### **Original Article**



# Data analysis in qualitative research: aspects related to results triangulation

Análise de dados em pesquisa qualitativa: aspectos relacionados à triangulação de resultados

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ABSTRACT | OBJECTIVE: Present the systematization of the triangulation of results, contributed to the Social Representations, through methodological instruments. **METHOD:** Methodological research that presents instruments used in the results triangulation process. The empirical material came from projective structural and lexical analysis techniques using software; and interviews using the discourse analysis technique. Thematic was the sexuality and participation of 191 women, aged 18 to 75 years, living with HIV, being carried out between September and November 2018. RESULTS: The analysis was systematized and formed summary tables. The interpretation of the results took place by identifying meaning cores for each generation and their sharing, with the comparison of the obtained results highlighting the convergences of the triangulation. **CONCLUSION:** The methodological experience revealed that it is plausible to systematize, in a practical way, instruments that help the analysis, revealing possibilities for replicability and improvement in research with a qualitative approach.

**DESCRIPTORS:** Methodology. Data analysis. Projective technique. Sexuality. HIV.

RESUMO | OBJETIVO: Apresentar a sistematização da triangulação dos resultados, aportada nas Representações Sociais, por meio de instrumentos metodológicos. MÉTODO: Pesquisa metodológica que apresenta instrumentos utilizados no processo de triangulação dos resultados. O material empírico adveio de técnicas projetivas com análises estrutural e lexical por auxílio de softwares e entrevistas com uso da técnica de análise de discurso. Teve como temática a sexualidade e participação de 191 mulheres, de 18 a 75 anos, vivendo com HIV, realizada entre setembro e novembro de 2018. **RESULTADOS:** A análise foi sistematizada e conformou quadros sínteses. A interpretação dos resultados se deu por meio da identificação de núcleos de sentido para cada geração e seu compartilhamento, com a comparação dos resultados obtidos destacando as convergências da triangulação. **CONCLUSÃO:** A experiência metodológica revelou ser plausível sistematizar, de forma prática, instrumentos que auxiliem a análise, revelando possibilidades para a replicabilidade e o aprimoramento em pesquisas com abordagem qualitativa.

**DESCRITORES:** Metodologia. Análise de dados. Técnica projetiva. Sexualidade. HIV.

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#### Introduction

The research is developed by a process formed by several phases, ranging from the formulation of the problem to discussing the results and their final thoughts. In order to carry out a rigorous scientific investigation, the methodology and theoretical choice are fundamental to validate and reach the proposed end, namely: to find solutions to problems.<sup>1</sup>

In qualitative research, the socially constructed nature of reality is emphasized through the intimate relationship between the researcher and the object of study in the search for solutions that are explicit in the social experience, which, when created, acquires meaning for people. Qualitative research involves an interpretative approach to phenomena and their meanings.<sup>2</sup>

Methodological research involves investigating methods of obtaining and organizing data and excels in rigor in conducting and developing research. Thus, evaluations through solid and reliable results depend on the rigor of the intervention and the procedures for obtaining them. A methodological study aims to adapt and analyze the structure and reliability and validate scales and instruments.<sup>3</sup> In this sense, there is an increased interest in methodological research among researchers.<sup>4</sup>

The use of multi techniques for data collection in qualitative research needs to be carefully planned because it will bring the necessary basis for the research results carried out and should be in line with the objectives. Furthermore, after the collection phase, the data processing and its systematization will allow the analysis and interpretation of the results.<sup>5</sup>

Each analysis procedure allows evaluating/interpreting the object of study in a particular way, from a specific look. Thus, the use of methodological triangulation, specifically, ceases to be a validation strategy and becomes an enrichment factor for understanding the phenomenon.<sup>6</sup>

Objectivity is the product of the sociocultural and historical consensus of the scientific community, therefore governed by the sign of intersubjectivity. In qualitative research, interpretation is the starting and finish point for being considered the interpretation of interpretations. Thus, triangulation in a qualitative study can enable the dialogue between different

data collection and analysis techniques, sources from the literature, illuminating obscure points, and establishing new knowledge.<sup>Z</sup>

Triangulation, coming from the exact sciences, began to be used in health studies by psychology professionals. This area of knowledge used multiple tests in the analysis of the same object in order to achieve convergent results. It then spread to other areas.<sup>8</sup>

Given the scenario presented, the relevance of triangular results obtained through analysis techniques supported by the Theory of Social Representations (TSR) and Discourse Analysis (DA) is important and was adopted as a fruitful resource in producing knowledge. Thus, it is a qualitative alternative for the validation of research that uses multiple methods to deepen and ensure the understanding of the investigated phenomenon.

