Use of grounded theory in medical research

By Patrick Dunn, Ph.D.

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Medical research = Scientific Method

Big data

Registries

Clinical trails

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Observational trials

Role of Qualitative research in the medical literature

Editor's Perspective

Promoting Publication of Rigorous Qualitative Research

Harlan M. Krumholz, MD, SM; Elizabeth H. Bradley, PhD; Leslie A. Curry, PhD

In the basic sciences, investigators frequently conduct descriptive studies as a prelude to formulating and testing hypotheses. These discovery studies can be quite unbounded at the outset as investigators accumulate novel information that will serve as the building blocks for future studies. In the clinical sciences, descriptive studies are also common, but they are almost always based on data collected as standardized variables using quantitative methods. Such an approach implies either that available data are sufficient or that we have enough knowledge to define the precise data that are required. However, in many cases, we are in a more formative phase of understanding a given research area, particularly when we study healthcare delivery and issues relating to complex clinical care, rather than whether a drug, device, or clinical strategy produces a specific effect.[1] When we are in an early phase of understanding a research question, qualitative methods may be the best approach. And yet, research that uses qualitative methods is infrequently published in the mainstream medical literature.

There are many possible explanations for this relative absence. Few individuals may be gaining the necessary skills to pursue this type of research, as training opportunities and teachers are scarce in typical research training programs. Few investigators may be obtaining funds to pursue qualitative research, as large medical research funding organizations issue only a small number of direct calls for this type of work. Finally, journals may not be interested in research based on qualitative methods.

We believe that, when used appropriately and with scientific rigor, qualitative methods can play a critical role in advancing the fields of biomedical research, health services research, outcomes research, and implementation science. The well-established standards for qualitative methods provide guidance about what constitutes a high-quality design.[2-6] More than 22 guidelines that address the publication of qualitative studies have been synthesized to produce the Consolidated Criteria for Reporting Qualitative Studies,[7] which is similar to other reporting checklists (Consolidated Standards for Reporting Trials and Quality of Reporting of Meta-Analyses) to support the aim of transparency in research methods; a 32-item checklist recommends that authors report content in the 3 key domains of research team and authors report ity, study design, and data analysis. When a research question would best involve qualitative research methods and a study is conducted according to these standards, this journal would welcome this approach.[8,9]

Qualitative research is defined by a substantial body of literature from multiple disciplines[10-15] and has been applied in the study of health and health care since the mid-1990s.[15,16] The methods can be used to understand complex social processes, organizational change, individual health behaviors, and nuanced aspects of environmental context that influence quality of care, healthcare delivery, and health outcomes for individuals and populations.[10,16,20] The role that qualitative research can play is exemplified in our National Institutes of Health-funded study on strategies to improve door-to-balloon times. At the time of the study, there was considerable uncertainty about the determinants of timely treatment. We knew that some institutions achieved remarkable times, but we did not know which questions needed to be asked or which processes required evaluation in order for their performance to be replicated elsewhere. Consequently, we designed a qualitative study, using inductive methods, to characterize the practices and experiences at these institutions. Our research partners had expertise in qualitative methods and helped to ensure scientific rigor commensurate with that of a quantitative design. The study produced insights that would not have been possible with a quantitative design. Moreover, we gained critical information that guided subsequent quantitative studies and formed the foundation of national initiatives that contributed to a remarkable improvement in the timeliness of treatment.[21-23]

Techniques recognized by qualitative and mixed methods experts to enhance validity and reliability have been well described.[2,12,13,24] Most importantly, researchers should ensure that there is adequate and authentic representation of qualitative expertise on the research team at the inception of a study and that this expertise is sustained throughout the life span of the project. Reviewers observe the following common problems in manuscripts that report qualitative studies: lack of a compelling rationale for a qualitative approach; insufficient detail regarding the methods, eg, sampling, data collection, and analyses; reports of findings that are not novel and lack nuance and depth that are characteristic of sound qualitative research; and ineffective writing, including excessive jargon, poor or inappropriate methods citations, and failure to integrate narrative data with interpretive text.

At a systems level, efforts to increase the quality, visibility, and impact of qualitative research face several challenges. First, there is a need for education and awareness within the clinical

The opinions expressed in this article are not necessarily those of the American Heart Association.

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Key Issues in Outcomes Research

Qualitative and Mixed Methods Provide Unique Contributions to Outcomes Research

Leslie A. Curry, PhD, MPH; Ingrid M. Nembhard, PhD, MS; Elizabeth H. Bradley, PhD

Outcomes research examines the effects of medical care interventions and policies on the health outcomes of individuals and society.[1] Investigators conducting outcomes research seek to inform the development of clinical practice guidelines, to evaluate the quality of medical care, and to foster effective interventions to improve the quality of care.[2] Outcomes research has traditionally used quantitative sciences to examine the utilization, cost, and clinical effectiveness of medical care through randomized and nonrandomized experimental designs. Quantitative methods are not as well suited to measure other complex aspects of the healthcare delivery system, such as organizational change, clinical leadership in implementing evidence-based guidelines, and patient perceptions of quality of care, which are also critical issues in outcomes research.[3-7] These more nuanced aspects of healthcare delivery may be most appropriately examined with qualitative research methods.[8-10]

Qualitative approaches are becoming more common in clinical medicine and health services research,[5,11-15] Federal encouragement of qualitative research is regularly reflected in funding program announcements issued by the National Institutes of Health.[16] For more than a decade, federal agencies and foundations such as the National Science Foundation have demonstrated a commitment to supporting qualitative research through funding scientific conferences, workshops, and monographs on this field of inquiry.[17-20] Despite this steady growth in qualitative research, outcomes investigators in cardiology have relatively little guidance on when and how best to implement these methods in their investigations.

