

V diagram as a tool for analytical integration of theoretical, conceptual, and methodological knowledge in health care



O diagrama V como ferramenta de integração analítica de conhecimentos teórico-conceituais e metodológicos na saúde

El diagrama V como herramienta de integración analítica de conocimientos teórico-conceptuales y metodológicos en la salud

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ABSTRACT

Objective: To produce a reflection on the ability of the V diagram to integrate theoretical, conceptual, and methodological knowledge obtained from complex, non-explicitly identifiable systems, models, and theories.

Methods: Reflection study with an analytical characteristic.

Results: The V Diagram is presented as an instrument that can ensure an integrated analysis between theoretical and conceptual knowledge (worldview and philosophy, theories, principles, constructs, and concepts), and the analysis or production of methodological knowledge (data records, transformations, knowledge assertions, and value assertions). Examples are related to the Unified Health System (SUS), and care in Psychosocial Care Centers for Alcohol and Drugs.

Conclusions: V diagram is an instrument capable of producing an integrated analysis of the knowledge contained in productions linked to complex and non-explicitly identifiable models and theories as a theoretical model, theory or framework applying deductive and inductive procedures.

Keywords: Models, theoretical. Knowledge. Nursing research.

RESUMO

Objetivo: Produzir uma reflexão sobre a capacidade do diagrama V de integrar os conhecimentos teóricos-conceituais e metodológicos obtidos de sistemas, modelos e teorias complexas e não explicitamente identificáveis.

Métodos: Estudo de reflexão com característica analítica.

Resultados: Apresenta-se o diagrama V como um instrumento capaz de garantir uma análise integrada entre conhecimentos do domínio teórico-conceitual (visão de mundo e filosofia, teorias, princípios, constructos e conceitos) e a análise ou produção de conhecimentos metodológicos (registros de dados, transformações, asserções de conhecimento e asserções de valor). São usados exemplos relacionados ao Sistema Único de Saúde e atenção em Centro de Atenção Psicossocial Álcool e Drogas.

Conclusões: O diagrama V é um instrumento capaz de produzir uma análise integrada dos conhecimentos contidos em produções ligadas a modelos e teorias complexas e não explicitamente identificáveis como um modelo, teoria ou referencial teórico aplicando procedimentos dedutivos e indutivos.

Palavras-chave: Modelos teóricos. Conhecimento. Pesquisa em enfermagem.

RESUMEN

Objetivo: Producir una reflexión sobre la capacidad del diagrama V de integrar los conocimientos teóricos-conceptuales y metodológicos obtenidos en los sistemas, modelos complejos y teorías que no se identifica de forma explícita.

Métodos: Estudio de la reflexión con características analíticas.

Resultados: Muestra el diagrama V como una herramienta para asegurar un análisis integrado de los conocimientos del dominio teórico y conceptual (visión del mundo y la filosofía, las teorías, principios, conceptos y construcciones) y el análisis de la producción de conocimientos metodológicos (registros de datos, transformaciones, afirmaciones de conocimiento y afirmaciones de valor). Utilizan ejemplos del Sistema Único de Salud y atención en el Centro de Atención Psicossocial Alcohol y Drogas.

Conclusiones: El diagrama V es un instrumento capaz de producir un análisis integrado de los conocimientos contenidos en las producciones relacionadas con complejos modelos y teorías, que no se identifican explícitamente como un modelo, teoría o marco teórico aplicando procedimientos deductivos e inductivos.

Palabras clave: Modelos teóricos. Conocimiento. Investigación en enfermería.

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■ INTRODUCTION

It is common to associate the term **research** exclusively with facts and methods. The dimension of facts is useful, but it is not enough for the development of knowledge. Theory has the function of putting isolated facts and observations into meaningful interrelations^(1; 212).

Nursing research is used to create and test theories about the experiences related to the health of human beings in their environments, and about the actions and processes that nurses use in practice, following a systematic procedure of investigation⁽²⁾. Thus, the primary purpose of nursing research, as well as of health research, would be to produce and test theories⁽²⁾.

It starts from the premise that research would **usually** be done to test theories (by deduction) or to generate theories (by induction). Thus, a nexus between theory and research would be established as an essential condition for the advancement of knowledge. The term **usually** emphasizes that other studies do not have theoretical connections (research isolated from theories)^(1,3), and are not focused on the development, extension, examination or validation of a theory⁽¹⁾. But the existence of this condition mentioned for the latter type of research is questionable.

