

Content Analysis in Critical and Emergency Care: A Discussion Paper

Maria N.K. KARANIKOLA, PhD, MSc, RN^a 

Introduction: Content analysis, although firstly introduced in social sciences as a qualitative research method, has become a popular method for inquiry in healthcare sciences, including emergency and critical care nursing. **Aim:** The aim of content analysis is to interpret qualitative data through coding and analytical identification of themes or schemas.

Results: There are different forms of content analysis, according to the aim of the study, (a) the conventional approach, (b) the direct approach, and (c) the summative approach. The depth of the analysis is defined by the degree to which the researcher reveals the covered meanings included in data. The range of the analysis is defined by the number of the identified themes and relevant categories of themes, and mainly of how abstract is the identified association among the different categories of themes. Balancing the strengths against the researcher-identified limitations and other weaknesses of the study, the researchers determine the value or trustworthiness of study findings, aiming to increase the transferability of the findings to other populations. **Conclusion:** Qualitative research is under-used as a research method in emergency and critical care despite the limitless variations of clinical research questions that can be investigated through this method of inquiry and relevant study designs, including content analysis.

Keywords: content analysis; qualitative data; trustworthiness; critical care; conventional approach

INTRODUCTION

The ultimate standard of care in nursing is the development of therapeutic relationships between people facing health-related problems, their family members, and healthcare professionals, including the context of emergency and critical care services (Schram, Hougham, Meltzer, & Ruhnke, 2017). This in turn, requires a holistic comprehension of the needs and perceptions of those using emergency and critical care services, as well as of those employed in these services (Sánchez-Vallejo, Fernández, Pérez-Gutiérrez, & Fernández-Fernández, 2016). Additionally, improvement in clinical outcomes,

as well as enhancement of the quality and safety of delivered care entails the inclusion of the perspectives of healthcare service consumers and healthcare professionals regarding the quality and safety of provided services (Hoffmann, Dreher-Hummel, Dollinger, & Frei, 2018; Tomasi et al., 2018). At the same time, a holistic and in-depth understanding of the perspectives and experiences of those treated in critical care services might endorse enhanced empathic understanding towards them (Hekmatpou & Ebrahimi-Fakhar, 2015). This in turn may further empower the therapeutic relationship and promote engagement of patients and their family

^aAssistant Professor, Department of Nursing, School of Health Sciences, Cyprus University of Technology, Limassol, Cyprus.
E-mail: maria.karanikola@cut.ac.cy

members in the therapeutic process, all leading to improved clinical outcomes (Donaghy et al., 2018; Elliott, Bohart, Watson, & Murphy, 2018).

The investigation of the experiences and needs of both populations, that is, healthcare service consumers and healthcare professionals, with regard to the healthcare associated phenomena is mainly achieved through qualitative research (Munhall, 2012). Qualitative research methods aim to answer questions such as “What is it like to be admitted in the ICU?” or “What is the meaning of an experience, within the critical care context?” Overall, this form of research is designed to investigate the phenomenon of interest without predetermined theories so as to disclose unknown perspectives of it (Munhall, 2012). Nevertheless, qualitative research may be also based on preexisted theory and deductive approaches too, by utilizing a priori codes, or theoretical assumptions. For instance, qualitative research may be applied within the mixed methods approach aiming to investigate the construct validity and relevant thematic categories of an instrument as part of the cultural adaptation process (Karanikola & Papathanassoglou, 2015). The main methodologies for qualitative research are (a) phenomenology, (b) ethnography, (c) content (thematic) analysis, and (d) grounded theory (Ingham-Broomfield, 2014).

Overall, qualitative research allows participants to describe their perspectives and experiences as deeply as they want to. The analysis of data coming from qualitative study designs aims to present the manifest components, as well as to reveal the concealed parts of the narrative of each participant (Munhall, 2012).

Content analysis, although firstly introduced in social sciences as a qualitative research method (Ingham-Broomfield, 2014), has become a popular method for qualitative inquiry in healthcare sciences, including emergency and critical care nursing (Erlingsson & Brysiewicz, 2017). Aiming to explore the extent to which qualitative methodology, and particularly content analysis approach

is applied in critical care research designs, we searched one of the most reliable scientific data base for healthcare studies. In particular, a search in pubmed data base using the following combination: (critical care [MeSH Major Topic]) AND content analysis [Text Word], retrieved 128 articles, while additional 140 were retrieved under the combination: critical care [MeSH Major Topic]) AND qualitative study [Title/Abstract]. The latter, in the vast majority, refer to content analysis approach. Thus, content analysis is the most common, qualitative analysis method used in critical care, corresponding to more than half of the qualitative approaches applied in the critical care topic. In particular, aiming to explore the extent to which content analysis is used among other modes of qualitative study designs we performed individual searches, each of them corresponding to the different types of qualitative designs, and particularly phenomenology and ethnography. The truncation symbol* was used for phenomenology (i.e., phenomenolog*) in order to include all relevant terms, for example, “phenomenological inquiry.” No time limit was used, since our focus was on the range of qualitative studies performed so far. Table 1 presents the results of a search in pubmed data base regarding the different forms of qualitative inquiry applied in critical care research field.

