

# APPLIED MEDICAL RESEARCH ΕΦΑΡΜΟΣΜΕΝΗ ΙΑΤΡΙΚΗ ΕΡΕΥΝΑ

## Thematic analysis in qualitative research

Thematic analysis is a widely used method in qualitative research to analyze data recorded, in the form of written text by researchers. Particularly, it is applied to analyze data resulting from the most common methods of data collection in qualitative research which are interviews, focus groups and observations. The purpose of thematic analysis is to create a detailed and systematic record of the codifications and themes arising from the interviews or observations of the participants. In thematic analysis, researchers discover the themes in the written texts that emerge from the participants and then try to confirm, verify and expand on these themes through the data and repeat the process of finding other themes on the other. In recent years, some software programs have been developed that help in data analysis in qualitative research, the most important of which are NVivo, ATLAS.ti, Transana, AQUAD, MAXQDA, etc. It should be noted that these software programs cannot analyze and interpret data, as analysis and interpretation is the sole responsibility of researchers, but they can help researchers in simpler and easier storage, coding, and data management, especially in studies with numerous data. There are two methods for checking validity in thematic analysis: (a) checking validity by participants and (b) checking validity by other researchers.

### 1. INTRODUCTION

Thematic analysis is used in qualitative research to analyze data recorded in the form of written text by researchers, and more specifically to analyze the data resulting from the most common data collection methods in qualitative research, such as interviews, focus groups and observations. Written data obtained from participants provide a description of the study, but they do not provide explanations and interpretations. Researchers need to understand the data, decode and interpret them in order to explain their research question to the greatest extent possible. Data analysis in qualitative research begins with the collection of the first data and is adjusted according to the data that emerges over time. For example, the schedule of an interview may be slightly modified if findings arise that require greater clarification and understanding.<sup>1-5</sup>

### 2. PURPOSE

The purpose of the thematic analysis is to create a detailed and systematic record of the codings and themes arising from the interviews or observations of the participants. This is where the first problem arises for researchers

who use thematic analysis to analyze data in qualitative research. More specifically, a key challenge arises whether it is logical and valid for the opinions, verbal expressions, behaviors of a person to merge with those of other individuals, i.e. whether the “common themes” that emerge from the thematic analysis are in fact “common” or whether they unfortunately differ and were wrongly judged as “common” by researchers. Essentially, the question arises as to whether a person’s opinion or behavior regarding a particular theme can be merged with the opinion or behavior of other individuals. In thematic analysis it is considered that this can happen, but researchers must always be vigilant so that error is avoided and valid conclusions can be drawn.<sup>5-7</sup>

### 3. METHODOLOGY

In thematic analysis, researchers discover the themes in the written texts that emerge from the participants and then try to confirm, verify and expand on these themes through the data and repeat the process of finding other themes on the other.<sup>8-13</sup>

First, researchers read the written text resulting from each participant’s interview or observation and take short

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Θεματική ανάλυση  
στην ποιοτική έρευνα

*Περίληψη στο τέλος του άρθρου*

#### Key words

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notes, in the margin of the text, in the form of words, theoretical concepts, or short phrases that summarize what is written in the text. This process is known as open coding and aims to create a very concise description for each element recorded in the text. It is noted that if there are parts of the text that escape the research question and do not concern the researchers, then their codification is not required, as they do not offer anything to the specific analysis. Table 1 presents an example of an initial coding of the written text that resulted from the interview of a participant regarding his experiences from his visit to the outpatient clinic of a hospital.

The researchers then collect all the words, theoretical concepts, or short phrases they have recorded from the written texts of the interviews and enter them on separate white pages, removing the duplicates, resulting in a significant reduction in the number of initial encodings. Indicatively, with regard to the example in table 1, the initial codifications that arise after this procedure may be the following: Reason for the visit, diagnostic tests, appointment scheduling, materials and consumables, cost, waiting time, operating hours, means of transport to the hospital, taking a history from the doctor, interest from the doctor, discussion with the doctor about the medication, recommendations from the doctor for improvement of living conditions (e.g. physical exercise, smoking, alcohol consumption, sleep habits, etc.), explanations from the doctor to questions and queries, polite doctor, examination time, administrative staff, orientation inside the hospital, waiting area, disabled access and cleanliness.<sup>8-13</sup>

Afterwards, the researchers group the original encodings with similar content into broader categories that constitute the themes they name them. The themes are always considerably fewer than the original encodings, and rarely exceed ten. With regard to the example in table 1, the themes arising from the initial encodings are presented in table 2. The short list that results in the thematic analysis

(tab. 2) includes the themes and the codifications of each topic according to the written texts resulting from the participants. It is clear that for the creation of the codifications and themes, researchers rely on the respective theoretical framework surrounding their research question on the one hand and on their personal judgment and experience on the other. Therefore, different researchers may create different encodings and different themes to some extent, but

