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Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness

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Transferability;
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Summary Qualitative content analysis as described in published literature shows conflicting opinions and unsolved issues regarding meaning and use of concepts, procedures and interpretation. This paper provides an overview of important concepts (manifest and latent content, unit of analysis, meaning unit, condensation, abstraction, content area, code, category and theme) related to qualitative content analysis; illustrates the use of concepts related to the research procedure; and proposes measures to achieve trustworthiness (credibility, dependability and transferability) throughout the steps of the research procedure. Interpretation in qualitative content analysis is discussed in light of Watzlawick et al.'s [Pragmatics of Human Communication. A Study of Interactional Patterns, Pathologies and Paradoxes. W.W. Norton & Company, New York, London] theory of communication. © 2003 Elsevier Ltd. All rights reserved.

Introduction

Initially content analysis dealt with 'the objective, systematic and quantitative description of the manifest content of communication' (Berelson, 1952, p. 18) but, over time, it has expanded to also include interpretations of latent content. Many authors, from a variety of research traditions, have addressed content analysis (for example, Berelson, 1952; Krippendorff, 1980; Findahl and Höijer, 1981; Woods and Catanzaro, 1988; Downe-Wamboldt, 1992; Burnard, 1991, 1996; Polit and Hungler, 1999). The first descriptions date from the 1950s and are predominately quantitative. Cur-

rently, two principal uses of content analysis are evident. One is a quantitative approach often used in, for example, media research, and the other is a qualitative approach often used in, for example, nursing research and education. Qualitative content analysis in nursing research and education has been applied to a variety of data and to various depths of interpretation (for example, O'Brien et al., 1997; Latter et al., 2000; Berg and Welander Hansson, 2000; Söderberg and Lundman, 2001).

A review of literature based on common databases (Cinahl, Medline and Sociological Abstracts) as well as references from articles and books shows different opinions and unsolved issues regarding meaning and use of concepts, procedures and interpretation in qualitative content analysis. The diversities can be understood partly from a historical point of view and partly from various beliefs of the nature of reality among researchers.

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An assumption underlying our paper is that reality can be interpreted in various ways and the understanding is dependent on subjective interpretation. Qualitative research, based on data from narratives and observations, requires understanding and co-operation between the researcher and the participants, such that texts based on interviews and observations are mutual, contextual and value bound (Lincoln and Guba, 1985; Mishler, 1986). Thus, our presumption is that a text always involves multiple meanings and there is always some degree of interpretation when approaching a text. This is an essential issue when discussing trustworthiness of findings in qualitative content analysis.

Another issue is that concepts within the quantitative research tradition still predominate when describing qualitative content analysis (for example, Krippendorff, 1980; Burnard, 1991; Downe-Wamboldt, 1992), especially the use of concepts describing trustworthiness. This causes confusion and paradigmatic uncertainty among authors and readers of scientific papers.

The purpose of this paper was threefold: first, to provide an overview of concepts of importance related to qualitative content analysis in nursing research; second, to illustrate the use of concepts related to the research procedure; and third, to address measures to achieve trustworthiness.

Overview of concepts

The following provides an overview of concepts related to qualitative content analysis and is to be seen as a contribution to a debate rather than an endeavour to find consensus. First, we present various uses of concepts found in the literature, and then we give reasons for our stance. The concepts are manifest and latent content, unit of analysis, meaning unit, condensing, abstracting, content area, code, category and theme.

A basic issue when performing qualitative content analysis is to decide whether the analysis should focus on manifest or latent content. Analysis of what the text says deals with the content aspect and describes the visible, obvious components, referred to as the *manifest content* (Downe-Wamboldt, 1992; Kondracki et al., 2002). In contrast, analysis of what the text talks about deals with the relationship aspect and involves an interpretation of the underlying meaning of the text, referred to as the *latent content* (Downe-Wamboldt, 1992; Kondracki et al., 2002). Both manifest and latent content deal with interpretation but the interpretations vary in depth and level of abstraction.