The purpose of the present report is to introduce qualitative methods as providing unique and critical contributions to outcomes research. This report will describe the situations in which qualitative approaches are most helpful; summarize the primary principles and practices in study design, sampling, data collection, and data analysis for qualitative studies; present representative examples of cardiovascular outcomes research that uses qualitative methods; and synthesize current standards for ensuring rigor and enhancing credibility of qualitative research.

Defining Qualitative Research

Qualitative research is a form of scientific inquiry that spans different disciplines, fields, and subject matter and comprises many varied approaches.[21] Qualitative methods can be used to understand complex social processes, to capture essential aspects of a phenomenon from the perspective of study participants,[5] and to uncover beliefs, values, and motivations that underlie individual health behaviors.[22-24] Such research can also illuminate aspects of organizational context and healthcare delivery that influence organizational performance and quality of care.[10,25] Qualitative studies are often exploratory in nature and seek to generate novel insights[9,23,26,27] using inductive (starting with observations and developing hypotheses) rather than deductive (starting with existing hypotheses and testing them with observations) approaches.

Qualitative research can be distinguished from quantitative research in several ways. First, whereas quantitative research counts occurrences (eg, estimates prevalence, frequency, magnitude, incidence), qualitative research describes the complexity, breadth, or range of occurrences or phenomena. Second, whereas quantitative research seeks to generate hypotheses about a phenomenon, its precursors, and its consequences. Third, quantitative research is performed in randomized or nonrandomized experimental and natural settings and generates numeric data through standardized processes and instruments with predetermined response categories. Qualitative research occurs in natural (rather than experimental) settings and produces text-based data through open-ended discussions and observations.

Mixed methods, in which quantitative and qualitative methods are combined, are increasingly recognized as valuable, because they can capitalize on the respective strengths of each approach.[28] Pairing quantitative and qualitative components of a larger study can achieve various aims, including corroborating findings, generating more complete data, and using results from 1 method to enhance insights attained with the complementary method.[29,30] Approaches to mixed-methods studies differ on the basis of the sequence in which the components occur and the emphasis given to each.[29,30] The qualitative and quantitative components may be per-

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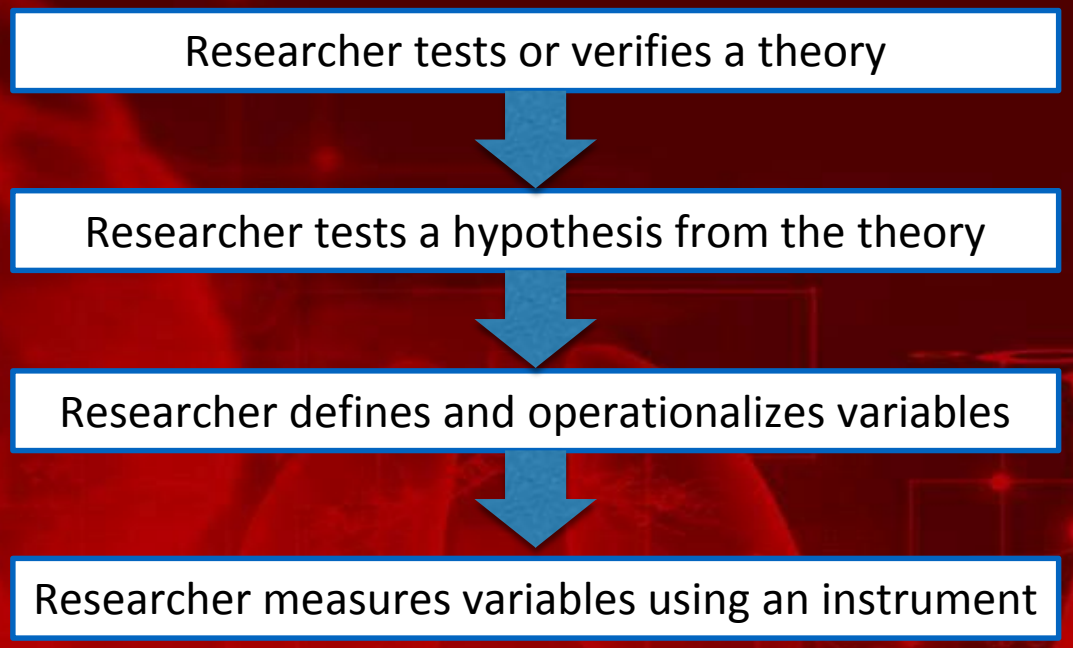
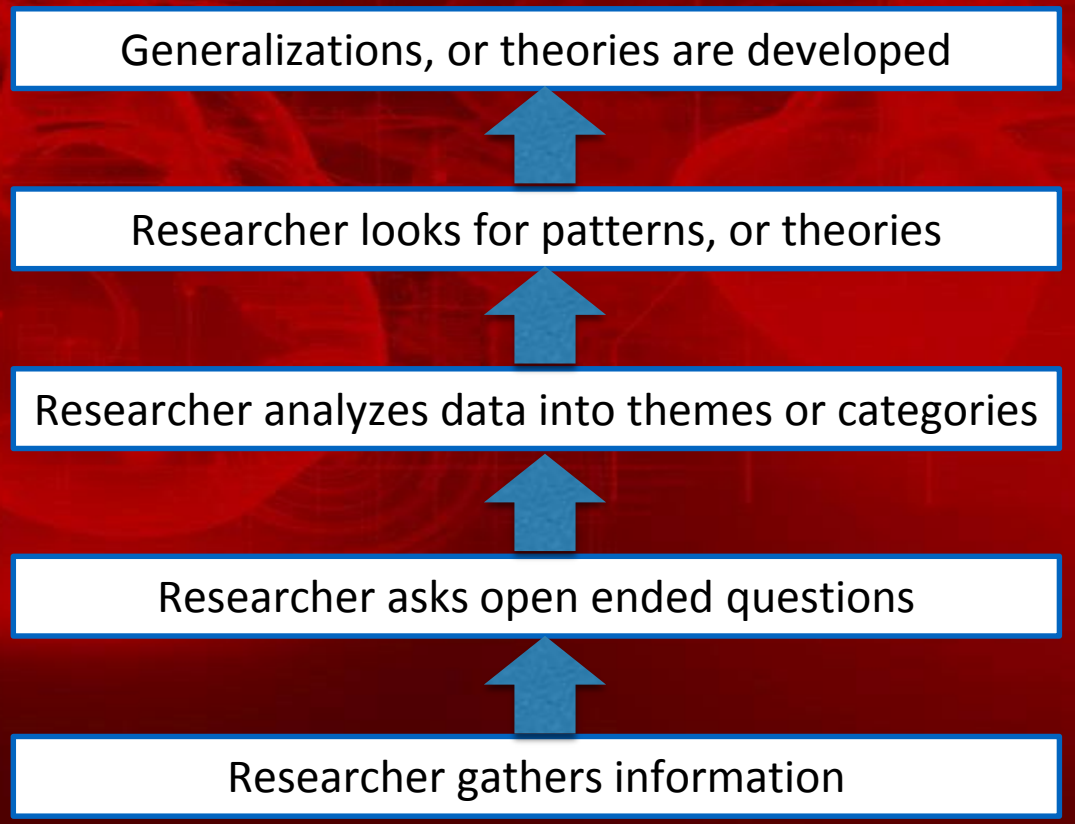
Inductive vs. deductive approaches



