EXPERIENCE REPORT

Epistemological challenges of indigenous people's research: reflections based on experience with conceptual map

Desafios epistemológicos da pesquisa com indígenas: reflexões baseadas na experiência com mapa conceitual

Desafíos epistemológicos de la investigación con indígenas: reflexiones basadas en la experiencia con mapa conceptual

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ABSTRACT

Objectives: to discuss the applicability of the conceptual map and its underlying theoretical anchors and analyze the challenges and potentialities of this method concerning the participation of Indigenous Peoples. **Methods**: experience report of the use of the conceptual map as a data collection instrument. **Results:** the study allowed us to discuss the epistemic approaches and distances, as well as to analyze to what extent the conceptual map favored the process of joint production of knowledge with Indigenous Peoples. The experience with this type of research design also revealed epistemological challenges that reflect the established historical relationships, whose overcoming implies the construction of new forms of egalitarian and intercultural scientific relations. **Final Considerations**: the conceptual map theoretically composes a structured participatory methodology, which enables data collection and the collective construction of knowledge, provided that the cultural, epistemic, social, and political diversities of all the social actors involved are considered.
Descriptors: Epidemiology; Indigenous Health; Search; Adolescent; School Health.

RESUMO

Objetivos: discutir a aplicabilidade do mapa conceitual e suas subjacentes ancoragens teóricas; e analisar os desafios e potencialidades desse método no que tange à participação dos povos indígenas. **Métodos**: relato de experiência da utilização do mapa conceitual como instrumento de coleta de dados. **Resultados**: o estudo permitiu discutir as aproximações e distanciamentos epistêmicos, assim como analisar em que medida o mapa conceitual favoreceu o processo de produção conjunta de conhecimento com os povos indígenas. A experiência com esse tipo de delineamento de pesquisa também revelou desafios epistemológicos que refletem as relações históricas estabelecidas, cuja superação implica a construção de novas formas de relações científicas igualitárias e interculturais. **Considerações Finais**: o mapa conceitual compõe, teoricamente, uma metodologia participativa estruturada, que possibilita a coleta de dados e a construção coletiva de saberes, desde que sejam levadas em consideração as diversidades culturais, epistêmicas, sociais e políticas de todos os atores sociais envolvidos.
Descritores: Epistemologia; Saúde Indígena; Pesquisa; Adolescente; Saúde Escolar.

RESUMEN

Objetivos: discutir aplicabilidad del mapa conceptual y sus subyacentes ancorajes teóricos; y analizar desafíos y potencialidades de ese método en lo que tange la participación de los pueblos indígenas. **Métodos**: relato de experiencia de la utilización del mapa conceptual como instrumento de recolecta de datos. **Resultados**: el estudio permitió discutir las aproximaciones y alejamientos epistemológicos, así como analizar en que medida el mapa conceptual favoreció el proceso de producción conjunta de conocimiento con los pueblos indígenas. La experiencia con ese tipo de delineamiento de investigación también reveló desafíos epistemológicos que reflejan las relaciones históricas establecidas, cuya superación implica la construcción de nuevas maneras de relaciones científicas igualitarias e interculturales. **Considuraciones Finales**: el mapa conceptual compone, teóricamente, una metodología participativa estructurada, que posibilita la recolecta de datos y la construcción colectiva de saberes, desde que tengan en cuenta las diversidades culturales, epistemológicas, sociales y políticas de todos los atores sociales involucrados.
Descriptores: Conocimiento; Medicina Tradicional; Investigación; Adolescente; Servicios de Salud Escolar.

INTRODUCTION

The epistemological challenges in the development of scientific research involving Indigenous peoples, especially those originating from South American countries, are inherent and result from the historical process of colonialism and political, epistemic, economic, social, and cultural subordination of colonized peoples. The criticism of the impacts of this colonialism emerges and affects different currents. Notably, there is an incorporation of the participants themselves in the scientific production process, which is revealed in a very forceful way when it comes to social research in health, especially among Indigenous peoples[1].

