized in the relevant cell. Charting not-previously-abstracted study data may also suggest the need for additions to framework components or sub-components, which may further require additional indexing work or the revisiting of earlier parts of the chart(s).

Researchers use a variety of approaches to create the chart or charts for their framework analyses. Some use pen and paper while others create charts using tables in word processing computer programs or spreadsheet computer programs (e.g., Swallow et al., 2003). Others use CAQDAS programs alone or in combination with aforementioned approaches to arrive at a completed chart (see Goldsmith et al., 2017 for an example of the latter). To the best of my knowledge, NVivo (version 9 and above) is the only CAQDAS program which facilitates the entirety of framework analysis, including charting, and allows for retaining live links between the cells in the chart and study data. (For worked examples of NVivo's *Framework Matrix* option, see Bonello & Meehan, 2019; Parkinson et al., 2016.)

To create the chart for the TBA dataset, I reviewed the study data by framework component and stakeholder group within the CAQDAS program and then manually entered my summary of the data in the relevant cell on a table I created in a word processing program (Table 3). The framework continued to work well for the TBA data, and no new framework components or sub-components were added to the chart.

Table 3

Charting (Step 4) in the TBA Dataset: Example of data abstraction for a few key framework components and sub-components by stakeholder group for understanding the work and value of TBAs and formal health care providers in the birth process

		TBAs	**Formal health care providers**	**TBA clients**
Reasons why women use TBAs rather than formal health care providers	TBAs more easily affordable than health center	All focus group participants recognize that health centre costs and transportation costs impede women from using health center Health center services more expensive than TBA services	Some focus group participants recognize that women cannot always afford to pay health center for services and/or cannot afford transportation costs and therefore use TBAs for delivery	All focus group participants recognize that health center costs and transportation costs impede women from using health center Health center services more expensive than TBA services TBAs do not ask for money up front and only ask for money if birth is successful
Concerns about formal health care worker practice		[no data]	[no data]	Health center workers do not support women as women would like to be supported (e.g., let them scream in pain without acknowledgement vs. talking them through pain); going to health centre not a guarantee against negative birth outcomes

The charting step results in one or more charts, with the number of charts dependent on the data and the researcher's preferences. Where the data are not manageable in a single chart, for example, the researcher may subdivide the data by framework components or by units of

analysis. For the TBA dataset, it was possible to use a single chart as the combination of each framework and charted data could be reasonably assessed as a single whole.

Step 5: Mapping and Interpretation

The final step in framework analysis—mapping and interpretation—is where the researcher combines the key learnings from the earlier steps, including hunches about patterns to explore in the data, with comparisons across and within units of analysis and across and within framework components. Comparisons of potential interest at this step include examining variation across the entire dataset, examining variation within subgroups and subthemes, and looking for clusters of data. The charts and other data are reviewed, recombined, collapsed, or condensed as suggested by the study focus, data, and major patterns. The researcher is ultimately trying to tell a compelling story about how the data are structured and patterned.

There is no single form of product from framework analysis. The results of mapping and interpretation can be shown in a variety of ways, including identifying and describing key concepts or the nature and range of particular phenomena; demonstrating associations across units of analysis for key concepts or particular phenomena; explaining attitudes, experiences and behaviors; and creating typologies (Ritchie & Spencer, 1994). This list should not be seen as a complete list; the researcher is encouraged to be creative and follow the analysis to where the researcher is led even if the approach is not listed above. (See Ritchie & Spencer, 1994, for multiple varied examples of mapping and interpretation products).

With respect to conducting the mapping and interpretation step with the TBA data, I wanted to summarize the comparisons across the three stakeholder groups while also reflecting the strength of the signals from the data. I already had some thoughts about patterns in the charted data—for example, during the charting step I noticed that the formal health care providers' discussion about TBA affordability was less nuanced than the discussion in the other two stakeholder groups. I also imagined that one use of this analysis would be to identify areas of silence and differing emphases such that future policy and education could be more targeted and appropriate in design. I took the table from the charting step further by mapping the presence and intensity of data associated with framework components and subcomponents. This was not an attempt to simply reduce the focus group data to quantitative data by only relying on the volume of data associated with each framework component and sub-component. Rather, my measure of data intensity combined data volume with an assessment of the relative presence of the component or sub-component across the focus group transcript (i.e., across various focus group questions) and across focus group participants. Using data presence and intensity for each cell was my attempt to show variation in the value and understanding of the birth process work of the two provider groups from the three stakeholder perspectives.