Triangulation can be understood as a combination of differentiated methodologies when the intention is to analyze the same phenomenon, which consolidates the construction of social theories. In this study, it was used as a starting point that allowed confront the results obtained with the different analysis methods among women of different generations. The systematization of the results through instruments elaborated in the research with the interpretative purpose of the content manifested by women living with HIV allowed revealing the phenomenon.

In order to explain the use of the triangulation strategy in the qualitative approach, the development of research that used intra-method triangulation with people from different generations to achieve their goals is presented while conferring reliability and rigor to the investigation.

Considering the above, the following research question arose: how to systematize the triangulation of the results that emerged from the analysis of empirical data through multi techniques in different generations? To answer this question, in this article, the objective was to present the systematization of the triangulation of the results, contributed by the Social Representations, through methodological instruments.

#### Method

This descriptive methodological study addressed the systematization of triangulated results extracted from data analyzed with the support of the TSR and through structural and lexical analysis and the DA technique.<sup>10</sup>

This article presents fragments of the research developed, resulting in a doctoral thesis entitled: "Sexuality of women of different generations after HIV diagnosis," whose object of research was the sexuality of women living with HIV. It was developed through the qualitative approach and was anchored in the Social Representations (SR), which constituted a guide for understanding behaviors because it allows observing the remodeling and reconstitution of elements of the environment in which the behavior should occur. Thus, the SR form practical knowledge that guides the action and the taking of position.<sup>11</sup> In this sense, the original research sought to know the social representations of women of different generations about sexuality after the diagnosis of HIV by examining the process of construction of reality from social relations.

The SR enabled the understanding of the object of study by opting for the structural approach with the Central Core Theory (CCT), developed by Claude Flament, Jean-Claude Abric, and Pierre Vergès, which composes it as a methodological strategy, enabling the collection of qualitative data and establishing acceptable interdisciplinary dialogues in the data analysis process.<sup>12</sup>

DA was another method used for working with meaning and understanding it from what is produced and not from what is translated. DA is a field of research that does not have a ready/finished methodology by using the constitutive elements of the theoretical design that will guide its analyses. Thus, by understanding that theory and methodology go hand in hand, one giving support to another, the multimethodological option that supported the study is justified.<sup>13</sup>

To this end, the intention was to report, in detail, the elaborated instruments that allowed presenting the elements of approximation didactically and distancing from the empirical material, but which were analyzed separately.

At the methodological level, a plurimethodological approach was developed that allowed working the complexity of the representational phenomenon and supported the strategy of data triangulation to study the phenomenon of sexuality of women living with HIV.

The research involved 191 women aged 18 to 75 years and allowed the formation of four groups of participants in different life cycles. Group 1- women between 18 and 29 years old; group 2- women between 30 and 44 years old; group 3- middle-aged women between 45-59 years; group 4- older women over 60 years of age.

The study field was the municipality of Feira de Santana, State of Bahia, the main road axis of the North/Northeast of the country, whose female population is 292,643. Data collection occurred in a specialized service that assists people living with HIV from September to November 2018, and who agreed to participate in the study and signed the Informed Consent Form. The sampling was intentional in nature among the approximately 1,200 women registered in the service. A sample can be considered ideal when it can elucubrate the totality in its multiple dimensions.

Considering the inclusion/exclusion criteria established and the specificity of the theme and the social group of the participants for each collection technique used, there was a need to establish a sample size, which would even provide the process of data triangulation: 39 women participated in the semi-structured interview and 191 in the application of the Free Associations Test (FAT).

Of the 191 women who participated in moment 1, FAT application, 39 participated in the semi-structured interview (moment 2). In relation to the FAT, this projective technique is based on verbal production and reduces the possible difficulties and limits in the expression and censorship of the discourse of the person participating in the research. It allowed the constitution of the semantic universe of the object of study through latent and unmasked elements in discursive productions. The inducing terms were: 'sexuality' and 'sexuality of a person living with HIV.' The interview followed a script that served as a guide and was performed individually in offices/rooms available at the service.

The analyses of the research data occurred in three stages. First, the data from the FAT with the inducing terms of the 191 participants were processed with the help of the Software Ensemble de Programmes Permettant l'Analyse de Évocations (EVOC) and allowed evidencing structural, central, and peripheral elements of the SR, configured in four-house frames.