The aim of the present paper is to describe different approaches of content analysis that can be used in critical care research, and to compare and contrast them. Nevertheless, an understanding of the different content analysis approaches, underpinnings, and merits will help critical care researchers increase the validity and transparency of their study designs and further support data generalizability and evidence-based policy making and clinical practice (Kilbourne & Atkins, 2015).

THE METHOD OF CONTENT ANALYSIS AT A GLANCE

The aim of content analysis, as a flexible method for systematically analyzing qualitative data, is to

TABLE 1. Search Results in Pubmed Data Base in December 2018 Regarding the Different Forms of Qualitative Methodology Applied in Critical Care Research Field

	Search Terms	Query Items Found
#1	(Critical care [MeSH Major Topic]) AND ethnography [Title/Abstract]	12
#2	(Critical care [MeSH Major Topic]) AND hermeneutic [Title/Abstract]	45
#3	(Critical care [MeSH Major Topic]) AND phenomenolog* [Title/Abstract]	127
#4	(Critical care [MeSH Major Topic]) AND qualitative exploration [Title/Abstract]	8
#5	(Critical care [MeSH Major Topic]) AND content analysis [Text Word]	128

interpret the content of qualitative data through coding and analytical identification of themes or schemas (Hsieh & Shannon, 2015). The types of qualitative data suitable for content analysis include verbal, print, or electronic documents, collected through personal semi-structured interviews, focus-groups, journals, narratives, questionnaires with open-ended questions, observations, and media or art material, only to name a few (Bengtsson, 2016).

Data analysis begins with reading the entire data continually to attain immersion into the data, and achieve a perception of the whole (Erlingsson & Brysiewicz, 2017). Then, the researcher identifies condensed meaning units which are further transformed to the main themes and then grouped to categories of meanings (Erlingsson & Brysiewicz, 2017). There are different degrees of the depth and range of the analysis (Graneheim, Lindgren, & Lundman, 2017). The depth of the

analysis is defined by the degree to which the researcher reveals the covert meanings included in data. Thus, the depth of a content analysis ranges from manifest analysis, which includes strict and evident meanings, to highly hermeneutic analysis, which regards the disclosure of the concealed meanings in data. The range of the analysis is defined by the number of the identified themes and relevant categories of themes, and mainly of how abstract is the identified association among the different categories of themes (Erlingsson & Brysiewicz, 2017).

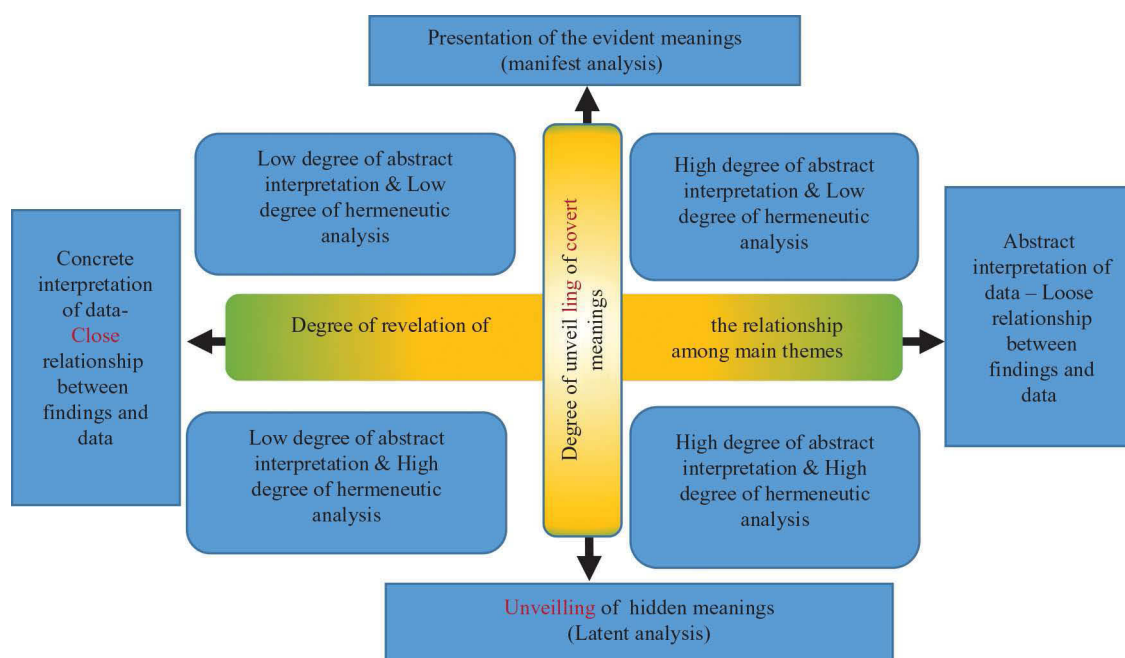
Overall, this method of data analysis provides information about a phenomenon under study through the sorting of a plethora of data into a well-organized number of categories that reflect relevant meanings (Bengtsson, 2016).