One of the most basic decisions when using content analysis is selecting the *unit of analysis*. In the literature, unit of analysis refers to a great variety of objects of study, for example, a person, a program, an organisation, a classroom or a clinic (Mertens, 1998), or a community, state or nation (Patton, 1987). Other authors have considered the unit of analysis as interviews or diaries in their entity, and the amount of space allocated to a topic or an interaction under study (Downe-Wamboldt, 1992). Parts of the text that are abstracted and coded (Weber, 1990), or every word or phrase written in the transcript (Feeley and Gottlieb, 1998), have also been considered as units of analysis. We suggest that the most suitable unit of analysis is whole interviews or observational protocols that are large enough to be considered a whole and small enough to be possible to keep in mind as a context for the meaning unit, during the analysis process.

A *meaning unit*, that is, the constellation of words or statements that relate to the same central meaning, has been referred to as a content unit or coding unit (Baxter, 1991), an idea unit (Kovach, 1991), a textual unit (Krippendorff, 1980), a keyword and phrase (Lichstein and Young, 1996), a unit of analysis (Downe-Wamboldt, 1992), and a theme (Polit and Hungler, 1991). We consider a meaning unit as words, sentences or paragraphs containing aspects related to each other through their content and context.

In the literature, shortening the text includes the concepts of reduction (Findahl and Höijer, 1981), distillation (Cavanagh, 1997) and condensation (Coffey and Atkinson, 1996). Reduction refers to decreasing the size, but it indicates nothing about the quality of what remains. Distillation deals with the abstracted quality of a text, which we see as a further step in the analysis process. We prefer *condensation*, as it refers to a process of shortening while still preserving the core.

The process whereby condensed text is abstracted has been called aggregation (Barroso, 1997) and 'grouping together under higher order headings' (Burnard, 1991, p. 462). We suggest *abstraction*, since it emphasises descriptions and interpretations on a higher logical level. Examples of abstraction include the creations of codes, categories and themes on varying levels.

Parts of a text dealing with a specific issue have been referred to as a domain or rough structure (Patton, 1990), a cluster (Barroso, 1997) and a content area (Baxter, 1991). We prefer *content area* since it sheds light on a specific explicit area of content identified with little interpretation. A content area can be parts of the text based on

theoretical assumptions from the literature, or parts of the text that address a specific topic in an interview or observation guide.

The label of a meaning unit has been referred to as a *code*. There seems to be agreement in the literature about the use and the meaning of a code. According to Coffey and Atkinson (1996, p. 32) 'codes are tools to think with' and 'heuristic devices' since labelling a condensed meaning unit with a code allows the data to be thought about in new and different ways. A code can be assigned to, for example, discrete objects, events and other phenomena, and should be understood in relation to the context.

Creating *categories* is the core feature of qualitative content analysis. A category is a group of content that shares a commonality (Krippendorff, 1980). Patton (1987) describes categories as internally homogeneous and externally heterogeneous. Krippendorff (1980) emphasises that categories must be exhaustive and mutually exclusive. This means that no data related to the purpose should be excluded due to lack of a suitable category. Furthermore, no data should fall between two categories or fit into more than one category. However, owing to the intertwined nature of human experiences, it is not always possible to create mutually exclusive categories when a text deals with experiences. A category answers the question 'What?' (Krippendorff, 1980) and can be identified as a thread throughout the codes. As we see it, a category refers mainly to a descriptive level of content and can thus be seen as an expression of the manifest content of the text. A category often includes a number of sub-categories or sub-subcategories at varying levels of abstraction. The sub-categories can be sorted and abstracted into a category or a category can be divided into sub-categories.

The concept of *theme* has multiple meanings and creating themes is a way to link the underlying meanings together in categories. Polit and Hungler (1999) describe a theme as a recurring regularity developed within categories or cutting across categories. Baxter (1991) defines themes as threads of

meaning that recur in domain after domain. The concept of theme is also used in literature in other qualitative methods. van Manen (1990, p. 87) considers a theme to 'describe an aspect of the structure of experience' and emphasises that a theme can not be an object or a thing. A theme answers the question 'How?' We consider a theme to be a thread of an underlying meaning through, condensed meaning units, codes or categories, on an interpretative level. A theme can be seen as an expression of the latent content of the text. Since all data have multiple meanings (Krippendorff, 1980; Downe-Wamboldt, 1992), themes are not necessarily mutually exclusive. A condensed meaning unit, a code or a category can fit into more than one theme. A theme can be constructed by sub-themes or divided into sub-themes.