**Table 2.** The themes arising from the initial codifications of the example in table 1.

Theme	Initial coding
<i>Access to health services</i>	Scheduling an appointment
	Standby
	Cost
	Means of transport
	Reason for visit
	Opening hours
	Diagnostic tests
<i>Medical staff</i>	Materials and consumables
	Interest from the doctor
	Politeness
<i>Healthcare</i>	Exam time
	Taking a history from the doctor
	Explanations by the doctor to the questions and queries
	Discussion with the doctor about medication
<i>Facilities</i>	Recommendations from the doctor to improve living conditions
	Waiting area
	Disabled access
	Administrative staff
	Orientation within the hospital
	Cleanliness

**Table 1.** Example of initial coding of the written text that emerged from the interview of a participant regarding his experiences from his visit to the outpatient clinic of a hospital.

Written text	Initial coding
<i>Question:</i> "Can you describe your experience of visiting the outpatient clinic in general?"	
<i>Answer:</i> "I have hypothyroidism and I went to the endocrinologist for the check-up that I do every year. I thought he should do an ultrasound and some blood tests. But I suffered a lot"	Reason for visit Diagnostic tests
<i>Question:</i> "Why did you suffer?"	
<i>Answer:</i> "First of all, I had a very difficult time making an appointment. There was a long waiting time. I made an appointment for three months after I wanted to. In addition, the ultrasound of the hospital was damaged and I had to go to a private doctor for the ultrasound and pay extra money"	Scheduling an appointment Materials and consumables Cost

it is unlikely that they will disagree completely and there will be complete disagreement.<sup>8-13</sup>

In the next step, the researchers assign a specific pen color to each topic and re-read the written text that corresponds to each participant, highlighting the data with the appropriate color. With regard to the example in table 2, the researchers correspond the red color to the topic "access to health services", so the data in the written texts corresponding to this topic are underlined with a red pen, while the green color corresponds to the topic "medical personnel", in which case the data in the written texts corresponding to this topic are underlined with a green pen, etc. Finally, all the pieces of written text that correspond to the different colors and by extension to the different themes are recorded in separate sections on A4-sized white pages, so each topic includes the encodings and pieces of written text that emerged from the interviews or observations of the participants. In this way, an organized data file is created on which the researchers will rely to write the findings of their study.<sup>8-13</sup>

The thematic analysis of data in qualitative research presented in this article does not include the use of specialized software programs. It should be noted, however, that in recent years some software programs have been developed that help in the analysis of data in qualitative research, the most important of which are NVivo, ATLAS.ti, Transana, AQUAD, MAXQDA, etc. It should be noted that these software programs cannot analyze and interpret the data, as the analysis and interpretation is the sole responsibility of researchers. But they can help researchers in storing, coding, and managing data more simply and easily, especially in studies with numerous data. In addition, software programs used in qualitative research process not only data in the form of written text, but also data in the form of images, audio files, videos, and movies in digital form. Thus, software programs are a flexible and easy-to-use tool in the hands of researchers for more effective data analysis in qualitative research, but it cannot replace researchers, but only facilitate them.<sup>8-13</sup>

In summary, software programs used in qualitative research help researchers (a) enter and store their data, (b) annotate, and recall texts, (c) search for and find definitive words, phrases, or sentences, (d) encode their data, (e) interconnect their data, and (f) present their findings in the form of graphs.

Each software program has advantages and disadvantages, and the choice depends on the research question and the purposes of the researchers. NVivo is the most frequently used software program and perhaps the best. In

summary, NVivo makes it possible to import and store the data of a project, so that a large amount of data is initially classified. It then enables the transcription of audio and video data and the storage of this data in text form. Additionally, NVivo makes it easier to encode the stored data in text format, as well as retrieve data using keyword-based searches. Finally, it enables the interconnection of data according to the researchers' queries and the presentation of these interconnections with graphs.

#### 4. VALIDITY CHECK

The thematic analysis of data in qualitative research is clearly more subjective than the analysis in quantitative research, in the sense that different researchers may end up for example on different themes and different codifications to a certain extent, of course, as complete disagreement is impossible. For this reason, checking validity in thematic analysis is crucial, as it reduces error and makes the analysis more robust.<sup>8-13</sup>

There are two methods for checking validity in thematic analysis: (a) respondent validation and (b) researchers validation.<sup>8-13</sup>

In the validity check by the participants, each participant is given the written text of their interview and the results of the researchers' analysis, and then the participant confirms or rejects the interpretation of the data by the researchers. In this way, the codifications and themes are clarified and defined more effectively, but this is an extremely time-consuming process and moreover if it is not carried out relatively soon after the data has been collected and analyzed, then there is an increased possibility that the views and perceptions of the participants will change. In addition, it is possible that in this validity check some participants will be influenced by the results of the analysis and modify their initial views so that they are in line with the views of the other participants. There is also the problem that the participants are not researchers and will probably find it difficult to understand the results of the analysis.