Deductive
Hypothesis driven
Quantitative
Basic on logic and fact
Good when a lot is known
Common in medical research

Inductive
Used to form explanation or theory
Qualitative
Based on observation
Good when little is known
Rare in medical research



Topics in healthcare where more information is needed

- Medication adherence
- Health literacy
- Preventing readmissions
- Navigating the healthcare system
- Use of digital tools
- Motivation, engagement and behavior change

What is health literacy?

Healthcare professionals

Education

Blood pressure

Decision making

Diabetes

Trusted sources

Linguistics

Chronic conditions

Communication

Apps

DOCUMENT

Health Literacy

Knowledge

PROSE

Social networking

Health apps

Heart disease

Internet searches

Connected health devices

Numeracy

Heart failure

Wearables

Navigation

Cholesterol

Personalized, interactive, social, & relevant

Digital tools & technology

Why grounded theory?

Why use grounded theory in medical research?

- **Grounded theory goes beyond the description of the phenomena to a theoretical explanation – or theory**

- **The theory or model can be used to better understand the process and actions, including:**
  - the sequence of activities
  - including actions by people
  - including interactions by people

- **leading to better hypotheses, tools, and interventions**

Key Characteristics of Grounded Theory Design

- Theoretical sampling
- Simultaneous collection and analysis of data
- Constant comparison

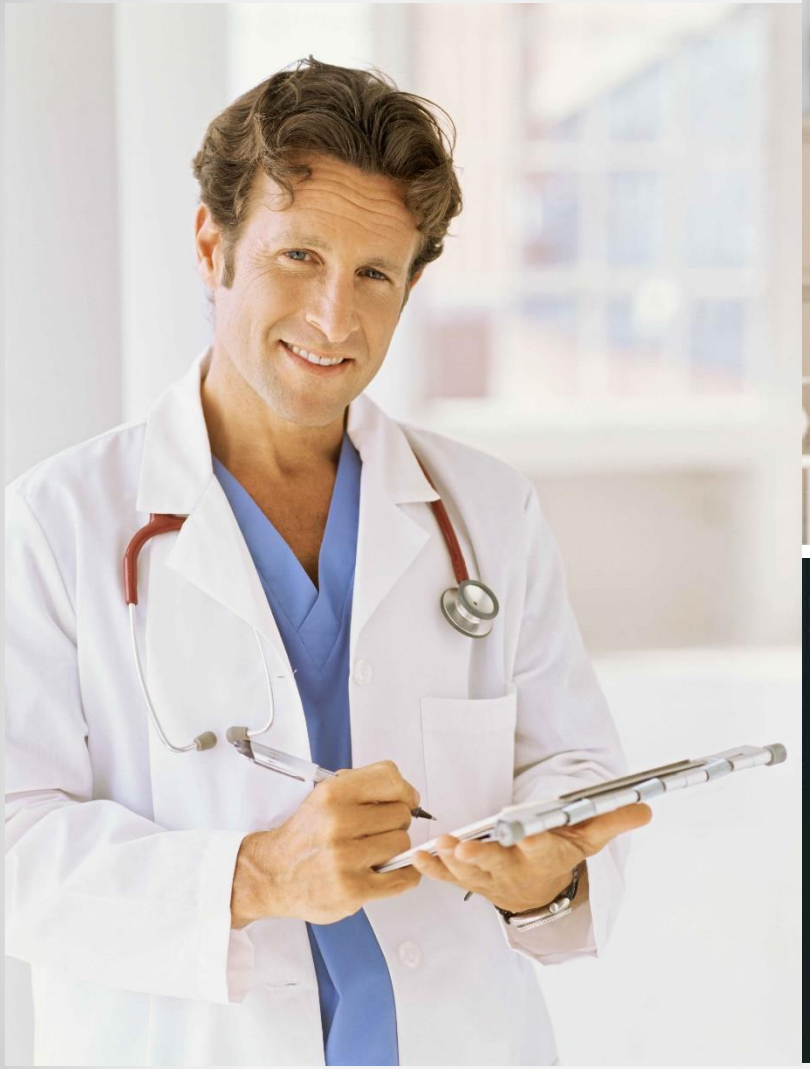
A Brief History of Grounded Theory Designs

- 1967 Glaser and Strauss book *Discovery of Grounded Theory*
- *Glaser, 1992, Basics of Grounded Theory Analysis*
- 1990, 1998, 2008, & 2015 Strauss & Corbin; Basics of Qualitative Research, a prescriptive form with predetermined categories and concerns about reliability and validity
- 2000, 2008, & 2014 Charmaz introduces Constructing Grounded Theory, a "Constructivist" method
- 2005 Clarke introduces *Situational Analysis: Grounded theory after the postmodern turn, a* "Post-Modern" method

Use of grounded theory in medical research

Types of Grounded Theory Design:

- Emerging design: A theory is grounded in the data and not forced into categories – Glaser
- Constructivist: Theorist explains feelings of individuals as they experience a phenomenon or process- Charmaz
- Systematic: More structured process using open, axial, and selective coding-Strauss (and Corbin)



Which interpretation of GT?