Statements about the interdependence between theory and research make sense only under the following conditions: the concept of theory must be broad and there must be strict alignment between theory and empirical data or evidence. Thus, theory is the grouping of clear and logically interrelated propositions to explain reasonably general phenomena; some of these propositions are empirically falsifiable⁽⁴⁾. A set of relatively concrete and specific concepts are contained in theory, and are described or defined by (nonrelational) propositions. It incorporates propositions that establish relatively concrete and specific associations between two or more concepts⁽²⁾. Theory is also evidence against the view that evidence is what serves as proof⁽²⁾. Even if this sounds unusual in the empiricist and supposedly atheoretical hegemony of health research, evidence is only understood as such from an organization of knowledge that allows it to be recognized as a trace of reality. Thus, in evidence-based health, evidence should be what derives from both quantitative and qualitative research⁽⁵⁾, and should have an inextricable relation to theory⁽⁶⁾.

The theoretical dimension is always in research, and it can be stated that there is no research without theory(ies)⁽⁷⁾ or that empirical research without theory is blind^(8:774-5). On the other hand, theory is empty without the intention of producing a connection with the research^(8:774-5).

Since it is vital to connect theory and research, and as this connection is not always easy or discernible, a question arises: How is it possible to analyze theoretical-conceptual and methodological knowledge of productions linked to complex systems in an integrated way?

This article aims at reflecting on the ability of the V diagram to integrate the theoretical-conceptual and methodological knowledge obtained from complex and non-explicitly identifiable systems, models, and theories.

The use of the V diagram with examples of the Brazilian Unified Health System (SUS) and Psychosocial Care Center for Alcohol and Drug (CAPS AD) is illustrated, notably a complex system with a theoretical framework not usually explained.

V Diagram: concepts and purposes

The V Diagram is designed to recognize the complexity and basic simplicity of the knowledge building process. It derives from Gowin's educational theory elaborated to find meaning in educational events⁽⁹⁾ and meaningful learning⁽¹⁰⁻¹¹⁾.

V Diagrams are used to initiate, conduct, and finalize scientific research and evaluate documents, programs, or papers⁽⁹⁾. With a "V" shape, the diagram has theoretical-conceptual elements on the left, and methodological elements on the right (Figure 1).

The interaction between the sides of the diagram is reciprocal and encouraged by the production of a focus question or research question (V center). The diagram recognizes the centrality of concepts and propositions in the structure of knowledge⁽⁹⁾. Thus, the theoretical-conceptual idea becomes inseparable and integrated into the empirical field of scientific research.

It is the premise of the diagram that researchers draw research questions and interpret data influenced by conceptual views, philosophies, theories, and theoretical perspectives⁽⁹⁾. Thus, the V diagram would avoid the inadequate notion of evidence-based practice as a "dictatorship of facts" and that they would speak for themselves. The description of a phenomenon as an aspect of reality with the aim of producing a definition⁽¹²⁾ already represents an intellectual enterprise related to one or more theories.

The three purposes of the diagram are: to plan a research project, to analyze an article or document, or to function as a teaching and learning tool⁽⁹⁾.

Integration of the V diagram knowledge and illustration of use

At the outset, the methods of knowing to be accessed or analyzed are defined. According to philosopher Charles

Peirce, there are four methods of knowing⁽²⁾: tenacity, authority, *a priori*, theory.

Tenacity or tradition refers to the knowledge of personal opinions that are persistent, those that people believe to be true because they have always known them as true⁽²⁾.

The challenge of dealing with tenacity knowledge is that traditions are dispersed in knowledge that, most of the time, gives no space to conflicting opinions, not offering the elements for deciding what would be the best position in conflicting opinions⁽²⁾.