The analyses of the data originating from the evocations had the aid of the software Interface de R pour les Analyses Multidimensional de Textes et de Questionnaires (Iramuteq) that configured graphs of Descending Hierarchical Classification (DHC), Factorial Analysis of Correspondence (FAC), Analysis of similitude.

All analyses, based on the graphic representations generated by the respective software, from the evocations of words and textual data, were presented to the total of the participants according to groups disaggregated by age to assist the generational analyses.

The material from the interviews was analyzed based on the Discourse Analysis technique<sup>17</sup> and led to the grouping of themes and the configuration of three synthesis tables. The remaking of discourse in the search for structures of relevance allowed codifications of elementary utterances and their binary relations. Thus, the understanding of dialectical relationships constituting social achievement was based on the flexibility that theory provides to produce meaning. A striking characteristic of the original research is the search for the "unspoken," that is, about what is not explicitly shown in the discourses produced by women.

In the original research, the process of analysis of the empirical material, through the technique of discourse analysis, follows the steps: Reading the entire text to locate recurrences as well as concrete figures/elements and abstract themes/elements that led to the same block of meaning; a grouping of data according to the significant elements (figures or themes) that are added or confirmed in the same plane of meaning; and apprehension of the central themes, which allow the formulation of empirical categories.<sup>17</sup>

In all analyses, the results indicated different elements that comprised the social representations of generational subgroups about the object studied and followed the flow schematized in Figure 1.

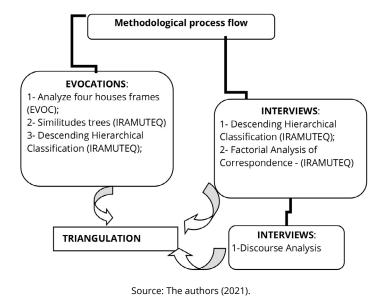


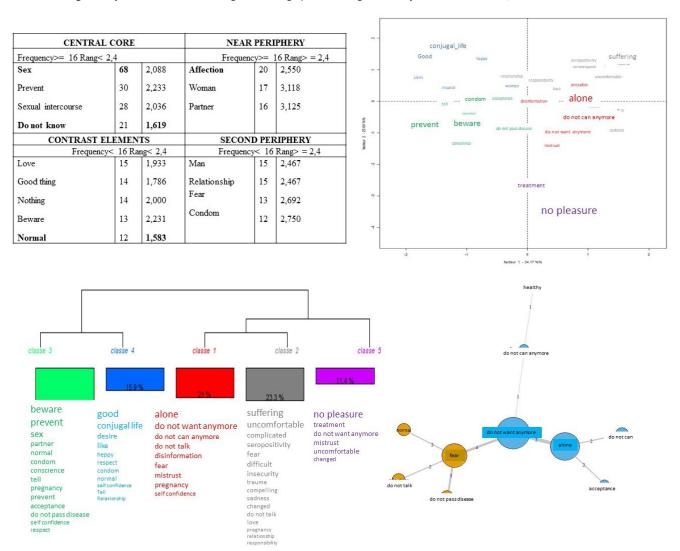
Figure 1. Methodological route flowchart for data triangulation. Bahia. 2021

The production of empirical material was initiated after approval by the Research Ethics Committee of the Nursing School of the Federal University of Bahia/UFBA, under protocol n. 2,776,570, according to the regulations of Resolution 466/12 of the National Health Council. The risks were minimized after clarifying the research objectives, ensuring the confidentiality, credibility of the information, and the privacy of the participants.

#### **Results**

The data of the evocations analyzed with the aid of the software were systematized in charts and figures that demarcate the methodological steps followed in the organization of the findings (Figure 2).

Figure 2. Synthesis of the main findings in several graphical forms generated by EVOC and IRAMUTEQ software. Bahia. 2021



Source: Softwares EVOC e Iramuteq.

The analyses based on the charts and figures, generated through the evocations, allowed examining constitutive elements of the central cores of the representations (frame of four houses) that found convergence in DHC, FAC, and tree of similitude. After this stage, the interviews were analyzed, following the steps of the DA16 technique, with the identification of 17 meaning cores, presented below:

- 1. The risks to the affective relationships that may culminate in refusal of sexual intercourse or isolation.
- 2. Resistance of partners regarding the use of condoms.
- 3. Doubts to reveal and/or not their diagnostic condition.
- 4. Fear of being exposed if it comments on their diagnosis.
- 5. Relief with partner negativity free of guilt.
- 6. Establish new relationships involving doubts and feelings of sadness/abandonment, leading to suffering and insecurity in the experience of sexuality.
- 7. The fear of the aggravation of infection by reinfection is higher when experienced or consciously experienced the partner's multi-share or unaware of the serological condition of the partner.
- 8. The use of condoms as a protective factor is incorporated after diagnosing seropositivity as a partner prevention and reinfection medium.