Illustrations of the use of concepts

In the following we illustrate the use of concepts and analysis procedures for two texts based on interviews and observations respectively. One rationale behind giving two examples is to show various ways to develop themes. The processes of analysis are described and shown in Figs. 1–3. Even if these descriptions point to a linear process, it is important to bear in mind that the process of analysis involves a back and forth movement between the whole and parts of the text.

Qualitative content analysis of an interview text

The *unit of analysis* in this example is interview text about experiences of having hypoglycaemia. The context consists of a larger study aimed at describing coping strategies related to the everyday strains of living with diabetes (Lundman and Norberg, 1993). Twenty adults with Type 1-diabetes, aged 25–59 years, participated in the study. Interviews were performed addressing various aspects of living with Type 1-diabetes. The interview

Meaning unit	Condensed meaning unit	Code
there is a curious feeling in the head in some way, empty in some way	curious feeling of emptiness in the head	emptiness in the head
it is more unpredictable so to say, you can never be sure about anything	An unpredictable and unsure situation	uncertainty

Figure 1 Examples of meaning units, condensed meaning units and codes.

Theme	LACK OF CONTROL AND STRUGGLE FOR REGAINING CONTROL					
Category	SENSATIONS			ACTIONS		COGNITIONS
Sub-category	Unfamiliar bodily sensations	Familiar but unexpected bodily sensations	Terrible feelings	Unfamiliar actions	Familiar but unexpected actions	Thinking difficulties
Codes	Double vision Emptiness in the head Emptiness in the stomach Stiffness in the tongue Unsteadiness Weightiness in the legs	Enormous hunger Palpitations of the heart Tremor Sweating	Frightened to death Loss of control Uncertainty Confusion	Fumbling Disconnected speech Disruptive behaviour	Urge to eat Verbal expressions of anger “Attack” on the refrigerator	Inability to think clearly Uncertainty of what to say Unawareness of surroundings

Figure 2 Examples of codes, sub-categories, categories and a theme from content analysis of narratives about hypoglycaemia.

Meaning unit	Condensed meaning unit Description close to the text	Condensed meaning unit Interpretation of the underlying meaning	Sub-theme	Theme
She kicks about and hits the care provider when she is putting shampoo to her hair. // She tries to push the care providers away.	Using physical violence when being undressed and washed.	Fighting to defend her body zone against intrusion.		
When the care providers are in her room she closes the door from the outside so the care providers are locked up in her room and she stays outside in the corridor.	Closing the door between herself and the care providers.	Marking a boundary against others.	Fighting to protect her personal space	
She comes out to the corridor. She wears T-shirt, plastic pants and diapers and she has faeces all over her body. She walks into another resident's room and locks the door. // The care provider goes to see what she is doing and it appears that she has laid down in his bed.	Appearing undressed and “dirty” in commonly used areas and in other residents' rooms and beds.	Crossing fellow residents' physical space.	Invading the physical space of others	
She goes into the ward office and starts to mess about among the staff's documents.	Causing a mess in the ward office.	Crossing the care providers' physical space.		Interaction as a process of respecting and invading each other's privacy
The care provider knocks on her door, waits for an answer.	Knocks on the door and waits for an answer.	Asking permission and waiting for an answer before entering her room.	Paying respect to her physical space	
The care providers permit her to rise and rummage about, she is allowed to move around while they are looking after her. // She is wandering around in the bathroom during the showering.	Permitting her to rise, rummage about, move around and wander during the morning toilet.	Allowing a certain amount of freedom of movement during the morning toilet.	Paying respect to her personal space	
She sits in a chair in her room restrained by a belt. // The care providers put her into a shower chair and restrain her with a belt, which is tied to the back of the chair.	Using physical restraints.			
The care provider sits on her bed and leans over her.	Sits on her bed and leans over her.	Coming too close.	Invading her personal space	
Care providers ask: “Shall we go to the toilet?” “Shall we take a shower?”	Addressing her as we instead of you.			
The care provider is talking with others about her rash and itch.	Discussing private matters over her head.	Treating private matters as common matters.		