This new paradigm seeks to overcome the influences of the scientific method, originally anchored in the Natural Sciences, shaped by a Cartesian logic and still dominant in the scientific mainstream; and these new ways of producing science imply innumerable challenges in terms of objects, methodologies, sources of funding, groups of researchers and geographical regions[2].

Along the same lines, there is an intersection of overlapping challenges that interact and amplify each other. In Latin America, classical authors such as José Marti, Mariátegui, Aníbal Quijano, and Mignollo are widely recognized references in this discussion that goes through the origins of Latin American thought in search of the construction of a critical epistemology. More recently, such debates have expanded amid the so-called "epistemologies of the South"[3].

Concerning social research in health with Indigenous peoples, other existing challenges must be added, such as epistemological obstacles specifically related to the health area. The hegemony of the biomedical paradigm, inscribed until today in the health education of professionals in the area, is expressed in the dominant epistemological currents and, consequently, in the theoretical and methodological frameworks and research development processes[4].

The biomedical paradigm has imprinted on all health professions the predominance of the biologicist logic and the unicausal explanation of diseases, alienating the other dimensions of life and the importance of the social, cultural, and political mode of the organization over the human experience of living and getting sick[1]. Thus, the biomedical model is, above all, a carrier of the logic of modern reason (Western Cartesian) that does not include other rationalities and ways of understanding birth, life, illness, and death.

Thus, explanations and care practices not guided by this logic are not commonly accepted. The rationalities developed by other cultures distinct from the hegemonic culture, such as the indigenous worldview, have been and remain excluded. Since the rise of modernity, instrumental reason and science have become symbols of power and domination over peoples and civilizations. In this sense, the culture and rationalities of Latin American Indigenous peoples have historically been denied, as well as other forms of thought elaborated by traditional peoples in various regions of the world[5].

In Brazil, such issues have also led to unfavorable relations between the State and Indigenous peoples. The construction of public health policies in the Country was also permeated by the imposition of standards and conceptions of health guided by Western rationality. All institutions have perpetrated it in such a way that the production of science was impregnated with unequal relations between researchers and subjects of action.

Concerning Indigenous peoples, this fact was perhaps even more present compared to other populations, considering the academic unilaterality in the definition of research questions and methodological designs, the absence of collective constructions with the communities and populations involved, and, consequently, the majority use of research instruments little or nothing participatory; such characteristics, as a whole, revealed, in history, different epistemological perspectives that, to a large extent, did not favor the promotion of autonomy and emancipation of Indigenous peoples[6].

However, both in Brazil and the world, various epistemological perspectives have contributed to overcoming these unequal and Cartesian relationships with different social groups and also with Indigenous peoples. For many decades, social movements and Indigenous organizations have been making efforts to affirm democratization. Thus, they rescue assumptions inscribed in critical epistemology and popular education[7].

Despite the adverse history about the way science and research with Indigenous peoples and other popular classes have been developed over time, counter-hegemonic groups have also always existed in the scientific environment, especially in Latin America; many are anchored in the aforementioned references and other critical theoretical currents. Thus, several others epistemological strands, theories, and instruments were incorporated into research with Indigenous peoples to realize the active participation of subjects in the processes of knowledge production[8]. In this regard, one of the possible instruments to be adopted in scientific research carried out with Indigenous peoples is the conceptual map.

Although it is widely adopted by groups in different countries, its unusual within Indigenous health research conducted in Brazil. The research that has incorporated it is more linked to the teaching processes[4]. Therefore, we propose to conduct a study using the conceptual map, which, in this article, will be presented in the form of an experience report.

OBJECTIVES

To discuss the applicability of the conceptual map and its underlying theoretical anchors and analyze the challenges and potentialities of this method concerning the participation of Indigenous peoples.

METHODS

The purpose of the experience report is to describe a lived experience that can contribute to knowledge construction in the area of expertise. In this line, this article reports the experience of using the conceptual map as a data collection instrument in research in the field of Indigenous health.