- 9. Attempts to maintain self-esteem.
- 10. Acceptance and confidence in the possibility of living with HIV.
- 11. The fighting and coping with AIDS through organized groups.
- 12. Being alone or not exposing themselves to expand freedom to take care of and not satisfy their lives to third parties.
- 13. Relief with partner negativity free of guilt.
- 14. Limitation of desires and difficulties in revealing discomforts in certain sexual practices in order not to reveal the diagnosis.
- 15. Insufficient level of information on sex with protection when the couple lies with undetectable viral load.
- 16. Compensation before the blame process and the fear of exposing the condition of seropositivity boost the belief in the social role of women as a caregiver.
- 17. Restoration of self-confidence is amid new experiences that create possibilities of overcoming barriers, with partner and family, even facing the fear of possible reactions by sharing the diagnosis.

The categorization process allowed synthesizing the main findings, locating the meaning cores that composed and crossed the discourse in all generations and their specificities, according to Table 1.

Table 1. Synthesis of the main findings by generation through the technique of discourse analysis. Bahia. 2021

Young G1	Presented the meaning core 1 (the risks for the affective relationship that can culminate in refusal of sexual intercourse or insulation) and the cores 2; 3; 4; 5; 6; 7; 8; 9; 10 and 11
Adults G2	Presented the meaning cores 1 to 11 with the exception of the element 7, adding cores 12; 13; 14 and 15.
Middle-aged G3	Did not present the meaning cores 1, 2, 7, 13 and 14, plus 16 and 17.
Elderly G4	Only presented the meaning cores 3; 5; 6; 7; 8 and 16.
All	Presented the meaning cores 3; 4; 6 and 8

Source: The authors (2021).

After conforming table 1, the analyses allowed the identification of common elements shared by one or more generation, allowing the understanding of social representations and their generational nuances, as provided in Table 2.

**Table 2.** Synthesis of the meaning cores that perpetrate generations. Bahia. 2021

Generation	Common meaning cores between generations
Young G1	1 and 2 with G2;
	5 and 7 with G4;
	9, 10 and 11 with G2 and G3
	They presented speeches that have set up with all generations.
Adults G2	1 and 2 with G1;
	9, 10 and 11 with G1 and G3;
	Introducing the incorporation of new cores: 12, 13, 14 and 15 shared with G3.
	However, there was no consonance with G4.
Middle-aged G3	9, 10 and 11 with G1 and G2;
	12, 13, 14 and 15 with G2;
	Introducing highlighting for the incorporation of a new core that is 16 shared with G4. In addition to presenting element 17 as unique to this group.
Elderly G4	5 and 7 with G1;
-	6 with G3.
ALL	The nuclei of meaning 3, 4, 6 and 8 perpetrate the SR of all generations.

Source: The authors (2021).

Finally, the ideas conforming the SR in each technique and analysis used, according to Figure 3.

Figure 3. Synthesis of analyzes of Social Representations obtained by different collection techniques and data analyzes. Bahia. 2021

## **OBJECT: SEXUALITY**COLLECTION AND ANALYSIS TECHNIQUES

**EVOCATIONS - EVOC** 

SR results for structural analysis

YOUNG - idea of impossibility, sorrows and discomforts, linked to fear and suffering.

**ADULTS** - certain "possibility" of survival against the difficulties, intermediated by 'fear', as the central element reinforcing the thinking of 'denial'

**MIDDLE-AGE** - It differs from previous generations, by the balance between the poles: 'acceptance/normal' and 'no longer can'.

**ELDERLY** - differentiated characteristics of other generations. Point to the denial of 'her sexuality'.

**INTERVIEWS - IRAMUTEQ** 

RS results by lexical analysis

**YOUNG** - keeping faithful to a relationship that affectively and sexually may no longer be satisfactory. **ADULT AND MIDDLE-AGED** - focus on self-care and maternal paper performance with loved ones. **ELDERLY** - Center on the Binomial Child / HIV, Denial and Self-criticism.

INTERVIEWS - DISCOURSE ANALYSIS

RS results for Discourse Analysis

YOUNG - Difficulty in revealing the diagnosis for fear of being exposed. Incorporate condom use.

**ADULTS** - Resistance of the partner to the preservative implies refusing the practice of sexual intercourse or seek solitude for the fear of reinfection.

