Identifying Patterns and Meanings Across the AANA Foundation Closed Claim Dataset Using Thematic Analysis Methods

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The American Association of Nurse Anesthetists (AANA) Foundation Closed Claim Research Project was initiated in 1995 and remains active to date. The charge accepted by the Closed Claim Research Team is to conduct comprehensive analyses of adverse anesthesia outcomes from medical malpractice claims, identify causes of anesthesia patient injury and negative patient outcome trends, provide data that can be used to facilitate nurse anesthesia educational curricula, and facilitate recommendations for AANA practice standards. The overall goal of closed-claim research is to improve patient safety.

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The American Association of Nurse Anesthetists (AANA) Foundation Closed Claim Research Team most recently analyzed a new set of closed malpractice claims, and the initial results were published in the AANA Journal in 2015.1 Unique to this most recent dataset, however, is the method used to further analyze data and report additional findings. For the first time, the team employed a formal qualitative process by way of thematic analysis (TA); these results will be published in 2018 and will cover topics such as cardiac, transfer of care, cosmetics, death, regional anesthesia, pediatrics, obstetrics, and respiratory-related events. Thematic analysis of closed-claim data is innovative, and we acknowledge that CRNAs may benefit from a detailed description of this method; we anticipate it will facilitate understanding and importance of findings. The purpose of this descriptive article, therefore, is to offer Certified Registered Nurse Anesthetists (CRNAs) an overview of TA, which can be referenced when reading the closed-claim research publications in upcoming issues of the AANA Journal.

Qualitative Research Methods

Distinct criteria differentiate quantitative and qualitative research. The decision to employ either type or both (mixed methods) is dependent on the purpose of the research and what makes the most sense to answer, refine, and/or establish the research question or questions. Qualitative research allows an understanding and interpretation of group infrastructures. Its utility continues to be increasingly accepted and appreciated in the health sciences. In qualitative investigational studies, samples are made up of people, cultures, behaviors, events, or processes; researchers must offer a thorough rationale for all sampling decisions. In contrast to quantitative research, there are no rules for determining a sample size; however, the sample must be named, and the justification for the type of the sample should be clearly explained.2 Data collected are typically in the form of words such as open-ended responses from subjects who are queried, transcripts of interviews and group discussions, observations made from varying venues and situations, field notes, and data extracted from formal documents when applicable. The various documents in the closed-claim files, including but not limited to insurer reports, anesthesia records, and deposition transcripts, are the type of data used for the AANA Foundation closed-claim research. The scientific method specific to qualitative research is best described as exploratory or bottom-up: the researcher generates a new hypothesis, and sometimes even theory, from the data collected. Additionally, qualitative data analysis often identifies patterns, features, and themes specific to the sample or situation studied; the result of analysis considers that human behavior is dynamic, situational, often personal, and even community oriented. In the final report, written narratives are often the root of the results section and include background and/or environmental descriptions and quotations directly from the dataset.

Employing qualitative methods mandates a different set of rules to ensure what is known as data trustworthiness. This term warrants explanation. Regardless of the research method used, rigorous standards must be adopted that will ensure study results are credible to key constituents. Validity, both internal and external, and reliability, must be established. Qualitative research mandates its own specific set of processes that confirm validity and reliability. Forcing processes typically used in quantitative research is nonsensical and does not “fit” in qualitative research. Qualitative researchers substitute
the essential concepts of validity and reliability, and they establish what is known as the qualitative equivalent: data trustworthiness. Trustworthiness consists of the following components, all used to measure the research quality: (1) credibility, (2) transferability, (3) dependability, and (4) confirmability.3

Credibility ensures that the findings represent what is going on and are not merely the researcher’s preconceived notions. Specific activities increase the probability that credible findings will be produced. Such activities include prolonged engagement, persistent observation, triangulation (using multiple and different sources to obtain data and having more than 1 investigator collect data), peer debriefing, negative case analysis, referential adequacy, and member checks.

Transferability is the generalization of the study findings to other situations and contexts. It is not considered a viable naturalistic research objective. However, the settings in which qualitative data collection occurs define the data and contribute to the interpretation. Therefore, generalization in qualitative research is often limited, but the purposive sampling process does address transferability; specific information is maximized in relation to the context in which the data collection occurs. Explaining further, detailed and varied information is emphasized in purposive sampling, rather than generalized, which would generally be the case in quantitative research. Purposive sampling requires the consideration of the characteristics of the individual members of a sample in as much as those characteristics are directly related to the research questions.

Dependability refers to the extent to which repeating a study in the same milieu would find the same results. Careful research design produces it, especially data collection and analysis strategies.

Confirmability is established by demonstrating that the reporting findings are grounded in the data. It is achieved with audit trail linkages allowing a knowledgeable researcher to follow from data to analysis to reporting. In other words, sources of reported data are cited in the research report.