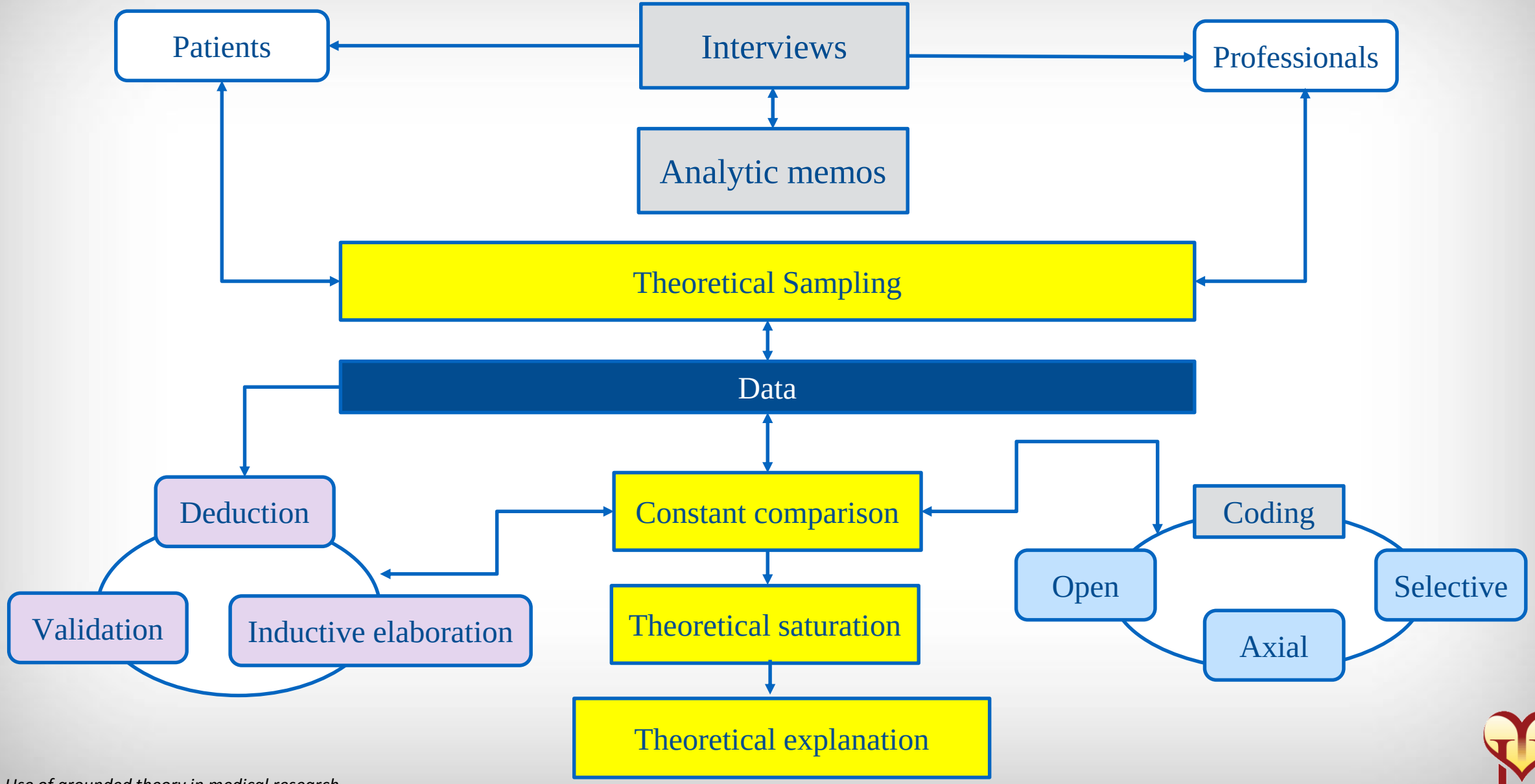
Medical researchers are trained in the scientific method

- **The Corbin and Strauss interpretation of grounded theory is more structured;**
- **While this may be limiting to some, it is the one most likely to be accepted by a medical researcher**