The writing of the study report followed the COREQ (consolidated criteria for qualitative research reports) roadmap, which is a checklist of 32 specific items to describe qualitative studies, excluding generic criteria that apply to all types of research. This checklist is comprehensive and covers all components that must be described.

This research, approved by the National Research Ethics Commission (CONEP), with opinion number 3,100,358, was entitled "Strengthening the primary health care system of Indigenous adolescents in Brazil: integrating community health agents in the school environment." It was funded by the Medical Research Council (MRC) and the Research Support Foundation of the Federal District (FAP-DF) through International Cooperation established between Brazil and the United Kingdom. Brazil was represented by the *Universidade do Estado do Mato Grosso do Sul* and *Universidade de Brasília*; and the United Kingdom, by Kings College London.

The recent guidelines of the Medical Research Council (MRC) inform that, for the evaluation of a process of complex interventions, it is essential to understand: what works, under what conditions, and for whom. In addition, it is necessary to identify the mechanisms of change that explain how the intervention can lead to a positive result[9]. It was, precisely, the guiding thread of the study, carried out at the *Sidrolândia* Base Center in the municipality of *Sidrolândia*, State of Mato Grosso do Sul (MS), Brazil. This Base Center serves the indigenous population of two municipalities: *Sidrolândia* and *Dois Irmãos do Buriti*.

The survey began in April 2018, after the application of a specific instrument to assess whether participants were ready. The participants were indigenous Guarani-Terena people, and the data collection was carried out in the second half of 2019, with the construction of the conceptual map. The participants of the study were separated into two groups: a group with 15 adults (Indigenous leaders, teachers, health professionals, and parents) and another with 40 students, entitled "adult group" and "adolescent group," respectively. The conceptual mapping followed the steps suggested by Trochim[10].

The guiding questions for the first group were: "To develop the health of young people in the village and at school, it is necessary that…" and "to incorporate the Indigenous health agent in the school, it is necessary…". The following questions were presented to the group of adolescents: "To be happy, it is important…" and "to have a healthy body, it is necessary…".

In the workshops, there were a moderator o guide the discussions; after the brainstorming, the classification of the statements was systematized, culminating in the construction of themes. Finally, the sentences were hierarchized and classified by each participant. Therefore, the focus of these workshops was to generate statements related to the objectives of the intervention; order the statements into categories based on similarity, and finally classify each statement according to importance and feasibility.

RESULTS

The results of the experiment were divided into two sections: the first deals with the challenges in the process of methodological construction and epistemic debates in the development of the research; the second section discusses the theoretical aspects of the conceptual map.

Epistemological challenges in the development of research with Indigenous peoples

The epistemological and cultural challenges revealed in the development of the research are not restricted to the relations between Indigenous and non-Indigenous peoples. It can be stated because all the social actors involved are immersed in different cultures, with different trajectories, their own social and political roles, in addition to the entire history of each institution, country, and people, whose expressions emerge very forcefully in the course of a scientific work.

The epistemological tensions arising from the historical past and how science has reproduced itself cannot be disregarded in an initiative such as the one that this research enterprise meant. However, it is necessary to keep in mind the complexity that involves these processes because, in the present research, there were symbolically four peoples, four geographical regions, four institutions, and possibly four expectations.

Initially, the research conducted the pilot application of the proposed method for data collection using the Concept System software, socialized by King's College London. The experience of the instrument showed potentialities and signaled characteristics inscribed in the literature, such as the possibility of providing the immersion of themes, situations, and conceptions from the participants, as well as the feasibility of listing priorities and outlining action hotspots aligned with the perceptions emanated.

The purpose of the Concept System software is to process data to understand how groups think, using a quantitative and qualitative methodology, focusing on solving group problems. It produces visual maps, generates reports, provides strategic visibility, and supports the planning and evaluation of group activities.