Thematic Analysis Methods

Thematic analysis is one of the most common methods of analysis used in qualitative research. It has been clarified in the literature numerous times but rarely acknowledged considering its widespread use; many researchers believe it should be a foundational method for qualitative analysis. The decision to employ a TA approach for the most recent closed-claim study was based on numerous factors, most notably the purpose of the research. The purpose of the closed-claim data analysis is to further explore adverse events, describe preventable errors, and identify mitigation strategies to reduce them given that the narrative portion of the claim review yields unique insights into the basis of the claim.1

The following paragraphs offer a general overview of the methods and rigorous processes used by the closed-claim researchers conducting TA. This is not intended to be a formal curriculum but rather a wide-ranging description of commonly followed scientific procedures to ensure trustworthiness.4,5 Analogies are made between the AANA Foundation Closed Claim Research processes and findings to aid in understanding.

Establishing the Dataset

As previously described, the type of data unique to qualitative research that includes TA is often in the form of words. The words that are analyzed come from a variety of sources distinct to each respective study and are gathered to address the research objectives and answer the questions. The most recent AANA Foundation Closed Claim dataset, for example, included 245 claims provided by CNA Insurance in Downers Grove, Illinois, that met previously determined inclusion criteria for analysis. A data collection instrument developed and tested for interrater reliability is the tool used by the researchers (of the closed-claim team) to extract data from all the documents available in each file.6 An analogous process, for example, is extracting data from a medical record when performing respective medical record (chart) reviews for research purposes. Although 3 sources were used to contribute to the most recent comprehensive closed-claim database, it is the portion of the instrument that contained written narratives by the research team—the reviewer’s narrative, the assessment, a list of accusations, and a description of lessons learned—that provided the major contribution of words for TA.

The written narrative section of the closed-claim data instrument is where the researchers document information gleaned from each closed-claim file. This is a comprehensive summary written after reading and rereading the multiple sources describing the adverse event that resulted in a claim. The reviewer’s narrative, as delineated on the “reviewer survey” (also known as the data collection instrument), coaches the researcher to provide a chronicle of the actual events cited in the claim. This is a free-form text application and is not limited in terms of space. The intent is to allow the researcher as much room as necessary to describe in detail an objective portrayal of what transpired that appeared to initiate a claim by the defendant.

Next, the reviewer’s assessment of the closed-claim instrument allows each CRNA researcher to provide an interpretation, an assessment, and an evaluation of the claim based on his or her own clinical expertise and experience. As appropriate, the CRNA indicates whether the patient may have contributed to the adverse event. The list of accusations is where the most predominant accusations as clearly depicted in each claim are documented. The lessons learned section of the data collection instrument
is where the researchers document what they believed are the most critical lessons learned from the case.

The total sample of claims (n = 245) naturally fell into unique categories, and subgroups were established based on variables such as physiologic occurrences, patient demographics, the nature of the adverse event, surgery types, and anesthesia methods, to name a few. Additionally, each closed-claim review allowed supplementary demographic data to be captured, and this included information related to anesthesia technique, type of principal procedure, where the anesthetic was performed, the adverse event itself, the basis for the lawsuit, and whether the records provided an understanding of the details surrounding the event named in the lawsuit. After the retrospective review was complete, claims were further categorized. Resultant topics to be emphasized in future publications are transfer of care, death, regional anesthesia, pediatrics, obstetrics, cosmetic surgery, cardiovascular physiology, and respiratory-related events. The entire team unanimously agreed on each respective category for individual analysis.

**Framework Method**

Standard for all research processes, once data collection is complete, the phase of analysis begins. One common path to follow for TA is described via the Framework method. The Framework method is intended to facilitate interpretation and understanding of a dataset; involves the collection and organization of qualitative data; and seeks to allow the researcher to draw descriptive and/or explanatory conclusions clustered around themes that were identified, developed, and extracted from the data. Although this type of analysis can be conducted using an inductive or deductive approach, it is the inductive approach that attempts to gain insights and understandings from data patterns rather than collect data to support or reject a hypothesis, which is common in quantitative research methods. Typically, the research begins with vaguely formulated questions, and intense time is spent reviewing the dataset to validate and even refine the research questions. The focus is on identifying patterns’ meaning across a dataset. The Framework method (modified below for ease of understanding) is widely used in many different disciplines and encompasses the following assumptions:

- The guiding researchers should be skilled in qualitative methods to facilitate the team in the generation of descriptions, categories, explanations, and types.
- Qualitative rigor is a requisite, which consists of components that establish trustworthiness.
- The process should be considered at the proposal stages of research development.
- Qualitative flexibility must be maintained.
- The technical process should not be overemphasized; rather, data analysis should be influenced by the characteristics of the researchers and their disciplinary pattern.