A researcher selects the form of content analysis approach according to the theoretical background of a study and the type of research question under study (Erlingsson & Brysiewicz, 2017). There are different forms of content analysis, according to the aim of the study. The main types of content analysis are (a) the conventional approach, (b) the direct approach, and (c) the summative approach (Hsieh & Shannon, 2015). Figure 1 presents the different degrees of the depth and range of content analysis.

CONVENTIONAL CONTENT ANALYSIS

The aim of the conventional form of content analysis is the description of a phenomenon, and further through this the development of a theoretical model or concept (Coombs, Mitchell, James, & Wetzig, 2017). Thus, conventional content analysis is suitable when existing theory or research data on a topic are limited, for example, “The experience of people who survived from acute cardiac arrest” (Aristidou, Vouzavali, Karanikola, Lambrinou, & Papatthanassoglou, 2018). In that case, the research questions would be “What is the lived experience of people who survived from acute cardiac arrest?” Further, a purposive sample is drawn from the target population according to the inclusion criteria

Figure 1. The different degrees of the depth and range of content analysis.



(Ingham-Broomfield, 2014), while the size of it is defined by data saturation criteria (Karanikola, Kaikoushi, Doulougeri, Koutrouba, & Papathanassoglou, 2018). The later, prerequisite heterogeneity of the sample, that is, men and women, middle age people and older people; parents and singles; and so on (Karanikola et al., 2018). A basic criterion for participation in a research project is sufficient experience about the phenomenon under study, as well as willingness to communicate the perceptions and experiences regarding this phenomenon. Additional criteria are (a) ability to reflect on the experience of the phenomenon under study, based on the depth of the described personal perspective (b) ability to communicate the experience, as it is drawn from the content of a narrative (Morse, 2015; Saunders et al., 2018).

The tool for data collection is an interview guide, articulated by open-ended questions (Hsieh & Shannon, 2015), for example, “Can you describe your experience of being a survivor from acute cardiac arrest?” During the interview, the researcher may use probes, specific to the

participants’ narratives, for example, “Can you tell me more about that?” “Can you give me an example?”

Data analysis requires avoidance of preconceived theories and related to the phenomenon under study categories in the literature (Hsieh & Shannon, 2015). Thus, categories and labels of these categories derive directly from the data. The main components of the analysis are (a) meaning units [condense parts of the text describing a particular topic], (b) codes [labels assigned to each meaning unit, which very accurately describe the main topic of a meaning unit], (c) categories and subcategories [groups of codes related to one another according to their core quality characteristics, reflecting similarities, differences or multiple aspects of a phenomenon or topic], and (d) themes [constructs reflecting an abstract association among two or more categories and articulated by answers to questions about different aspects of a phenomenon, such as “How,” “Why,” “In what manner”] (Erlingsson & Brysiewicz, 2017). The main steps during data analysis according to the conventional content

TABLE 2. An Example of the Main Steps in Conventional Content Analysis

Themes	Categories (Subcategories)	Codes	Participants' Narratives (Condensed Meaning Units and Codes)
Factors of work dissatisfaction	Low social appraisal of nursing and profession devaluation (factors)	Social status Social appraisal	"I don't feel satisfied from my profession because of its <u>social status</u> [. . .] I realize that the <u>social appraisal</u> of the nursing profession is not corresponding either to nurses' educational preparation in university settings or to the investment of their personal time in their career, or to their contribution to patients' outcomes. I feel <u>anger</u> ."
Adverse work-related emotional experiences	Adverse feelings	Lack of satisfaction Anger	
Adverse work-related emotional experiences	Adverse feelings	Dissatisfaction	"I don't feel satisfied also from my salary. We do <u>not</u> earn <u>enough</u> at all. ZERO, they cannot <u>pay</u> us for this job [. . .] It is a <u>soul-tearing</u> profession [. . .] our body is involved. We need to <u>get paid</u> for this because we deserve it."
Factors of work dissatisfaction	Low salary and substandard payment (factors)	Pay	
Adverse work-related physical experiences	Fatigue (experience)	Soul-tearing job	
Factors of work dissatisfaction	-Unsatisfactory work conditions: Personnel shortage, work overload, wide range of duties and responsibilities (factors)	Huge shortage, inadequate time, many responsibilities, inappropriate duties	"The greatest <u>burden</u> is the great <u>numbers of patients</u> and the <u>small number of nursing personnel</u> . I would wish more <u>humane work conditions</u> [. . .] a little more time for patients. Most of the times, the personnel is not sufficient to cover even the most immediate <u>patient needs</u> [. . .] That is you cannot break at all."