The experience revealed the need to develop methodological adjustments for its use with Indigenous peoples, in view of cultural characteristics, particularities of conceptions, modes of existence and Indigenous worldview, elements that signaled possible obstacles to the requirements previously foreseen in the aforementioned collection method.

In addition, other uncertainties were identified as potential challenges in the application of the instrument in the prescribed manner, such as some concepts implicit in guiding questions that could be dissonant with Indigenous conceptions. It applies above all to the conception of health, which, in the case of Indigenous peoples, is much more holistic and inseparable from relations with the territory, ancestry, nature, spirituality, worldview, and all other elements inseparable from the body of the material and immaterial symbolic entities of the environment, as understood from the perspective of modern reason.

The conception of adolescence also seems to constitute a kind of conceptual impediment since, although it is a classic variable from the epidemiological point of view, it presents a diversity of conceptions in terms of social markers, such as class, ethnic group, gender, and the specific historical context. Therefore, it is necessary to identify health risks from a non-Indigenous perspective. In addition, "adolescence" does not seem to be a concept that finds symbolic significance among most Indigenous peoples since the stages of life and rites of passage experienced by them do not have the same meanings that they have for non-Indigenous society.

These concerns allowed us to reflect and improve the instrument to make it adaptable to the sociocultural reality of the indigenous peoples participating in the research and, above

all, to enable the effective participation of the subjects in the collective construction of knowledge. Thus, the purpose was to contemplate closer the sociocultural diversities and promote of the participation of the respective indigenous peoples and to provide the expected results regarding the construction of effective solutions capable of promoting the health of Indigenous adolescents through the inclusion of Indigenous Health Agents (AIS) in schools.

Theoretical aspects of the conceptual map

The implementation of health and education programs requires an initial concept. It can refer to ideas, thoughts, and reflections that take shape as goals and objectives. The research methodology starts from qualitative data, obtained in a participatory way, which, when worked with the group quantitatively and fed into the software, will result in a conceptual mapping. This mapping represents how a specific group or society "sees" the topic under study[10].

This instrument uses data collection from a group through an induced and structured process, which allows the extraction of ideas from the participants and the application of quantitative analytical tools on these subjective data. The categorization and prioritization of the participants' ideas and points of view allow the decision-making and elaboration of appropriate methodologies so that the needs of that specific population are met[10].

This mapping modality results from a mixed, qualiquantitative methodology, insofar as the subjective data obtained from the participants are treated quantitatively, used to support decision-making. Such a research approach is called "participatory research," has the potential to promote the engagement and collaboration of participants and allows the production of an instrument based on the perception of the group that will receive the intervention. It means that the conceptual map produced will represent the ideas and suggestions of actions elected as more relevant and feasible by those individuals.

The action methodology must be based on the intersection of these two values, that is, on the topics considered as the most relevant and most viable. With this methodology, it will be possible to increase the chances of success of health promotion actions since they are elaborated with the community and for the specific community. In other words, these actions are outlined and customized within what the group/society itself has identified as fundamental.

The step-by-step elaboration of the conceptual map consists of the stages described in Chart 1[10].

After the methodological adjustments, the research instrument was applied, and the result was the construction of a conceptual map, elaborated in line with the sociocultural context and Primary Health Care. It can instrumentalize an implementation panel to be designed to help interpret the findings, suggesting the best way to maximize potential synergies between the Base Center, school and researchers.