Figure 3 Examples of meaning units, condensed meaning units, sub-themes and themes from content analysis of observations about interaction between a woman with dementia and her care providers.

text was sorted into seven *content areas*: experiences related to the onset of the disease; management of the disease in daily living; experiences related to hypoglycaemia; experiences related to hyperglycaemia; self-monitoring of blood glucose; and ideas about complications and the future. Experiences related to hypoglycaemia were evoked by asking: ‘Please tell me about your experiences of having hypoglycaemia.’

The interviews were read through several times to obtain a sense of the whole. Then the text about

the participants' experiences of having hypoglycaemia was extracted and brought together into one text, which constituted the unit of analysis. The text was divided into *meaning units* that were *condensed*. The condensed meaning units were *abstracted* and labelled with a *code*. Examples of meaning units, condensed meaning units and codes are shown in Fig. 1. The whole context was considered when condensing and labelling meaning units with codes. The various codes were compared based on differences and similarities and sorted

into six *sub-categories* and three *categories*, which constitute the manifest content. The tentative categories were discussed by two researchers and revised. What differed between the two researchers was their judgement about what comprised familiar and unfamiliar sensations and actions. A process of reflection and discussion resulted in agreement about how to sort the codes. Finally, the underlying meaning, that is, the latent content, of the categories, was formulated into a *theme*. Examples of codes, sub-categories, categories and a theme are given in Fig. 2.

Qualitative content analysis of a text based on observations

The *unit of analysis* in this example is text based on 14 observational notes and six reflective dialogues. The context was a study aiming to illuminate how one woman with dementia and 'behavioural disturbances' acted in relation to her care providers, and how the care providers acted in relation to her (Graneheim et al., 2001). The study was performed at a residential home for people with dementia and so called 'behavioural disturbances'. The care providers were asked to select a person whose 'behavioural disturbances' caused severe difficulties in daily care. Two observers participated on six occasions during morning toilet and breakfast. One observer was familiar to the setting and the participants and represented an insider perspective. The other observer was unfamiliar with these conditions and represented an outsider perspective. The participant observations focused on the interaction going on between the woman with dementia and her care providers. To further illuminate various aspects of the ongoing interaction, a reflective dialogue between the observers and the care providers followed each observation occasion. The observational notes and reflective dialogues were tape-recorded and transcribed verbatim.

The text was read through several times to obtain a sense of the whole. Six observational notes, one from each occasion, were divided into *meaning units*. Considering the context, the meaning units were *condensed* into a description close to the text, the manifest content, and, where possible, into an interpretation of the underlying meaning, the latent content. Since parts of the text were much more concentrated than an interview text, further condensation was difficult. The condensed meaning units were seen as a whole and abstracted into sub-themes. Examples of meaning units, condensed meaning units, sub-themes and theme are shown in Fig. 3. Sub-themes were threads of

meaning running through the condensed text. The sub-themes were presented to the care providers and revised with consideration to their opinion. The remaining eight observational notes were analysed. A co-researcher read one-third of the observational notes and the thematisation. A process of reflection and discussion resulted in agreement on a set of sub-themes. Lastly, reflection on the sub-themes and a review of literature related to the sub-themes provided phenomena that seemed to serve as relevant headings to unify the sub-themes into themes. To reveal meaning units that rejected interpretations of the observational text the reflective dialogues were analysed and nothing that contradicted the themes could be found.