(Continued)

TABLE 2. An Example of the Main Steps in Conventional Content Analysis (Continued)

Themes	Categories (Subcategories)	Codes	Participants' Narratives (Condensed Meaning Units and Codes)
Quality and safety care standards	Patients' unmet needs (Perception)	Uncovered patients' needs	No time to eat, to go to the toilet, to drink water. You get dehydrated on the job [. . .] The <u>clerical work wears me out</u> , or the <u>supplies</u> [. . .] they <u>burden</u> nurses tremendously. In fact it is not our <u>responsibility</u> . But we all do everything."
Adverse emotional and physical work-related experiences	Participants' unmet needs, fatigue (experiences)	Burden Exhaustion	
Factors of work satisfaction	Quality of social interaction (factor)	Work environment climate	"We share a <u>pleasant work environment</u> and this is probably because we <u>don't have many conflicts</u> [. . .] and I <u>felt happy</u> going to work."
Positive work-related emotional experiences	Positive feelings (experience)	Happiness	
Positive work-related emotional experiences	Positive feelings (experience)	Satisfaction	"You <u>felt satisfied</u> when your <u>cooperative</u> (physician) or your <u>colleague</u> (nurse) says to you 'thank you for helping me to help the patient to overcome that difficulty'. It <u>gives satisfaction</u> ."
Factors of work satisfaction	Effective collaboration (Factor)	Cooperation Recognition	
Factors of work dissatisfaction	Ineffective management: Lack of support and accord with nurse administrators (factor)	Administration Lack of appreciation	"The <u>administrators</u> [. . .] are all orders and no substance." "This is what I <u>would like</u> , at least for the <u>administration</u> to appreciate what we do."

(Continued)

TABLE 2. An Example of the Main Steps in Conventional Content Analysis (Continued)

Themes	Categories (Subcategories)	Codes	Participants' Narratives (Condensed Meaning Units and Codes)
Factors of work satisfaction	Autonomy and participation in clinical decision-making (factors)	Clinical contribution and autonomy	"I feel <u>satisfaction</u> when I feel I <u>can contribute</u> , in some significant way, to the <u>outcome</u> of patients, when I can <u>function autonomously</u> as a nurse, even in this limited framework."
Positive work-related experiences	Positive feelings (experience)	Satisfaction	
Professional context perceptions	Perception of professional status (perception)	Limited autonomy	

Source: From Karanikola, M. N., & Papathanassoglou, E. D. (2015). Measuring professional satisfaction in Greek nurses: Combination of qualitative and quantitative investigation to evaluate the validity and reliability of the Index of Work Satisfaction. *Applied Nursing Research, 28*(1), 48-54.

analysis are presented in Box 1, while Table 2 presents an example of the main steps in conventional content analysis approach.

Box 1. Description of the Main Data Analysis Steps in Conventional Content Analysis Method

Data analysis in conventional content analysis: A nine-step procedure

1. Reading of the entire narrative data repeatedly to achieve immersion and obtain perception of the whole and keep notes, about what is the text talking about or what is the outmost impression of what is going on there? (First credibility criterion).
2. Reading of data word by word and highlighting the most descriptive parts of the text about a key concept/thoughts => DEVELOPMENT OF MEANING UNITS.
3. Shortening meaning units by writing the exact words from the underlined text that seem to capture

- key thoughts or concepts of the participants' perspectives/experiences=> DEVELOPMENT OF CONDENSED MEANING UNITS.
4. Naming of the condensed meaning units using one to two words directly derived from the text => DEVELOPMENT OF CODES.
5. Organization and grouping of codes into meaningful clusters (10-15), based on how different codes are related and linked => DEVELOPMENT OF THE "WHO-WHERE-WHEN-WHAT" TOPICS => DEVELOPMENT OF CATEGORIES (short and factual sound names).
6. Combination, and further reorganization of the categories into a smaller number of groups which express underlying meaning => DEVELOPMENT OF THE "WHY-HOW-IN WHAT WAY- BY

(continued)

WHAT MEAN” TOPICS=>
DEVELOPMENT OF THEMES.

7. Development of a tree diagram reflecting a hierarchical structure of the categories and themes of data => an all-meanings-embracing theme.
8. Development of definitions for each category and themes and presenting exemplars/representative quotes for each of them.
9. Identification of the relationship between categories and subcategories based on the researchers concurrence, antecedents, or consequences presented in a diagram/figure.