Chart 1 - Step by step of the elaboration of the conceptual map

Stage	Technique	Description
Stage 1	Preparation, brainstorm, and evaluation	Preparation begins by choosing a mediator who will work with a specific group and decide what will be the focus or theme to conceptualize. The logistical issues of the participants, number of participants in the initial group, homogeneity of the population, and sampling are explored by the researchers, among other points.
		The brainstorm is done at the beginning of the meeting to list topics of interest, organize and manage the ideas and even try to predict the subsequent results, that is, what may come as a speech in the next stages.
		Evaluation is necessary so that researchers can identify what information is most useful. The mediator usually asks participants how important the issues raised are, or how much they consider them relevant on a scale.
Stage 2	Data generation (speech)	People are encouraged to generate various comments on the item categories raised in the brainstorming. Participants are always encouraged to ask questions about terms. Each participant can write something and put it in an urn, on posters, or write on the computer. They can comment anonymously. After the group generates several comments, a meeting is held for reading and discussion so that the participants will evaluate what was created by the group.
Stage 3	Structuring of discourses	What has been written and verbalized needs to be related to the topics listed and organized. This task constitutes the conceptual domain. What was generated through the brainstorming is separated into cards, and the generated speeches are docked and interrelated by the participants. Each participant can classify the same category several times, and the moderator can advise on doubts regarding the process. Thus, sets of themes and lines that interconnect with speeches begin to be created.
Stage 4	Representation of speeches	There are three steps to construct the conceptual domain representation: a) location in dot map format. Similar discourses should be closer to each other; B) grouping, that is, the formation of categories of the original set; c) construction of maps by classification and categories. The mapping process is multidimensional, non-dimensional, and two-dimensional, with scaling and similarity matrix.
Stage 5	Interpretation of maps	There is a sequence to interpret the maps: a) list of discourses – the original list of brainstorming, each identified with a number; b) list of categories – a list of the grouped speeches; c) map of dots - map of numbered dots that shows the multidimensional speeches; d) map of categories - it shows speeches that have been grouped; e) map of dots classification – the map of numbered dots with the average ratings of the overlapping speeches; f) map of categories classification – the map of cluster with average ratings of cluster overlap.
Stage 6	Use of maps	The group discusses the conceptual map to plan local public policies, noting the barriers and whether they can use, in the results, facilitating aspects raised by the group of participants. A task force can be created to plan priorities in policy management. The concept map is also extremely useful in evaluating contexts.

This hierarchical diagram made it possible to identify health problems, including the mental health field, increasing the efficiency and effectiveness of care delivery. It also proved to be applicable for the school, as it provided the development of a systemic intervention with community agents of Indigenous health, constituting itself a key component that favored a joint intervention between the education system and the health system.

The epistemological and theoretical potentialities and perspectives of the conceptual map, in line with its underlying theoretical anchors, contribute to the development of participatory processes of joint learning and development of the ability to critically analyze reality.

The concept map presented evidence of how and where to take advantage of the benefits of the existing Indigenous Health Care Subsystem. Thus, it allowed the identification of areas of need and generated a profile of the Indigenous youth of that community, which favors adolescents, families, schools, and the health subsystem. This instrument also promoted a more significant interface between the school and the Center, which led to increased awareness of the importance of health promotion.

Study limitations

The limitations of this research focused on some cultural differences, not only with the indigenous population but also among researchers, requiring constant adjustment. There was also a limitation of literature related to the use of the conceptual map in health research, unlike what occurs in the area of education, where it is widely used.

Contributions to the fields of nursing, health, or public policy

this research contributes to health since the application of the conceptual map as a data collection tool proved to be assertive in the construction of knowledge. In the academic context, given its epistemological and theoretical bases, it presents itself as a possibility for conducting new research in undergraduate and graduate courses, both in Nursing and Public Health.

FINAL CONSIDERATIONS

The article addressed the conceptual maps and their epistemological and theoretical bases through the experience sharing. Observing these bases and reflecting on the present study, it is relevant to note that every research instrument is inseparable from the epistemic bases that underlie and guide the respective scientific research. It means that a study cannot analyses an instrument separately since its potentialities and limits will depend both on its theoretical assumptions and the existing conceptions and relationships around the production of knowledge.

Undoubtedly, the tool provided the identification of factors that influence the implementation of a health promotion action and the development of conceptual models, in addition to communication and collaboration between the groups. Therefore, it is possible to say that the conceptual map theoretically composes a structured participatory methodology, which allows the collection of data and the collective construction of knowledge, provided that the cultural, epistemic, social, and political diversities of all the social actors involved are consider.

FUNDING

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