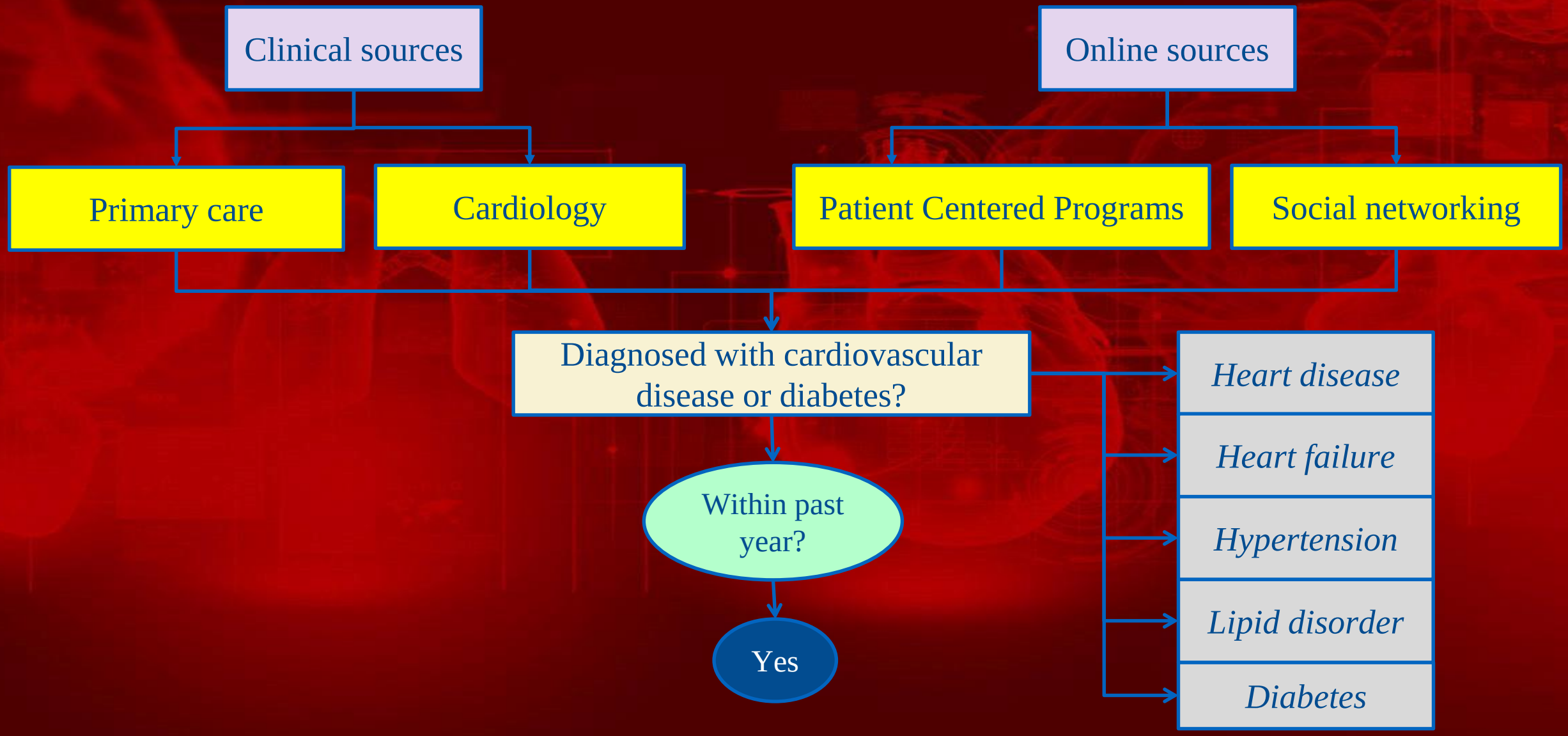
Understanding Health Literacy Skills of Patients With Cardiovascular Disease and Diabetes