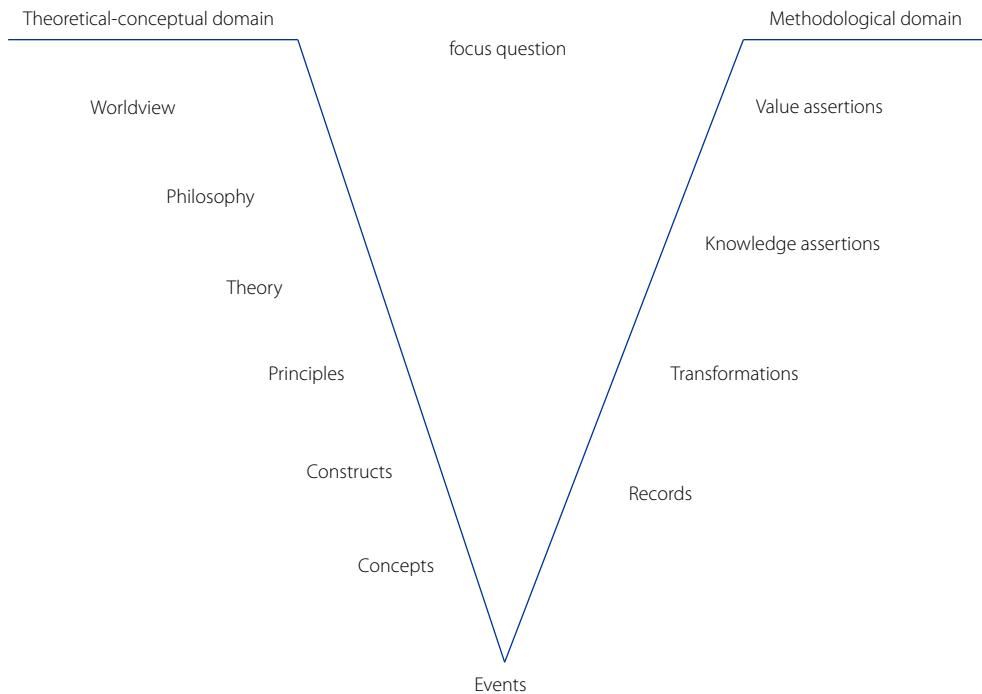


Figure 1- Representation of V Diagram

Source: Gowin; Alvarez⁽⁹⁾.

Authority refers to the method of knowing related to highly respected sources, such as books, articles, expert opinions, laws, rules, norms, and guidelines⁽²⁾. Knowledge produced by sources of authority is based on knowledge subject to imprecision and changes that are characteristic of social change and scientific advancement.

A priori, intuition, or common sense relates to the truth that would be obvious, with self-evident nature, often being produced from trial and error, or from unsystematic clinical experiences⁽²⁾. It occurs in everyday interactions and experiences.

Finally, **theory** (science) is the best method to have evidence, being more self-corrective and reliable. Reliability is based on systematization and the requirement to consider alternatives. Scientist should not assume that they are so sure of their results. Research produces theory only as the best currently available evidence⁽²⁾.

Thus, a theorizing analysis of SUS may require the four methods of knowing, making V diagram the best choice

over other methodologies. For instance: SUS principles are truths by tradition; laws, ordinances, regulations, protocols, and manuals have authority knowledge; in health care, *a priori* knowledge emerges from common sense; and the theoretical knowledge is in multiple dimensions and sources in SUS as the main elements that support it as a model.

Integrative reviews, for instance, would have an interface with the four methods of knowing. It can incorporate experimental and non-experimental studies; combine theoretical and empirical literature; be used with concepts, review theories and evidence, and analyze methodological issues⁽¹³⁾. However, for an analysis of SUS according to the proposed models, an integrative review, even with its methodological value, would be limited by the criterion of data quality when dealing with authority, a priori, and tradition knowledge. On the contrary, the integrative architecture of theoretical-conceptual and methodological domains of the “V”, and its intention to approach complexity may require and accept the inclusion of methods of knowing.

The actual application of the V diagram begins with the selection of the event. An event is something that has happened, is occurring or may occur, and can be produced by human action or not⁽⁹⁾. An event can also be understood as a fact or phenomenon. It is the object of investigation of what one wishes to apprehend, and to build knowledge of. In the scope of SUS, there is a multitude of events such as: health care, nursing care, popular participation, social control, and application of a specific care protocol. For the illustration of this article, the event will be the user service at CAPS AD.

With the event outlined, the research question or focus question that should have compatibility with the event (object of investigation) is defined. It could be: **Considering the characteristics of SUS, how is nursing care provided to users at CAPS AD?**

The criteria for defining and cutting the question follow those of the other research questions, and are focused both on encouraging the scientist's inquisitive spirit, and on broadening his or her view of the event, and may increase the accuracy and clarity of the event to be investigated.