**MIDDLE AGE** - Insecurity in establishing new relationships for frequency of abandonment. 'Chooses' solitude as a way to maintain his freedom.

**ELDERLY** - they are gratified with the negativity of the partner, but insecure in establishing new relationships for the frequency of abandonment and death.

Source: The authors (2021).

#### **Discussion**

When using a multimethodological approach, the evidence obtained on a given object is considered strong, as they can reduce possible biases, both in the collection process and in the systematization and analysis. Thus, when using different data collection techniques to assess conclusions based on the whole, the data obtained should be analyzed together and not only by individual methods.<sup>19</sup>

In the data analysis process, the specificity of each technique allowed explaining new elements and broadened the understanding of the studied phenomenon. Thus, the systematization of the results through instruments elaborated in the research, with the interpretative purpose of the content manifested by women living with HIV, could be revealed.

Because of the triangulation of the results, in order to multiply the attempts of approximation with the object studied, it is necessary not to disregard odd information, which stands out in the empirical material and is not repeated, because the explanatory potential of this information provides the discovery of the internal logic of the studied group.<sup>15</sup>

Triangulation is a procedure that combines different data collection methods, populations, and theoretical perspectives, which means consolidating conclusions about the investigated phenomenon. <sup>19</sup> In social research, the main challenge of a researcher is to give meaning to their conclusions.

Some authors address triangulation as a method that incorporates distinct methodological approaches. Thus, in qualitative/quantitative research, in which different methods are used to obtain results on a single topic, triangulation can be applied. However, methodological triangulation can be performed in two ways: within a single approach (qualitative or quantitative) or between different approaches. However, the concept of triangulation opens the possibility of working on different perspectives of understanding reality in its methodological aspect, assuming a totally different form when used in quantitative research. Let

In this sense, knowing that no observation or interpretation is perfectly repeated, triangulation also

serves to clarify meanings by identifying the different ways in which a case is seen.<sup>22</sup> Furthermore, the study of a research theme can assume different views and combine different types of data under the same theoretical approach for producing knowledge based on multiple perspectives.<sup>23</sup> Thus, the same population can answer questionnaires and interviews, providing a comparison between their answers. In this sense, the triangulation will take place within the scope of the set of data researched.<sup>2</sup>

In a study conducted to combine statistical analysis of vocabulary, a traditional method of qualitative analysis, considering its unfolding in content networks, allowing a more comprehensive view in the evaluation of coherent and discrepant information between the methods.<sup>24</sup>

The use of triangulation in qualitative research is seen as a strategy to achieve the proposed objectives, to evaluate the credibility and scientific rigor in its realization. In this sense, it cannot be restricted to using only one method or one data source. Moreover, it is considered that the discourses are complex, even when we interview a single theme - sexuality - multiple aspects are related to the representations in their ideological composition and figurative image. Therefore, in this case, triangulation allowed commencing the results obtained with the different data collection methods.

In the process of combining different types of data, the results are likely presented in different ways, i.e., convergent, when the data produced in the different collection techniques present the same results; complementary when the data produced from one technique complement issues raised in another technique; when the information is totally opposite to those produced with other techniques.<sup>23</sup>

In this study, the triangulation performed with the FAT (structural and lexical analysis) analyses for all participants was followed by the analysis of the interviews (discourse analysis) by subgroups and allowed achieving the complementation of the results. In complementation, the results focus on different aspects of the research question, and because they are complementary, they allow visualizing a broader picture of the reality investigated. It is also emphasized that convergences were identified, and no divergences were observed.

#### **Conclusion**

The use of triangulation and its application as methodological systematization in social research to reduce biases and confer reliability revealed possibilities for improving analyses in qualitative research. Thus, through the presentation of this methodological experience, it was possible to verify that systematization practically, from the application of instruments and/or multi techniques of analysis, already consolidated in the scope of research, allows excelling in rigor and technical-scientific improvement.

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#### **Authors' contributions**

Suto CSS and Paiva MS participated in the conception, analysis and interpretation of the data. Suto CSS, Paiva MS, Porcino C and Silva DO participated in the writing of the article and relevant critical review of intellectual content. Suto CSS and Coelho EAC approved the final version of the scientific article.

#### **Compeeting interests**

No financial, legal, or political conflict involving third parties (government, companies and private foundations, etc.) has been declared for any aspect of the work submitted (including, but not limited to grants and financing, participation in the advisory board, study design, manuscript preparation, statistical analysis, etc.).

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