In the validity check by other researchers, at least one researcher experienced in thematic analysis who was not involved in the analysis of the study data independently performs the analysis, creating his own encodings and themes. In this way, on the one hand, the error that may arise from the subjective judgment of the researchers of the study is addressed, and on the other hand, it is possible for the independent researcher to highlight new themes and further develop the theoretical background. Some, however, question the value of validity testing by other

researchers, believing that each researcher can interpret a study's data differently. In addition, it is impossible to compare the validity of different interpretations of the data by different researchers.<sup>8-13</sup>

Unfortunately, there is no clear answer to how the validity of data analysis can be checked in qualitative research. However, it is certain that the analysis must be based on clear methodological principles, relate to all the data collected and be thorough and systematic. Therefore, researchers must be vigilant and look for data that deviate from the usual findings, as these data are not only not incorrect, but they are the ones that will enrich the results of the analysis to the greatest extent possible. In addition, researchers need to make a continuous comparison when analyzing the data of a study, which involves repeatedly reading the data to highlight even the most occult encodings and themes. In this way, researchers can understand and interpret their study data in depth. The publication of

a study in qualitative research should include a detailed explanation of both the methods of collecting the data and the methods of analyzing them, so that readers can approach the study and its results critically.<sup>8-13</sup>

## 5. WRITING RESULTS

In qualitative research, there are two different approaches to writing the results of a study. In the first approach, the researchers begin by outlining the most important findings included in each topic, using the corresponding written texts resulting from the interviews or observations of the participants. The discussion is then presented as a separate section in which the findings of the study are discussed with the pre-existing literature on the specific research topic. The second approach differs from the first in that the discussion is not listed as a separate section, but is included in the findings section.<sup>8-13</sup>

## ΠΕΡΙΛΗΨΗ

### Θεματική ανάλυση στην ποιοτική έρευνα

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Η θεματική ανάλυση χρησιμοποιείται στην ποιοτική έρευνα για την ανάλυση των δεδομένων που καταχωρούνται με τη μορφή γραπτού κειμένου από τους ερευνητές και, πιο συγκεκριμένα, για την ανάλυση των δεδομένων τα οποία προκύπτουν από τις συνθετέστερες μεθόδους συλλογής δεδομένων στην ποιοτική έρευνα που είναι οι συνεντεύξεις, οι ομάδες επικέντρωσης και οι παρατηρήσεις. Ο σκοπός της θεματικής ανάλυσης είναι η δημιουργία μιας αναλυτικής και συστηματικής καταγραφής των κωδικοποιήσεων και των θεμάτων που προκύπτουν από τις συνεντεύξεις ή τις παρατηρήσεις των συμμετεχόντων. Στη θεματική ανάλυση, οι ερευνητές ανακαλύπτουν τα θέματα στα γραπτά κείμενα που προκύπτουν από τους συμμετέχοντες και έπειτα αφ' ενός προσπαθούν να επιβεβαιώσουν, να επαληθεύσουν και να επεκτείνουν τα εν λόγω θέματα μέσα από τα δεδομένα και αφ' ετέρου επαναλαμβάνουν τη διαδικασία για την εύρεση και άλλων θεμάτων. Τα τελευταία χρόνια έχουν αναπτυχθεί ορισμένα λογισμικά προγράμματα που συνδράμουν στην ανάλυση δεδομένων στην ποιοτική έρευνα, με σημαντικότερα το NVivo, το ATLAS.ti, το Transana, το AQUAD, το MAXQDA κ.ά. Επισημαίνεται ότι τα συγκεκριμένα λογισμικά προγράμματα δεν μπορούν να αναλύσουν και να ερμηνεύσουν τα δεδομένα, καθώς η ανάλυση και η ερμηνεία αποτελεί αποκλειστική ευθύνη των ερευνητών, αλλά μπορούν να συνδράμουν τους ερευνητές στην απλούστερη και ευκολότερη αποθήκευση, κωδικοποίηση και διαχείριση των δεδομένων, ιδιαίτερα σε μελέτες με πολυάριθμα δεδομένα. Υπάρχουν δύο μέθοδοι για τον έλεγχο της εγκυρότητας στη θεματική ανάλυση: (α) έλεγχος της εγκυρότητας από τους συμμετέχοντες και (β) έλεγχος της εγκυρότητας από άλλους ερευνητές.

**Λέξεις ευρητηρίου:** Θεματική ανάλυση, Ομάδες επικέντρωσης, Παρατηρήσεις, Ποιοτική έρευνα, Συνεντεύξεις

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