- Critical reflection must occur throughout the research process.
- The process can be adapted to units of analysis such as predefined groups.

The AANA Foundation Closed Claim Research Team followed the ideologies in the Framework method, and if necessary, modifications were made as appropriate without sacrificing or negating guiding principles of honorable qualitative conduct.

**Coding**

Once a dataset is established and there exists narratives (eg, the 4 written narratives for each closed-claim file), the generating of codes begins. In this phase, the researchers have read, reread, and become intimate and extremely familiarized with the data. This process involves the production of what is commonly known as identifying initial codes. A code in qualitative inquiry is a word or even short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of data. Code words or phrases identify a feature of the data that appears interesting to the researcher regarding the phenomenon of interest.4,8

The process of coding is one component of data analysis; it is when the organization of data into meaningful groups occurs.8

An example of coding based on the research questions from the cosmetic closed-claim files is presented here.

The research questions are as follows:

1. What themes emerged related to anesthetic technique appeared to contribute to the adverse event?
2. What themes emerged related to human behaviors appeared to contribute to the adverse event?
3. Did themes emerge that demonstrated deviations from the AANA Standards for Nurse Anesthesia Practice?

The following are examples of codes that were extracted from the claims and mutually agreed on by the researchers as pertinent to the phenomenon of interest:

- Patient not forthcoming with history
- Patient not cooperative with assessment
- Nondisclosure of patient significant health history by primary care provider
- Incomplete preanesthesia assessment

Coding can be done manually or through a software program. Regardless of how it is done, there is a systematic approach while working through the entire dataset; it is the researchers’ responsibility to give full and equal attention to each code identified. Universally accepted principles during coding exist, and researchers should code for as many potential patterns as possible, code extracts of data inclusively (eg, sentences and possibly paragraphs), and accept that individual extracts of data can ultimately fit into numerous themes depending on relevancy.8 When codes are applied and often reapplied
to qualitative data, researchers can group the codes as needed and, depending on the nature of the research and the volume of the codes, categorize them. This often permits the transition to theme development with organization and structure. Additionally, it is recommended that coding should be a collaborative process when applicable because multiple minds bring multiple ways of analyzing and interpreting the data (again, following the guiding ideologies of trustworthiness).

**Theme Development**

Themes are considered an outcome of coding, the categorization of codes, and analytic reflection by the researchers. The focus of theme generation is at a wider level, however, than coding; it is the capability and awareness to recognize the abstract and sometimes vague constructs that are developing and appear related, as the result of coding. For example, initially themes may not be outward or obvious, but still fuzzy; it is the researchers’ responsibility to make sense of the (potential) themes, to name them and/or operationally define them, and to validate their existence and objectivity. Extensive literature reviews do help to guide in this phase, and ultimately the description of the scope and content of each theme should be doable with ease and certainly make sense to the reader. This is considered a vast step in addressing the research questions posed.

Important to note, researchers may use self-developed visual representations, and map via graphics, the codes as they appear to lend themselves to a theme. Mapping is not mandatory but does help with decision-making processes and validation of objectivity. As the process continues, the refinement of initially established themes is considered an essential step. Data within themes should make sense and be interconnected; there should be distinctions easily identified between themes. The reconsideration of themes is always appropriate because they may require reworking, subthemes may be noted, new themes may be created, and some may not fit and be set aside. This phase is one way of embracing the flexibility component of TA and accepting the visualization of fit of each theme; the story can now be told.
Thematic Analysis: Dissemination of Findings
Producing the research report begins when there is a set of fully worked out themes and trustworthiness of the project is reconfirmed yet again. The goal of the write-up is to tell the complex story of the data in a manner that convinces the reader of the merit and validity of the analysis. Reports should always include data extracts and provide solid evidences of the themes in the data. The Table provides a modified description of the “stages” of the Framework method often used by qualitative researchers who have met the assumptions of the method and are employing a TA approach. Note that stages of the Framework method refer to interview transcription data, but an analogy is made for data from documents such as closed-claim narratives.

Conclusion
The AANA Foundation embraced an additional and innovative approach to study adverse events that occur during anesthesia and what we as CRNAs can do to advance patient safety. The importance and value of improving patient outcomes is indisputable, and there are always lessons to learn from strong data. It is well accepted that lifelong learning is embedded in our professional responsibility as anesthesia experts. Thematic analysis of closed-claim data offers an exemplary and novel approach for the exploration of perioperative anesthetic interactions at all levels that is inextricably weaved into patient care encounters. We are adding to a body of evidence by pinpointing, examining, and recording patterns or themes specific to adverse outcomes at a much greater degree than in the past. And, although TA is not exempt from limitations, the data gleaned by employing this method of analysis in reviewing closed claims promotes opportunities to inform, improve decision-making processes, and even modify current standards of care. The goal remains improving patient safety.

REFERENCES
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