Measures for achieving trustworthiness

Research findings should be as trustworthy as possible and every research study must be evaluated in relation to the procedures used to generate the findings. The use of concepts for describing trustworthiness differs between the qualitative and the quantitative research traditions. Within the tradition of qualitative content analysis, use of concepts related to the quantitative tradition, such as validity, reliability and generalisability, is still common (for example, Downe-Wamboldt, 1992; Olson et al., 1998; Shields and King, 2001). In qualitative research the concepts *credibility*, *dependability* and *transferability* have been used to describe various aspects of trustworthiness (for example, Guba, 1981; Lincoln and Guba, 1985; Patton, 1987; Polit and Hungler, 1999; Berg and Welander Hansson, 2000). However, Long and Johnson (2000, p. 31) propose that validity and reliability have 'the same essential meaning' irrespective of research tradition and nothing is gained by changing labels. In our paper, we suggest application of concepts linked to the qualitative tradition when reporting findings of studies using qualitative content analysis. Even though we separate the aspects of trustworthiness, they should be viewed as intertwined and interrelated.

Credibility deals with the focus of the research and refers to confidence in how well data and processes of analysis address the intended focus (Polit and Hungler, 1999). The first question concerning credibility arises when making a decision about the focus of the study, selection of context, participants and approach to gathering data. Choosing participants with various experiences increases the possibility of shedding light on the research question from a variety of aspects (Patton,

1987; Adler and Adler, 1988). In our illustrations, interviewees' various genders and ages, and observers with various perspectives, contributed to a richer variation of the phenomena under study. Selecting the most appropriate method for data collection and the amount of data are also important in establishing credibility. The amount of data necessary to answer a research question in a credible way varies depending on the complexity of the phenomena under study and the data quality.

Another critical issue for achieving credibility is to select the most suitable meaning unit. Meaning units that are too broad, for example, several paragraphs, will be difficult to manage since they are likely to contain various meanings. Too narrow meaning units, for example, a single word, may result in fragmentation. An exception to this is when one or several words represent a symbol or metaphor. In both cases there is a risk of losing meaning of the text during the condensation and abstraction process. Illustrating how meaning units, condensations and abstractions are made facilitates judging credibility of the findings (see Figs. 1–3).

Credibility of research findings also deals with how well categories and themes cover data, that is, no relevant data have been inadvertently or systematically excluded or irrelevant data included. Credibility is also a question of how to judge the similarities within and differences between categories. One way to approach this is to show representative quotations from the transcribed text. Another way is to seek agreement among co-researchers, experts and participants.

There are various opinions about the appropriateness of seeking agreement. Sandelowski (1993, 1998) argues that, since multiple realities exist that are dependent on subjective interpretations, validation among co-researchers, experts and participants is questionable. Even though we agree that reality is multiple and subjective, we defend the value of dialogue among co-researchers. The intent here is not merely to verify that data are labelled and sorted in exactly the same way, but to determine whether or not various researchers and experts would agree with the way those data were labelled and sorted (Woods and Catanzaro, 1988). Participants' recognition of the findings can also be an aspect of credibility. It is not, however, a question of verification but rather a question of confirmability.

Another aspect of trustworthiness is *dependability*. According to Lincoln and Guba (1985, p. 299), dependability 'seeks means for taking into account both factors of instability and factors of phenomenal or design induced changes', that is,

the degree to which data change over time and alterations made in the researcher's decisions during the analysis process.

When data are extensive and the collection extends over time, there is a risk of inconsistency during data collection. On one hand, it is important to question the same areas for all the participants. On the other hand, interviewing and observing is an evolving process during which interviewers and observers acquire new insights into the phenomenon of study that can subsequently influence follow-up questions or narrow the focus for observation. The extent to which judgements about similarities and differences of content are consistent over time can, as in our illustrations, be addressed by an open dialogue within the research team.

Trustworthiness also includes the question of *transferability*, which refers to 'the extent to which the findings can be transferred to other settings or groups' (Polit and Hungler, 1999, p. 717). The authors can give suggestions about transferability, but it is the reader's decision whether or not the findings are transferable to another context.

To facilitate transferability, it is valuable to give a clear and distinct description of culture and context, selection and characteristics of participants, data collection and process of analysis. A rich and vigorous presentation of the findings together with appropriate quotations will also enhance transferability.