A selection of this mapping of data intensity is shown in Table 4. There are striking differences in the patterns across columns throughout the chart. TBA clients had a more intense and complex discussion about why women use TBAs in comparison to the other two stakeholder groups. TBA clients were also the only stakeholder group that expressed concerns about the practice of formal health care workers. And while all stakeholder groups expressed concerns about TBA practice, the formal health care workers spent more time discussing concerns about TBA practice and provided more examples of poor care by TBAs than was the case in the other two stakeholder groups. The formal health care workers were also out of step with the other two stakeholder groups with respect to the two types of characterization of provider roles in the data. Formal health care workers did not discuss a joint caring model and were more intensely invested in a hierarchal model where TBAs are seen as less skilled and less knowledgeable alternatives to themselves.

Table 4

Mapping and Interpretation (Step 5) in the TBA Dataset: Example of data intensity mapping for a few key framework components and sub-components by stakeholder group for understanding the work and value of TBAs and formal health care providers in the birth process

		TBAs	**Formal health care workers**	**TBA clients**
Reasons why women use TBAs rather than formal health care providers	TBAs more easily affordable than health center	●●●	●●	●●●
	TBAs local while health center can be far away	●	●	●●●
	TBA practice preferred over formal health care workers practice	Ø	Ø	●●
	Formal health care workers' treatment has not worked	●	Ø	Ø
Concerns about TBA practice		●	●●●	●
Concerns about formal health care worker practice		Ø	Ø	●●
Characterization of provider roles	Jointly caring for women, with needed care happening at appropriate place and provider	●●●	Ø	●●●
	TBAs are a less skilled and less knowledgeable alternative to formal health care workers	●	●●●	●

Legend:
●●● indicates high intensity component or sub-component
●● indicates medium intensity component or sub-component
● indicates low intensity component or sub-component
Ø indicates no data present for this component or sub-component

These findings illustrated that the work and value of TBAs and formal health care workers was seen quite differently by the three stakeholder groups. Before it is reasonable to expect TBAs to refer to formal health care providers—the policy objective motivating the original data collection (Chukwuma, Mbachu, et al., 2017)—this framework analysis suggests that more attention should be paid to bringing the stakeholder groups' perspectives into closer alignment. Formal health care providers could be encouraged to recognize the value of the role of TBAs in women's birthing practices despite existing concerns about the practice of TBAs. Another possible opportunity for changing practice patterns and decreasing concerns over TBA

practice suggested by this analysis is to approach TBAs as joint partners in care for pregnant and postnatal women, which matches with the way that TBAs in this study predominantly described their role as providers in the birth process.

The Value of Framework Analysis for Applied Research

Framework analysis allowed for ease of comparison across the three stakeholder groups in the TBA dataset, although this comparative analysis was made more challenging by having focus group guides which differed across the three stakeholder groups. Framework analysis' demand for structure and order pushed the TBA dataset analysis beyond the simple listing of themes, which further benefitted the comparison between stakeholder groups. The charting and mapping demands of framework analysis also meant that each theme was reviewed for each stakeholder group, highlighting variation between stakeholders and helping to surface policy-relevant silences in the data. The results of this framework analysis then helped identify gaps needing bridging before expecting stronger working relationships between TBAs and formal health care workers.

The benefits of framework analysis' order and structure can extend beyond the study completion. As already mentioned in the introduction, the explicitness of the steps of framework analysis provides an easily understandable audit trail and provides non-research audiences access to the inner workings of the analysis. Such transparency can increase the willingness of policy makers, the public, and other knowledge users to engage with and use the research to understand and solve policy problems. Framework analysis' transparency can also be harnessed for future qualitative, quantitative, and mixed methods research. In the case of the TBA data study setting, the results of this framework analysis could be returned to the three stakeholder groups and used as a foundation for further discussion and work towards improving the outcomes of the birth process. For example, all stakeholders could be asked to comment on the silences identified in this framework analysis; future focus group guides could explore whether and how the previously identified silences represented an artifact of data collection, an invitation for new ways of thinking about the work and value of various stakeholders, or an opportunity for additional learning about other stakeholders. Regardless of the veracity of the previously identified silences, additional data would enhance our understanding of the role of TBAs and others in the birth process and enhance opportunities to improve birth outcomes.

Framework Analysis in Primary and Secondary Data Collection

The above analysis of the TBA dataset demonstrates that framework analysis can be accomplished in secondary data. The biggest challenge to this secondary data analysis was identifying a research question which could be supported by this dataset. Had I been working with primary data rather than secondary data, applying the first two steps of framework analysis to the TBA dataset would have likely gone more quickly. Primary data would have had the luxury of stronger alignment between the research question, data collection, and the analytic approach. In turn, constructing the framework could have relied more on the structure already present in the focus group guides (Ritchie & Spencer, 1994). I would have still needed to conduct inductive work in building the framework (as is usually the case in building any framework in framework analysis using qualitative data, even frameworks which are already fairly prescribed by the study objectives) but such effort would likely be more in service of deepening and broadening the structure rather than also needing to rely on inductive work to create the initial framework structure.