DIRECT CONTENT ANALYSIS

The aim of direct content analysis is to validate or conceptually extend an already described theoretical framework or hypothesis (Graneheim et al., 2017), for example, “How well Stamps’ theoretical framework of the six work components explains the main factors of professional satisfaction in Greek emergency and critical care nurses?” In that case the semi-structured interview guide for data collection will encompass open-ended questions articulate according to the aim of the study and associated research questions. In the example mentioned above, the main question in the interview guide would be “Can you describe the main factors associated with positive and negative feelings regarding your professional role?” Additionally, probes, specific to the hypothesis or theory tested will be developed, for example, “Can you talk to me more about your feelings and perceptions regarding the quality of relationships in your work environment?” With regard to the data analysis procedure, there are two distinct forms. The researcher may avoid preconceived categories in the literature when grouping codes of data, or may follow preconceived categories, already addressed in the literature (Graneheim et al., 2017). In that case, during direct content analysis, the researchers

work according to a more structured process compared to the conventional approach, since existing theory, relevant theoretical frameworks or prior research data are used not only for the development of the research question, but also to identify key concepts and variables as initial codes, categories, and themes (Hsieh & Shannon, 2015). Moreover, already described theory and research data support identification of the relationships among study variables.

It is worth noting that, meaning units without following preexisted coding relevant to already developed theory and research data may increase trustworthiness and the rigor of data analysis, since this method allows the researcher to capture all possible dimensions of a phenomenon, for example, professional satisfaction factors (Morse, 2015). Moreover, direct content analysis is also suitable for the description of a phenomenon when existing theory and research data are limited (Hsieh & Shannon, 2015), for example, morally distressing experiences in emergency nurses. In that case, although the questions included in the semi-structured interview guide are open-ended, however, are phrased according to the definition of the concept under study, for example, moral distress. In that case, the question may have the following form: “Can you describe any experiences where you felt that what you did as an ER nurse or witness to happen in your workplace was completely different from your moral and ethical principals?”

The first step during data analysis following the direct content analysis approach is to identify key concepts as initial themes according to existing theory and prior research (Hsieh & Shannon, 2015). For instance, taking into account Stamps’ theoretical framework for professional satisfaction in nurses six work components have been identified, that is, payment, quality of relationships, applied tasks, managerial policies, professional status, and clinical autonomy (Stamps, 1997). Thus, these six work parameters will be the initial themes, and relevant codes need to be described, for example, for

the theme PAYMENT, a number of codes may be “pay,” “money,” “salary,” “rewards,” and so on.

Then, a researcher has to develop operational definitions for all the initial themes using the existed theory. Thus the description of the six work factors according to Stamps are determined. The next step is reading the entire text to gain an understanding of the whole, and further to identify particular meaning units, relevant to the research question, for example, participants’ experiences of positive/negative feeling about work-related factors. Since the goal of the research study is to identify and categorize all dimensions of a phenomenon, for example, professional satisfaction factors, the researcher must read again the entire transcript and underline all parts of the text that seem to reflect a professional satisfaction/dissatisfaction factor, and then create for these parts also condensed meaning units. Then, codes are given to all underlined condensed meaning units relevant to the predefined themes where possible, for example, pay, autonomy. All parts of the text which have not be coded according to the initial list of themes should be given a new code (label) that best described their content, for example, positive/negative work-related emotion.

After coding, the research needs to create groups of codes, and then to determine any subcategories in each category (Hsieh & Shannon, 2015), for example, satisfaction from nurse to nurse relationships, satisfaction from nurse to physician relationships, satisfaction from nurse to patient relationships, and so on. Data which are not coded in one of the predefined categories are reassessed to which degree reflect new dimensions of the phenomenon under study, for example, different professional satisfaction factors. The next step is to identify themes based on the relationship among the categories. Finally, the researcher needs to compare the degree to which the present findings support the already developed theory and previous data on the subject, or the extent to which current findings

represent newly addressed professional satisfaction factors. In order to accomplish this task, the researcher may present current findings in a table by showing all themes and categories, accompanied by relevant representative quota, in a rank order based on the frequency of each category and theme identified in the entire sample (for instance, stated in brackets) (Hsieh & Shannon, 2015). Then, a column presenting the themes and categories already described in prior theory is needed (Hsieh & Shannon, 2015). The aim is to provide a comparison between the previously described categories and themes, for example, the six job components described by Stamps (1997) and the frequency of the newly identified factors related to positive and negative work-related emotions. It is also proposed to include an additional column to encompass the frequency of nonsupporting themes and categories in the entire sample (Hsieh & Shannon, 2015). Box 2 provides a description of the main data analysis steps in direct content analysis method, while Table 3 presents an example of the main steps in direct content analysis.