There is no single correct meaning or universal application of research findings, but only the most probable meaning from a particular perspective. In qualitative research, trustworthiness of interpretations deals with establishing arguments for the most probable interpretations. Trustworthiness will increase if the findings are presented in a way that allows the reader to look for alternative interpretations.

Reflections

When discussing meaning and use of concepts, procedures and interpretation related to qualitative content analysis, it is valuable to consider whether qualitative content analysis is a separate method or tool used within different forms of qualitative analysis. On one hand, a method that is so inexact that it fits into different research fields, methodological approaches and data can be seen as merely a tool. On the other hand, it can be assumed that qualitative content analysis has specific characteristics and underlying theoretical assumptions which need to be further illuminated.

One characteristic of qualitative content analysis is that the method, to a great extent, focuses on the subject and context, and emphasises differences between and similarities within codes and categories. Another characteristic is that the method deals with manifest as well as latent content in a text. The manifest content, that is, what the text says, is often presented in categories, while themes are seen as expressions of the latent content, that is, what the text is talking about.

One way to understand the theoretical assumptions underlying qualitative content analysis is to relate the method to communication theory as described by Watzlawick et al. (1967). They state axioms concerning human communication that could shed light on the issue of interpretation. One axiom is that 'one cannot not communicate' (Watzlawick et al., 1967, p. 51). Texts based on interviews and observations are shaped within an interaction between the researcher and the participants and can be seen as a communication act. In every text there are messages to be interpreted and described. As soon as the analysis procedure begins, ongoing communication between the researcher and the text is present. Another axiom is that 'every communication has a content aspect and a relationship aspect such that the latter classifies the former and is therefore a meta-communication' (Watzlawick et al., 1967, p. 54). In our illustrations, categories are seen as representing the manifest content, that is, the content aspect, and themes are representing the latent content, which can be seen as the relationship aspect.

'Human beings communicate both digitally and analogically' is another axiom of Watzlawick et al. (1967, p. 66). Verbal communication is mainly digital and easily transcribed into a text while non-verbal communication is mainly analogical and often put at a disadvantage in the transcription process. However, meaning is partly created by how a message is communicated, that is, the voice or implied feeling that emerges from the reading of the text (Downe-Wamboldt, 1992). Therefore, when transcribing interviews and observations into text, it is valuable to notice silence, sighs, laughter, posture, gestures etc., as these may influence the underlying meaning. Watzlawick et al. (1967, p. 59) have also formulated the axiom that 'the nature of a relationship is contingent upon the punctuation of the communicational sequences between the communicants'. Dividing the text into meaning units is a way of punctuating the ongoing communication in a text and is important for both manifest and latent content when beginning and ending a meaning unit.

Another aspect of interpretation is that a text always involves multiple meanings and the researcher's interpretation is influenced by his or her personal history. Since the researcher is often the one who collects the data as well as the one who performs the analysis, the question of the researcher's qualifications, training and experiences is important (Patton, 1990). In qualitative content analysis interpretation involves a balancing act. On one hand, it is impossible and undesirable for the researcher not to add a particular perspective to the phenomena under study. On the other hand, the researcher must 'let the text talk' and not impute meaning that is not there.

Learning and teaching how to analyse texts is a delicate matter in nursing education. Qualitative content analysis can be a valuable method for students when attending a research class for the first time due to the opportunity to perform the analysis at various degrees of difficulty. Analysing content close to the text, that is, the manifest content, can be a suitable starting point. With increasing knowledge and ability students may advance to interpret the underlying meaning, that is, the latent content, on various levels of abstraction.

In conclusion, our paper is intended to be used in nursing research and education and to contribute to a debate on qualitative content analysis. In order to clarify the underlying assumptions of qualitative content analysis, we suggest using concepts related to qualitative research when describing the research procedure and measures to achieve trustworthiness. Moreover, we apply communication theory as a way to address the issue of interpretation and clarify the underlying assumptions of qualitative content analysis.

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