Working with primary data and knowing that I was planning on doing framework analysis would have also meant that I could have designed a TBA study to more strongly reflect

the ability to and interest in comparing TBA, formal health care provider, and TBA client perspectives on the same issues. The focus group guides, in particular, could have been constructed such that the three stakeholder groups were asked the same battery of questions so comparison between the three roles could been more straightforward. I might have further decided to conduct more than one focus group for each stakeholder group, which would add to the volume of data, likely provide more variation within each stakeholder group, and allow for more grist for the analytic mill. Each TBA study focus group could have also included the completion of a short survey to ensure each participant provided information about key questions. This approach would allow for at least a partial shift of the unit of analysis to the individual participant within the overall framework analysis. Although detailed explanation is beyond the scope of this paper, it is important to point out to readers that properly planned framework analysis using primary data collection can easily accommodate quantitative and qualitative data and can be used to integrate the two data types.

A final way that primary data collection might have changed the use of framework analysis in a TBA study is in the timing of the analysis and the potential for iterative data collection and analysis. With primary data collection, framework analysis can begin once the first piece of data has been collected. Data familiarization and the initial construction of the framework can be shaped by the early data. Thoughts and hunches about framework components and sub-components could then be tested in the field through new purposeful sampling strategies and revisions to data collection tools such as focus group guides. In other words, framework analysis can be accomplished and potentially strengthened through iterative data collection and analysis, a possibility which only exists in primary data collection.

Conclusion

Using framework analysis with the TBA dataset provided systematic comparison amongst the three stakeholder groups and indications of where better communications and understandings had potential to improve TBA involvement in maternity care. The use of this common dataset in this special issue of The Qualitative Report allows for comparing framework analysis with other similar approaches, such as other forms of thematic analysis. This paper's detailing of framework analysis with the TBA dataset adds to the worked examples already present in the framework analysis literature (e.g., Bonello & Meehan, 2019; Parkinson et al., 2016; Swallow et al., 2011; Ward et al., 2013). This paper's highlighting the importance of multiple considerations of the units of analysis also adds to the existing framework analysis methodology literature.

I add my voice to others in demonstrating that framework analysis is both a powerful and flexible method for analyzing a variety of types of qualitative data, including secondary data. The examples in this paper and elsewhere show that framework analysis has been effectively used by solo researchers, by teams of qualitative researchers, and by multi-disciplinary and mixed-methods research teams. There are myriad reasons for applied researchers to use framework analysis, including transparency of process and a long and successful track record for better understanding of policy issues and social problems to help policy makers, service deliverers, and other knowledge users with improving program design and decision making. Results from applied research studies using framework analysis have also contributed to better theorizing about phenomena of interest and improvements in the design of future research of any type, whether that future research is qualitative or quantitative, or basic or applied. In sum, framework analysis has value to applied fields and beyond. I hope this paper encourages applied researchers to consider using framework analysis and to employ framework analysis with confidence and rigour.

References

Bonello, M., & Meehan, B. (2019). Transparency and coherence in a doctoral study case analysis: Reflecting on the use of NVivo within a "framework" approach. *The Qualitative Report*, *24*(3), 483–498. https://doi.org/10.46743/2160-3715/2019.3823

Dixon-Woods, M. (2011). Using framework-based synthesis for conducting reviews of qualitative studies. *BMC Medicine*, *9*(1), 39. https://doi.org/10.1186/1741-7015-9-39

Chukwuma, A., Chinyere, M., Cohen, J., McConnell, M., & Bossert, T. (2017). *Data for: "A qualitative study of perspectives on postnatal care referrals by traditional birth attendants in Ebonyi State, Nigeria."* (QDR 10078) [Data Set]. Qualitative Data Repository. https://doi.org/10.5064/F67H1GGS

Chukwuma, A., Mbachu, C., Cohen, J., Bossert, T., & McConnell, M. (2017). "Once the delivery is done, they have finished": A qualitative study of perspectives on postnatal care referrals by traditional birth attendants in Ebonyi state, Nigeria. *BMC Pregnancy and Childbirth*, *17*(1), 429. https://doi.org/10.1186/s12884-017-1616-x

Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*, *13*, 117. https://doi.org/10.1186/1471-2288-13-117

Goldsmith, L. J., Kolhatkar, A., Popowich, D., Holbrook, A. M., Morgan, S. G., & Law, M. R. (2017). Understanding the patient experience of cost-related non-adherence to prescription medications through typology development and application. *Social Science & Medicine*, *194*(Supplement C), 51–59. https://doi.org/10.1016/j.socscimed.2017.10.007