Box 2. Description of the Main Data Analysis Steps in Direct Content Analysis Method

Data analysis in direct content analysis: A 11-step procedure

1. Identification of key concepts as the initial themes, using already developed theory and prior research data.
2. Development of operational definitions for each initial theme and articulation of a list of codes, accurately defined using already developed theory.
3. Reading of the entire transcript several times to achieve absorption and a perception of the whole.
4. Clustering the transcript in meaning units, by underlining all parts of the text which describe key perceptions/feelings/experiences

(continued)

relevant to the predefined list of codes, as well as all parts of the text that describe additional key topics, relevant to research question even not supported by the predefined list of codes.

5. Development of condensed meaning units.
6. Labeling of all condensed meaning units using the predefined codes. Any text that could not be coded according to predefined themes/codes is given a new code which best describes its content.
7. Development of categories of codes.
8. Assessment of the data in each category to define any subcategories.
9. Reassessment of data which cannot be grouped into predefined categories, and description of different, additional categories.
10. Development of themes according to all identified categories.
11. Comparison of the extent to which current findings support prior theory or represent different themes.

SUMMATIVE CONTENT ANALYSIS

The aim of summative content analysis is identification and further quantification of certain words or constructs in a text of data, in order to understand the usage of certain words or constructs within a particular context (Hsieh & Shannon, 2015). Thus, through the report of the frequency of specific words or constructs among data, the researcher aims to interpret the meaning encompassed in these words or constructs within a particular cultural context (Hsieh & Shannon, 2015). The research questions in summative content analysis are focused on the exploration of essential meaning of constructs or words (Graneheim

et al., 2017; Hsieh & Shannon, 2015), for example, “How are the terms *care* and *caring* used in the communication among clinicians, that is, nurse to nurse and nurse to physician, when referring to futile care in ICUs, and what other terms, related to care, are used?. The probes included in the interview guide are specific to the context tested, for example, during decision-making or during documentation. The data suitable for this type of analysis journals, documents, texts from books, and so on (Ingham-Broomfield, 2014).

RIGOUR AND TRUSTWORTHINESS IN CONTENT ANALYSIS

The first step to assure the integrity of data collection in terms of data saturation regards the encouragement of the participants to refer to examples of their experiences to enable an in-depth understanding of their meaning (Karanikola et al., 2018). Additionally, each interview has to be ended only when the participants feel they have nothing to add, in answer to the following questions posed by the researchers: “Would you like to add anything more?” or “Is there anything you think it is important to add however irrelevant it may seem?” A negative answer confirms that the interview is completed (Karanikola et al., 2018). Moreover, a second interview is necessary with each participant in cases of personal interviews or a second meeting with each group in cases of focus group discussions (Munhall, 2012). Thus, participants may have the chance to reflect on their first narrative and to revise or even enrich its content during the second interview. Nevertheless, all participants need to have adequate experience with the phenomenon under study, a factor also resulting in the collection of rich data (Morse, 2015).

In terms of data analysis, the integrity is partially confirmed by the fact that all researchers involved in data analysis need to come into a consensus regarding study findings through ongoing discussions and reflection on the narratives of the participants (Ingham-Broomfield, 2014). When the analysis of data from all interviews is finalized a meeting with each participant (or with

TABLE 3. An Example of the Main Steps in Direct Content Analysis: Correspondence Between Index of Work Satisfaction (IWS) Subscales and the Themes/Categories/Codes Emerged from the Participants' Narratives

IWS Subscales Themes	Themes	Categories (Subcategories)	Codes	Participants' Narratives (Condensed Meaning Units and Codes)
Professional status	Factors of work dissatisfaction	Low social appraisal of nursing and profession devaluation	Social status Social appraisal	"I don't feel satisfied from my profession because of its social status [. . .] I realize that the <u>social appraisal</u> of the nursing profession is not corresponding either to nurses' educational preparation in university settings or to the investment of their personal time in their career, or to their contribution to patients' outcomes. I feel <u>anger</u> ."
Pay	Factors of work dissatisfaction	Low salary and sub-standard payment (factors)	Pay	"I don't feel satisfied also from my salary. We do <u>not earn enough</u> at all. ZERO, they cannot pay us for this job [. . .] It is a <u>soul-tearing</u> profession [. . .] our body is involved. We need to <u>get paid</u> for this because we deserve it."
Task requirements	Factors of work dissatisfaction	- Unsatisfactory work conditions: Personnel shortage, work overload, wide range of duties and responsibilities (factors)	Huge shortage, inadequate time, many responsibilities, inappropriate duties,	"The greatest <u>burden</u> is the great <u>numbers of patients</u> and the <u>small number of nursing personnel</u> . I would wish <u>more humane work conditions</u> [. . .] a little <u>more time for patients</u> . Most of the times, the personnel is not sufficient to cover even the most immediate <u>patient needs</u> [. . .] That is you <u>cannot break at all</u> . No time to eat, to go to the toilet, to drink water. You get dehydrated on the job [. . .]