Starting from the left side of the V, the worldview that guides the investigation of the research question is analyzed. In the V diagram, worldview and philosophy are presented separately. However, the terms can be used with the same semantics for expressing beliefs, visions, and perspectives. In nursing, it is common to observe the connection⁽²⁾.

The philosophy of SUS, articulated with the view of social security, requires an approach guided by the contemporary philosophy of postmodernity, which is characterized by the acceptance of the pluralism of ideas; recognition of multiple ways of knowing and interpreting reality; and incorporation of the relevance of contextual, political and structural analysis into scientific investigations⁽¹⁴⁾.

The next element in the V is the theory, that is, a systematically organized knowledge, a system of assumptions, accepted principles, and rules and procedures. Theory is focused on analyzing, predicting, and explaining phenomena or events⁽⁹⁾.

In the Unified Health System, there are several theories related to the system itself, with users, professionals, technologies, and resources. In a more comprehensive understanding, the very connection and organization of SUS concepts could form a theory.

Facing the risk of dispersion, it proposes to identify, analyze, and reflect on the theories based on SUS philosophies, with a view to the event. For example, Law 8.080 of the Unified Health System⁽¹⁵⁾ provides a [philosophical and modeling] basis for understanding assumptions and principles that facilitate the localization of theory(ies) immersed in SUS documents.

The principles are written statements about the regularity of events, being abstracted and derived from positions a priori established about the regularity present in events⁽⁹⁾. They combine knowledge positions and values⁽⁹⁾. As regards SUS, they are in article 7 of Law 8.080⁽¹⁵⁾.

The constructs are conceptual creations linking the concepts, and do not specify regularity in events, being ideas that do not have an operational meaning⁽⁹⁾. They are more complex concepts, usually elaborated by theoreticians or philosophers^(14,27). Within SUS and CAPS AD, examples of the construct are humanization and uniqueness. Nursing theories, especially the great theories, have constructs that can be aligned semantically with those of the health system as a whole.

Concepts are the ideas concerning the phenomena⁽⁹⁾, or components of a phenomenon necessary for its understanding^(14,27). They are adopted to name things, events, ideas, and other realities⁽¹²⁾. They are essential to theories, acting as building blocks.

The selection of concepts depends on the event. Regarding nursing care to the user in the CAPS AD, the concepts that are related and harmonic with it and with the other theoretical-conceptual elements are: contractuality, bonding, laterality and a singular therapeutic project.

The advancement along the methodological path (the right side) will take place from the bottom up with inductive reasoning, being also oriented from what emerged from the theoretical-conceptual domain.

The first element of the methodological domain refers to records. They are all monitoring instrumental data, or event study techniques. In CAPS AD, records can be constructed in a singular therapeutic project and in the nursing process.

Transformations are the judgments of records and therefore represent what is thought or postulated about the event. They produce new definitions from the knowledge of the event, reframing the recorded data, collecting new data and thoughts. Transformations can vary from a paragraph to a paradigm⁽⁹⁾.

Knowledge assertions are the answers to the focus question. Thus, it is necessary to return to concepts, events, records, transformations⁽⁹⁾ (and to the other elements of the theoretical-conceptual domain). An example would be: care to CAPS AD users should be guided by a systemic and complex view, respecting the principles of comprehensiveness and equity, and aiming at the creation and maintenance of the bond.

Finally, value assertions address the contribution of knowledge assertions, or are statements in the field of values. They deny the thought of some scientists that value

assertions would have no place in science⁽⁹⁾. A more general example: the multidisciplinary action in the CAPS AD reaches its maximum utility when clearly guided by the philosophies, theories, principles, constructs, and concepts contained in the Unified Health System. In the field of nursing, a value statement could postulate that “nursing care incorporates the recognition of the profession as co-responsible for the guarantee of community participation in the health system”.

■ CONCLUSION

The V diagram, with the use of deductive and inductive procedures, is capable of producing an integrated analysis of the knowledge contained in productions linked to complex models and theories not explicitly identifiable. It functions as a tool for the “unpacking” of implicit theories, as in the SUS model, thereby ensuring the analysis and understanding of the production of knowledge as the result of the interaction between the conceptual and the methodological domain of knowledge.

By its nature of integration, the V diagram can subsidize nursing research based on theories and disciplinary theoretical models. The limitation of the present study is the absence of experimental verification of the proposal.

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