Use of grounded theory in medical research

Grounded Theory

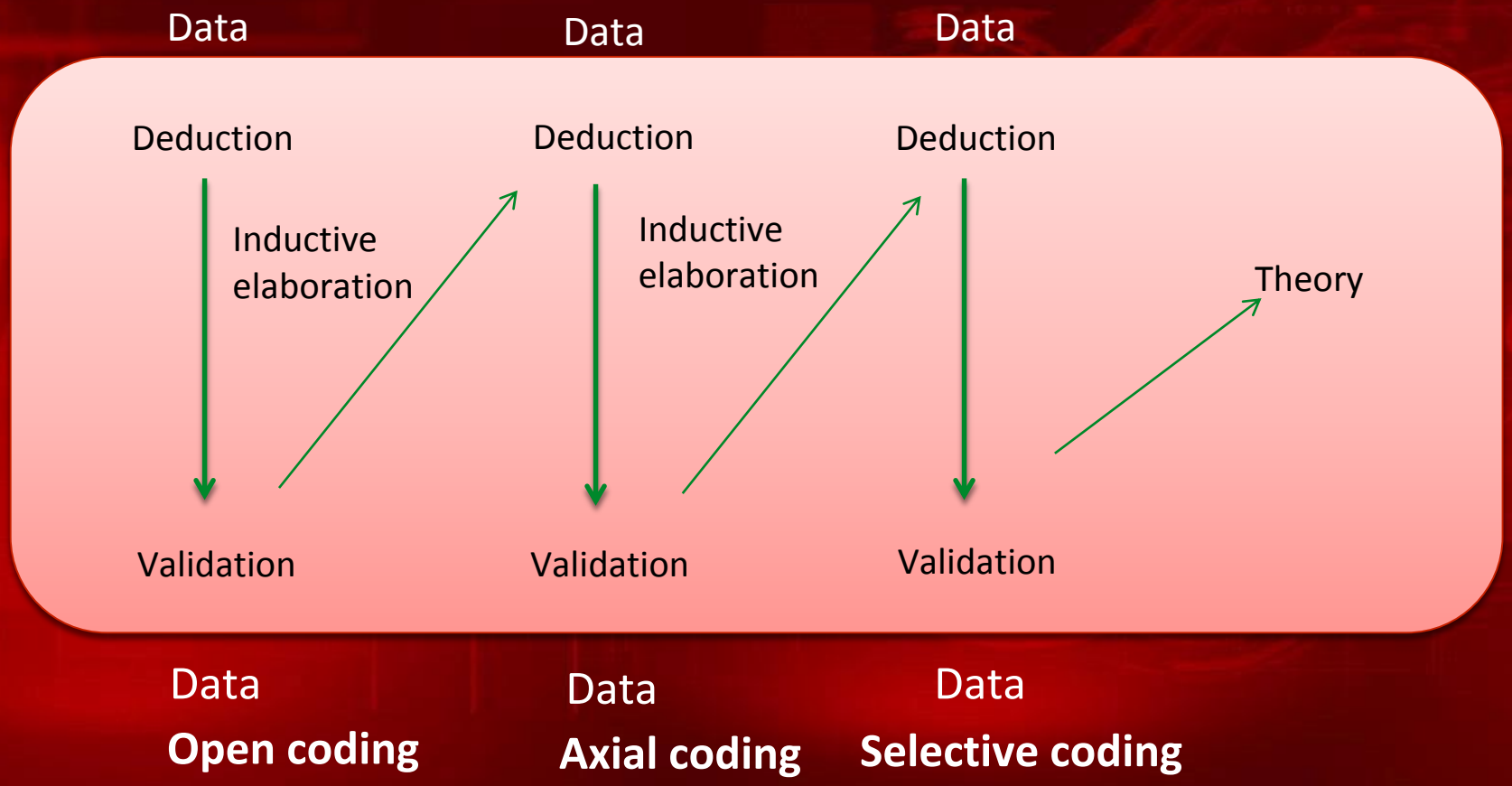


Theoretical Sampling



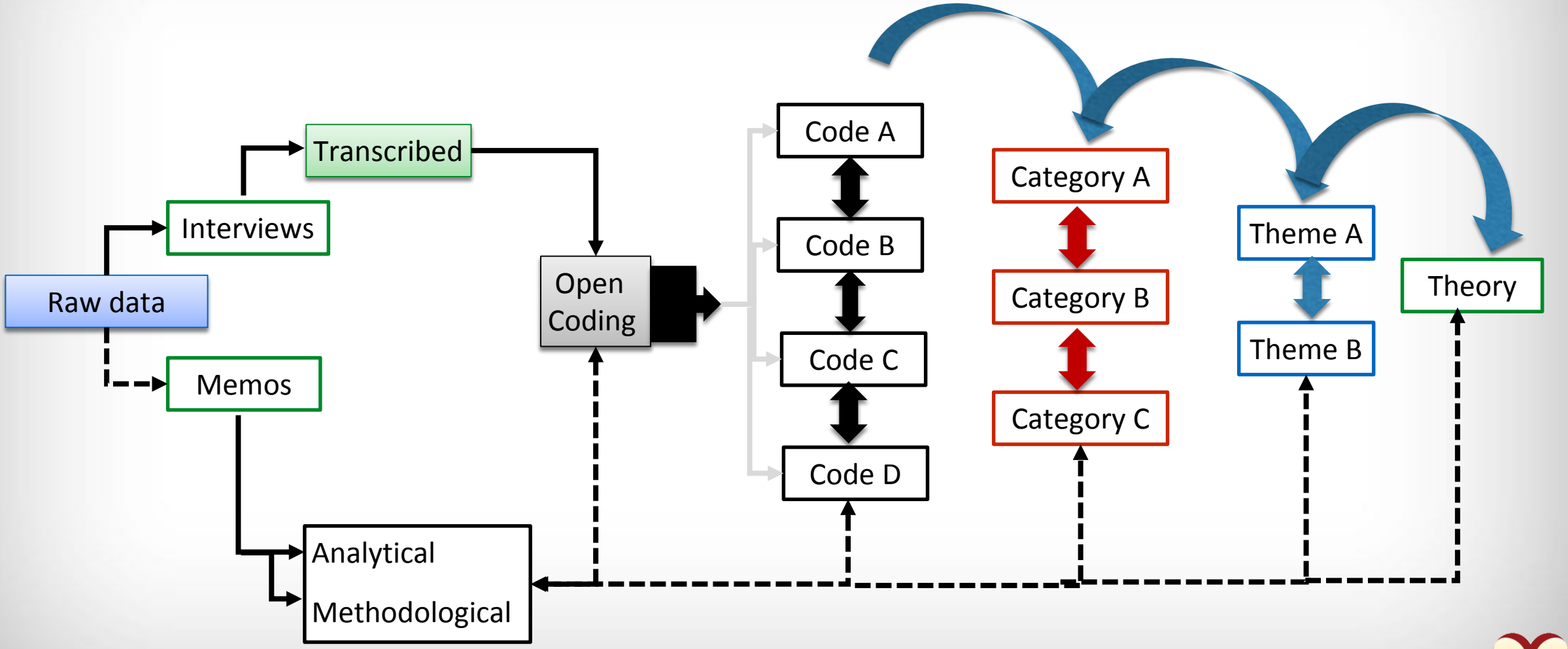
Data collection/Data analysis

Patient interviews **Healthcare provider interviews** **Observation of individual and group education**



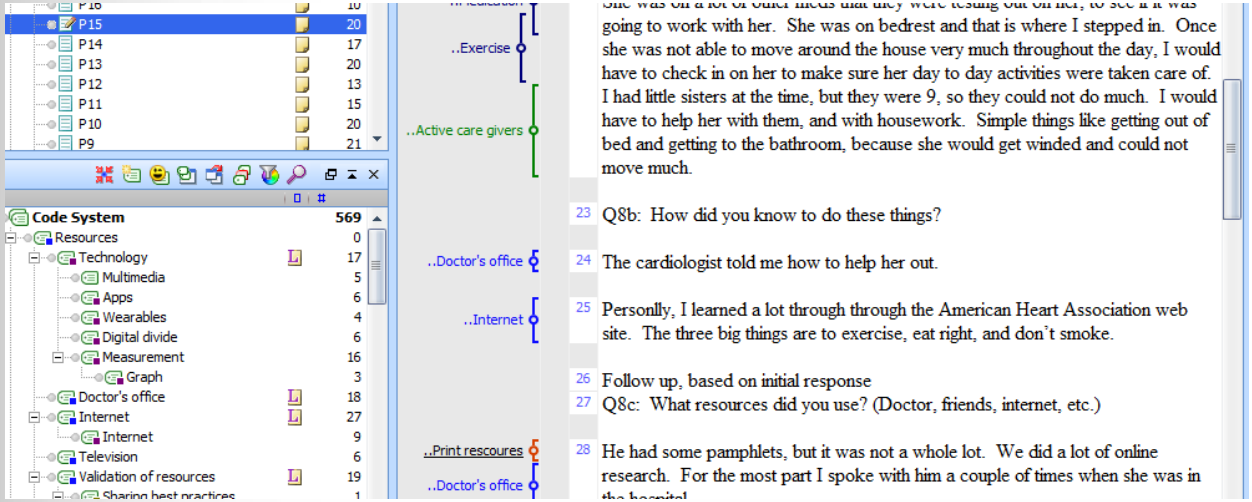
Corbin & Strauss (2007)