(Continued)

TABLE 3. An Example of the Main Steps in Direct Content Analysis: Correspondence Between Index of Work Satisfaction (IWS) Subscales and the Themes/Categories/Codes Emerged from the Participants' Narratives (Continued)

IWS Subscales Themes	Themes	Categories (Subcategories)	Codes	Participants' Narratives (Condensed Meaning Units and Codes)
Interaction	Factors of work satisfaction	Quality of social interaction (factor)	Work environment climate	The <u>clerical work wears me out</u> , or the <u>supplies</u> [. . .] they <u>burden</u> nurses tremendously. In fact it is not our <u>responsibility</u> . But we all do everything.” “We share a <u>pleasant work environment</u> and this is probably because we <u>don't have many conflicts</u> [. . .] and I <u>fell happy</u> going to work.”
Interaction	Factors of work satisfaction	Effective collaboration	Cooperation recognition	“You <u>fell satisfied</u> when your <u>cooperative</u> (physician) or your colleague (nurse) says to you ‘thank you for helping me to help the patient to overcome that difficulty’. It <u>gives satisfaction</u> .”
Organizational policies	Factors of work dissatisfaction	Ineffective management: Lack of support and accord with nurse administrators	Administration lack of appreciation	“The <u>administrators</u> [. . .] are all orders and no substance.” “This is what I <u>would like</u> , at least for the <u>administration</u> to <u>appreciate</u> what we do.”
Autonomy	Factors of work satisfaction	Autonomy and participation in clinical decision-making	Clinical contribution and autonomy	“I feel satisfaction when I feel I <u>can contribute</u> , in some <u>significant way</u> , to the <u>outcome</u> of <u>patients</u> , when I can <u>function autonomously</u> as a nurse, even in this limited framework.”

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the group in cases of focus group discussions), may provide to the researchers the chance to discuss the final findings of the study with the participants (Karanikola et al., 2018). By this, the researchers may have the opportunity to assess the degree to which all nine of Munhall's (2012) criteria of research rigour have been applied successfully. These criteria are resonance (the written analysis of the phenomenon resonates with individuals), reasonableness (study results constitute a reasonable interpretation of the phenomenon), representativeness (thorough interpretation of the phenomenon), recognizability (people recognize aspects from their own experience in the interpretation), raised consciousness (expanding one's perception of reality), readability, relevance (study results concern the nursing profession), revelation (disclosure of specific aspects of the phenomenon), and responsibility (the ethical demand to be true to participants).

Nevertheless, a process as described above (i.e., the findings of the study being brought back to participants for discussion) may result to the enrichment and corroboration of them (Munhall, 2012). In particular, the participants may have the chance to verify the interpretation of their narratives given by the researchers (Karanikola et al., 2018). During this, the researchers may ask the following question: "Is this what the experience is really like?" Thus, this procedure may result in confirmation of the criteria of representativeness, reasonableness, and recognizability. Moreover, prior to submission for publication, all participants receive a copy of the study manuscript and approve its content regarding the quota included and their interpretation. Through this process the criterion of readability is also confirmed (Karanikola et al., 2018). Additionally, all participants have the chance to assure during the second interview, after having presented with the findings and given to read the printed text with the results, that they have come across certain dimensions of the phenomenon that they had not reflected on before.

This cognitive process entails the confirmation of the raised consciousness and revelation criteria. Furthermore, during the presentation of the finding the participants have the chance to discuss the importance of the project with the researchers and to provide comments. This also confirms the criteria of relevance and resonance.

The integrity of data analysis may be further assured by the credentials of all the researchers involved in data analysis (Morse, 2015). It is also worth noting that coding, naming, and finalization of the main themes and core theme are obtained from the consensus among three researchers who participated in data analysis plus external investigators (Karanikola et al., 2018).

Nevertheless, balancing the strengths against the researcher-identified limitations and other weaknesses of the study, the researchers determine the value or trustworthiness of study findings, aiming to increase the transferability of the findings to other populations (Graneheim et al., 2017). Similarly, transferability of the findings of a study is appropriate only if the researchers show that these findings are trustworthy. There are four additional criteria to determine the degree of trustworthiness regarding the findings of a qualitative study (Krippendorff, 2013), and further to support the transferability of these findings. These criteria are defined in terms of transparency, truth, time, and transformation.

Transparency is the extent to which the researcher provided details about the study processes such as decisions made during data collection and analysis, ethical concerns that were noted, and personal perspectives that may bias the findings (Cook, Kuper, Hatala, & Ginsburg, 2016). In particular, the researcher may indicate that field notes were written immediately after each interview. Additionally, the openness of the researcher about how personal bias was managed increases confidence in the study findings.