Johnston, L. M., Matteson, C. L., & Finegood, D. T. (2014). Systems science and obesity policy: A novel framework for analyzing and rethinking population-level planning. *American Journal of Public Health*, *104*(7), 1270–1278. https://doi.org/10.2105/AJPH.2014.301884

King, N., & Brooks, J. (2018). Thematic analysis in organisational research. In C. Cassell, A. Cunliffe, & G. Grandy (Eds.), *The Sage handbook of qualitative business and management research methods: Methods and challenges* (pp. 219–236). Sage. https://doi.org/10.4135/9781526430236.n14

Mason, W., Mirza, N., & Webb, C. (2018). *Using the framework method to analyze mixed-methods case studies*. Sage. https://doi.org/10.4135/9781526438683

Parkinson, S., Eatough, V., Holmes, J., Stapley, E., & Midgley, N. (2016). Framework analysis: A worked example of a study exploring young people's experiences of depression. *Qualitative Research in Psychology*, *13*(2), 109–129. https://doi.org/10.1080/14780887.2015.1119228

Pope, C., Ziebland, S., & Mays, N. (2019). Analysis. In C. Pope & N. Mays (Eds.), *Qualitative research in health care* (4th ed., pp. 111–134). Wiley-Blackwell.

Pope, C., Ziebland, S., & Mays, N. (2000). Analysing qualitative data. *British Medical Journal*, *320*(7227), 114–116.

Ritchie, J., & Spencer, L. (1994). Qualitative data analysis for applied policy research. In A. Bryman & R. Burgess (Eds.), *Analyzing qualitative data* (pp. 305–329). Routledge.

Roberts, N. (2000). Wicked problems and network approaches to resolution. *International Public Management Review*, *1*(1), 1–19.

Robertshaw, D., & Cross, A. (2019). Experiences of integrated care for dementia from family and carer perspectives: A framework analysis of massive open online course discussion board posts. *Dementia*, *18*(4), 1492–1506. https://doi.org/10.1177/1471301217719991

Smith, J., & Firth, J. (2011). Qualitative data analysis: The framework approach. *Nurse Researcher*, *18*(2), 52–62. https://doi.org/10.7748/nr2011.01.18.2.52.c8284

Spencer, L., Ritchie, J., O'Connor, W., Morrell, G., & Ormston, R. (2014). Analysis in practice. In J. Ritchie, J. Lewis, C. M. Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 295-345). Sage.

Spencer, L., Ritchie, J., Ormston, R., O'Connor, W., & Barnard, M. (2014). Analysis: Principles and processes. In J. Ritchie, J. Lewis, C. M. Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 269-290). Sage.

Struik, L. L., & Baskerville, N. B. (2014). The role of Facebook in crush the crave, a mobile- and social media-based smoking cessation intervention: Qualitative framework analysis of posts. *Journal of Medical Internet Research*, *16*(7), e170. https://doi.org/10.2196/jmir.3189

Swallow, V., Lambert, H., Santacroce, S., & Macfadyen, A. (2011). Fathers and mothers developing skills in managing children's long-term medical conditions: How do their qualitative accounts compare? *Child: Care, Health and Development*, *37*(4), 512–523. https://doi.org/10.1111/j.1365-2214.2011.01219.x

Swallow, V., Newton, J., & Lottum, C. V. (2003). How to manage and display qualitative data using 'Framework' and Microsoft® Excel. *Journal of Clinical Nursing*, *12*(4), 610–612. https://doi.org/10.1046/j.1365-2702.2003.00728.x

Tallentire, V. R., Smith, S. E., Skinner, J., & Cameron, H. S. (2015). Exploring patterns of error in acute care using framework analysis. *BMC Medical Education*, *15*(1), 3. https://doi.org/10.1186/s12909-015-0285-6

Tishelman, C., Lindqvist, O., Hajdarevic, S., Rasmussen, B. H., & Goliath, I. (2016). Beyond the visual and verbal: Using participant-produced photographs in research on the surroundings for care at the end-of-life. *Social Science & Medicine*, *168*, 120–129. https://doi.org/10.1016/j.socscimed.2016.09.012

Ward, D. J., Furber, C., Tierney, S., & Swallow, V. (2013). Using framework analysis in nursing research: A worked example. *Journal of Advanced Nursing*, *69*(11), 2423–2431. https://doi.org/10.1111/jan.12127

Author Note

Laurie J. Goldsmith, PhD, is the Founder and Principal of GoldQual Consulting, a qualitative and mixed methods health services research company, and an Adjunct Professor in Simon Fraser University's Faculty of Health Sciences. Her research interests include access to health care and documenting and advancing the use of research methods. Please direct correspondence to laurie_goldsmith@sfu.ca.

Article Citation