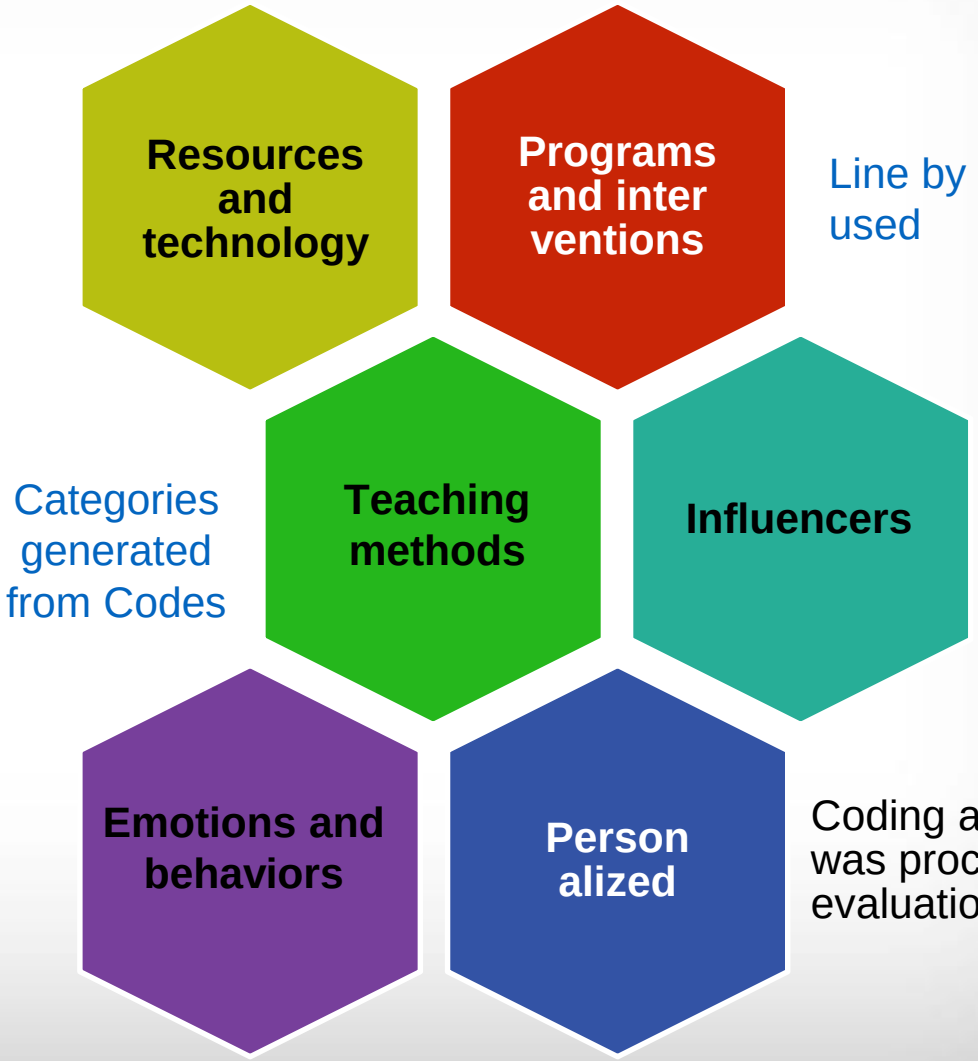
Constant Comparison Procedures in Grounded Theory