Truth as a characteristic of qualitative studies is not absolute. Truth encompasses confidence that the findings can be confirmed by reviewing the audit trail, field notes, or transcripts (note the overlap with transparency). Strategies implemented to increase rigor, such as comparing transcripts to audio recordings, sharing the findings with participants and writing memos, also increase the confidence in the truth of the findings. Truth also includes the conceptual and experiential fit of the findings with the researchers' view of the phenomenon. The researchers' view of the phenomenon also may expand as they empathize with the thoughts, feelings, and experiences of the participants (raised consciousness mentioned above). Some describe this as intuition or new insights that emerge as one reads the published study. Questions increasing the truth of a study include (a) What strategies did the researcher use to confirm the accuracy and logic of the findings? (b) How do the findings fit with the readers' previous views related to the phenomenon? (c) Are the findings believable?

Time is defined in relation to data and theoretical saturation criteria. In qualitative research, the researcher is the instrument. Thus the time spent in gathering data, developing relationships with participants and key informants, interviewing additional participants based on initial data analysis, and being immersed in the data during analysis and interpretation is a very important indicator of the rigour of a qualitative study. Questions such as "How long did interviews last?," "How much time was spent in the field?," and/or "How much time was spent in observation?" "Does the time spent collecting and analyzing data seem adequate based on the size of the sample, complexity of the design, and scope of the phenomenon?" Intent to assess the time as a criterion of the rigor of a qualitative study (Munhall, 2012).

Transformation refers to the depth and range of analysis and interpretation of data. Through data analysis and interpretation transform of the words of participants takes place.

Qualitative researchers who analyze the data at a superficial level will report the data as the findings, without evidence of synthesis, comparison across participants, or creation of abstract themes or categories. Aiming to assess the quality of a study regarding the transformation standard, the researcher needs to ask "Do the findings go beyond reporting facts and words to describing experiences with depth and insight?," "Are there other possible interpretations of the data?," "How do the meaning and interpretation of the data match or contrast with previous research findings?," "What contributions do the findings of the study make to what is known about the phenomenon?" Overall, the ultimate criterion is the degree to which the researcher has taken the time to hone the writing, that is, to transform the stories of the participants to a narrative that exhibits both thoroughness and eloquence.

Transferability based on the above standards, entails the applicability of the findings to another population or phenomenon, or stated another way the "ability to do something of value with the outcomes" (Cook et al., 2016). Thus, to be transferable, the findings must have meaning for similar groups or settings. Questions, such as "How similar were the study participants to the persons or groups with whom you interact?," "Are there general truths that emerged from the research that might be used with similar populations, or with people in similar circumstances?," "What implications may the findings have for clinical practice?," "What actions could be taken that are consistent with the findings?," "How does the study move research, theory, knowledge, education, and practice forward?" Determine the transferability of the findings of a qualitative study, including content analysis approach.

CONCLUSIONS AND SYNTHESIS OF RELEVANT INFORMATION

Although the main types of content analysis approach, that is, conventional and direct method share a number of similar steps, however each of them corresponds to a different research design. In more detail, the goal of the directed content

analysis is to confirm or conceptually expand a theoretical framework, since there are cases in which existing theory or prior research data about a phenomenon may be inadequate or would advantage from further description. For example, the factors associated with professional satisfaction among Greek emergency and critical care nurses. In that case, although a theoretical framework has been described by Stamps (1997), this has been developed for USA hospital nurses. Thus, further exploration of the degree to which this theoretical framework may explain the professional satisfaction factors in emergency and critical care nurses coming from a completely different cultural context is needed, and subsequently may underpin the research question of a study (Karanikola et al., 2015). In that case, the direct content analysis approach is suitable for this type of study design and data analysis.

In contrast, if a researcher aims to explore a phenomenon for which existing data are narrow, the conventional content analysis approach is more suitable since no preconceptions are present during data analysis. Thus, the questions and probes applied for data collection are worded in a non-specific manner, for example, "Please describe your experience as an emergency care nurses" or "Please talk to be about distressing situations." Although, direct content analysis may be also used when existing theory is inadequate, however, in that case the questions included in the interview guide are differently formulated compared to conventional approach. In particular, the questions and relevant probes are expressed according to already existing definitions in theory. Since by using direct content analysis the researchers are more likely to identify evidence which are supportive rather than nonsupportive regarding a theoretical framework, it is proposed to underline and code all key concepts in a text of data. This will also prevent an overemphasis on the pre existing theory which may hinder researchers from identifying additional dimensions of a phenomenon.

Moreover, special caution is needed regarding wording of the questions and probes included in the interview guide, in order to avoid leading questions. Nevertheless, special caution is also needed to the participants' tendency to answer the questions in a stereotypic way or give positive answers to satisfy the researcher (Krippendorff, 2013).

Nevertheless, qualitative research is under-used as a research method in emergency and critical care despite the limitless variations of clinical research questions that can be investigated through this method of inquiry inquiry and relevant study designs, including content analysis (Charlesworth & Foëx, 2016).

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