Coding

Data from interviews was transcribed into a Word document and uploaded to MaxQDA



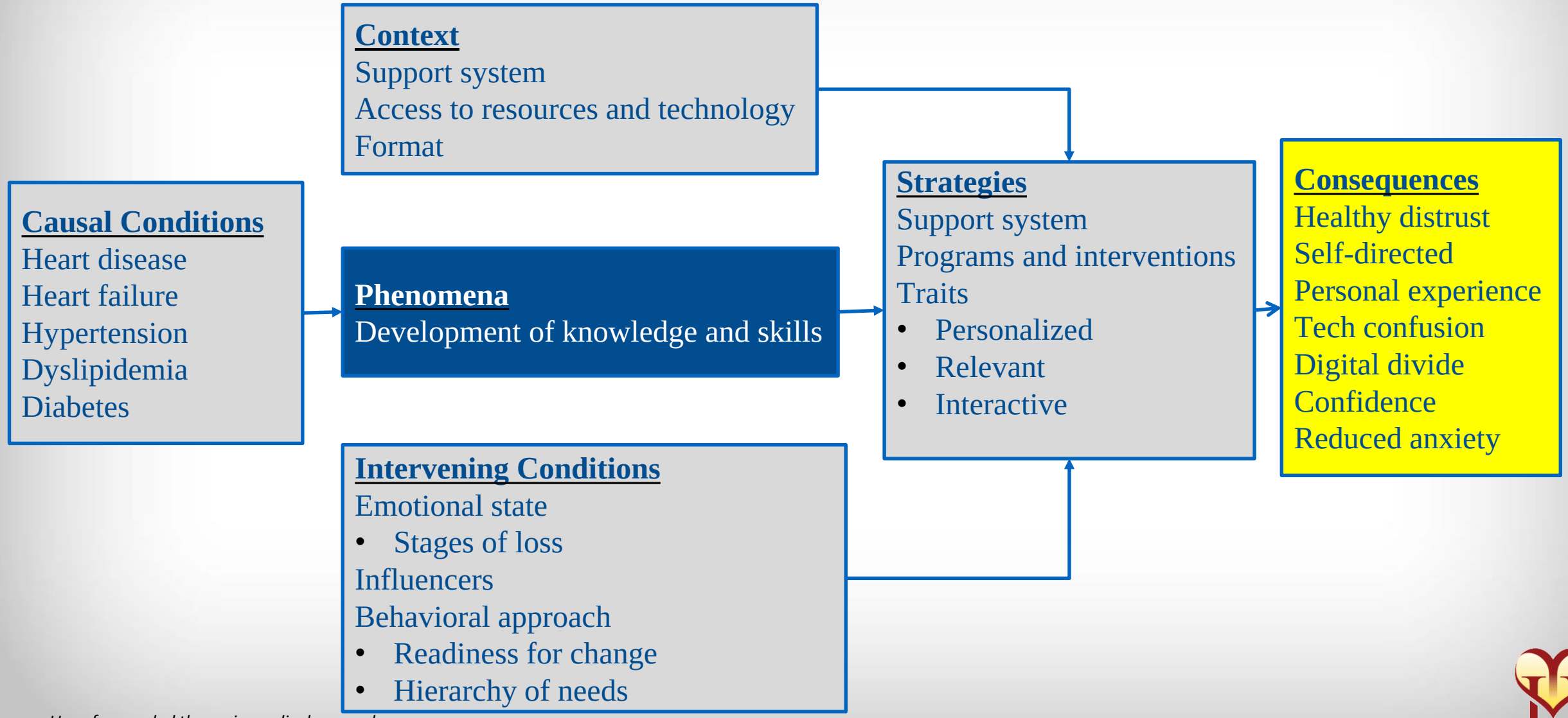


Line by line coding used

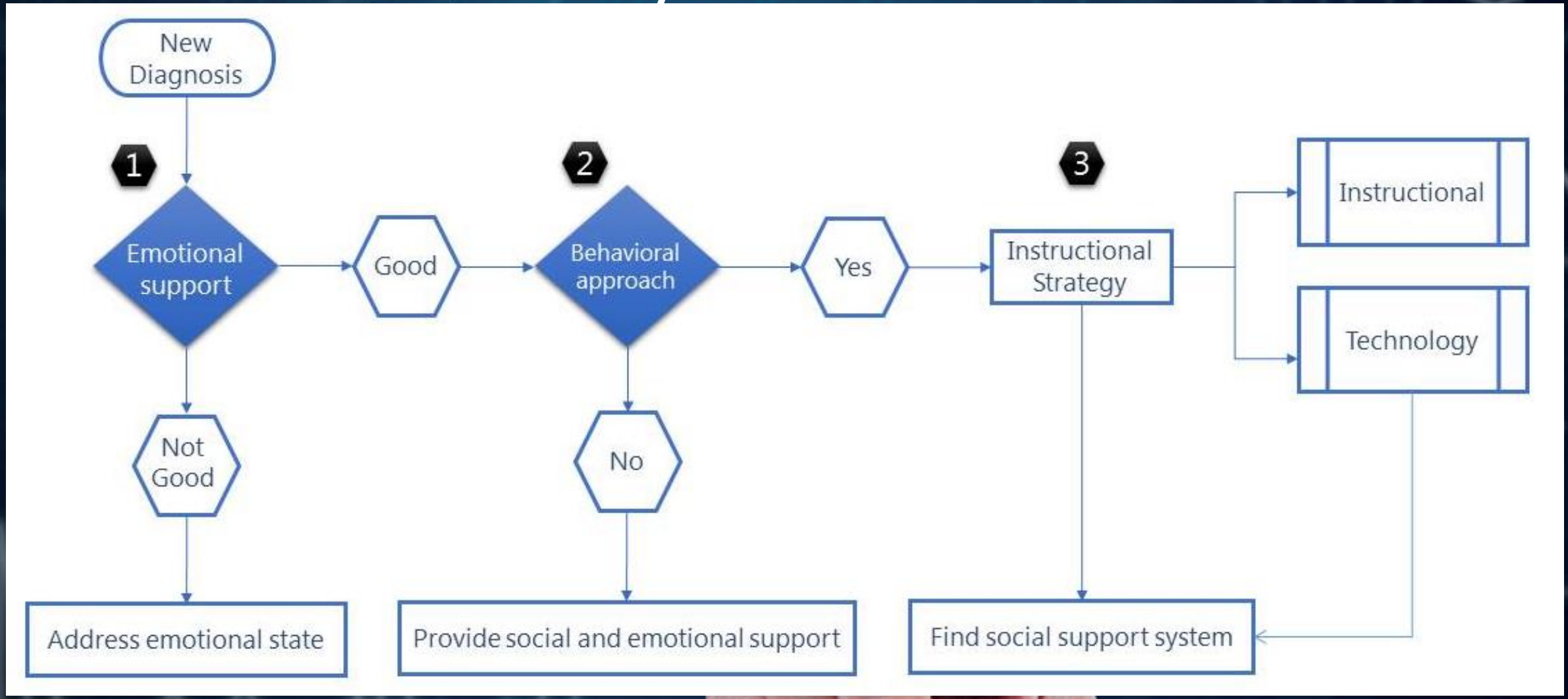
Categories generated from Codes

Coding approach was process and evaluation coding

Axial Coding



Theoretical explanation: Health literacy instructional model



Implications?

What is needed?

- Better understanding of the relationship between social and emotional support and health literacy
- Development of more effective tools and programs
- Development of more effective strategies for healthcare professionals
- Need for better options for unmotivated, non-self-directed learners – leaving no patient behind.

Criteria for Evaluating a Grounded Theory Design

- Are the categories based on the data?
- Has enough data been collected for dimensions to emerge and for saturation to occur?
- Does the theory emerge from the data?
- Does the theory provide an explanation of the process?
- Can the theory be modified as conditions change?
- Has the theory been validated?

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Thank you! Questions?

Contact information: pat@yourheartscore.com