

# THE METHODOLOGICAL PATHS FOR THE STUDY OF SANITARY SURVEILLANCE

*Os caminhos metodológicos para o estudo da vigilância  
sanitária*

*Los caminos metodológicos para el estudio de la vigilancia  
sanitaria*

Perspectives and Controversies

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## ABSTRACT

**Objective:** *The aim is to assess the appropriateness of using quantitative and qualitative approaches to analyzing and understanding the sanitary surveillance object in its relation to epidemiology.* **Data Synthesis:** *After a brief background on the relationship between epidemiology and social sciences, and between quantitative and qualitative methods, the study analyzes characteristics of the sanitary surveillance object that may assist the understanding of its nature and, therefore, of the most appropriate methodological approaches to its analysis. The characteristics identified here – namely, complexity of health/disease process, concept of risk, performance in promotion and protection levels, sanitary surveillance management model, availability of information, and relationship with epidemiology – express quantitative and qualitative aspects of equal importance to the knowledge of this issue.* **Conclusion:** *The combination or interaction of quantitative and qualitative approaches can be considered, in the case of sanitary surveillance, as a vital requisite for the apprehension of this object in its entirety.*

**Descriptors:** *Health Surveillance; Methods; Research.*

## RESUMO

**Objetivo:** *Busca-se avaliar a pertinência da utilização de abordagens quantitativa e qualitativa para a análise e compreensão do objeto vigilância sanitária em sua relação com a epidemiologia.* **Síntese dos dados:** *Após uma breve contextualização sobre a relação entre epidemiologia e Ciências Sociais, bem como, entre os métodos quantitativo e qualitativo, são analisadas características do objeto vigilância sanitária que podem apoiar a compreensão de sua natureza e, portanto, das abordagens metodológicas mais adequadas para sua análise. As características do objeto aqui identificadas – a saber, complexidade do processo saúde/doença; conceito de risco; atuação nos níveis de promoção e proteção; modelo de gestão da vigilância sanitária; disponibilidade de informações; e relação com a epidemiologia – expressam aspectos quantitativos e qualitativos de igual importância para o seu conhecimento.* **Conclusão:** *A combinação ou interação das abordagens quantitativa e qualitativa pode ser considerada, no caso da vigilância sanitária, um requisito imprescindível para a apreensão do objeto em sua totalidade.*

**Descritores:** *Vigilância Sanitária; Métodos; Pesquisa.*

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## RESUMEN

**Objetivos:** Se trata de evaluar la pertinencia de la utilización de enfoques cuantitativos y cualitativos para el análisis y comprensión del objeto de la vigilancia sanitaria con respecto a su relación con la epidemiología. **Síntesis de los datos:** Después de una breve contextualización sobre la relación entre la epidemiología y las Ciencias Sociales, así como entre los métodos cuantitativos y cualitativos, se analizan las características del objeto de la vigilancia sanitaria que pueden apoyar la comprensión de su naturaleza y, por lo tanto, los enfoques metodológicos más adecuados para el análisis. Las características del objeto que se identifican aquí - es decir, la complejidad del proceso de la salud/enfermedad; el concepto de riesgo; los niveles de rendimiento en la promoción y protección; el modelo de gestión de la vigilancia sanitaria; la disponibilidad de informaciones y la relación con la epidemiología - expresan aspectos cuantitativos y cualitativos de igual importancia para su conocimiento. **Conclusión:** La combinación o interacción de los enfoques cuantitativos y cualitativos se puede considerar, en el caso de la vigilancia sanitaria, un requisito esencial para la aprehensión del objeto en su totalidad.

**Descriptores:** Vigilancia Sanitaria; Métodos; Investigación.

## INTRODUCTION

Sanitary surveillance is one of the oldest practices of public health. In Brazil, its scope within *Sistema Único de Saúde- SUS* (Unified Health System) is defined in Law 8,080, of September 19, 1990<sup>(1)</sup> as a set of actions capable of preventing and intervening in health risks and health problems arising from the environment, the production and circulation of goods and services of interest to health. Under this definition, it includes the control of consumer goods and services that relate directly or indirectly to health.

An important feature of sanitary surveillance that can be inferred from this legal definition is the extent of their fields of action. Essentially preventive in nature, this comprises all stages of production of goods and provision of services related to health. In turn, these steps, linked to the economic domain, require the use of a set of principles and rules of law alongside the technical and scientific knowledge to date on the related objects. This sets up sanitary surveillance as a field of legal intervention on the production of health and diseases, linked to a set of expertise<sup>(2)</sup>.

Besides representing a privileged space to promote and guarantee the right to health<sup>(2)</sup>, the sanitary surveillance activities also highlight historical problems still underway, which resulted in low approximation to the National Health Policy<sup>(3)</sup>. If, on one hand, these actions' liability of intervention on the health indicators is evident, on the other hand it is not always possible to quantify the degree

or intensity of such intervention. Thus, the measure of sanitary surveillance's performance, although aimed at improving health conditions, has not been assessed - being, therefore, lesser known - from the point of view of the traditional epidemiological indicators, such as mortality and morbidity<sup>(2)</sup>. This study aims to evaluate the appropriateness of the use of quantitative and qualitative approaches to the understanding and analysis of the sanitary surveillance object in its relation to epidemiology.

## DATA SYNTHESIS

### Methodological path

For the analysis of the object sanitary surveillance under the methodological point of view, a literature review on the topic was performed using the Virtual Health Library (VHL). This study was developed as a product of a PhD program in Social Policy at the University of Brasilia, to complete the discipline of Social Research Methodology. The intention was to bring together studies that presented the debate on quantitative and qualitative approaches and had the sanitary surveillance as their research subject.

It was initially observed a gap in the production of scientific knowledge about sanitary surveillance, already pointed out by other authors<sup>(3,4)</sup>. Through literature search in MEDLINE, LILACS and SciELO, using as descriptors the words 'sanitary surveillance', 'epidemiologic surveillance', 'environmental health' and 'worker health' it was found that in the three bases, the proportion of articles on the subject is inferior to the other components of health surveillance (Table I).

### The relationship between epidemiology and social sciences: convergences and divergences

Since its birth, in the nineteenth century, the epidemiology has been related to the quantitative approach, in view of its origins dating back to the distribution of morbidity and mortality in the population. This kind of approach has already revealed, to some degree, the relationship between poverty and disease processes<sup>(5)</sup>. The emergence of microbiology represented the first split between epidemiology and social determination, because the strictly biological explanation of the disease became dominant. This strengthened the use of mathematics - read compilation and analysis of data - in epidemiology during the twentieth century and promoted the so-called quantitative revolution in the field of knowledge<sup>(6)</sup>.

Addressing the causality, by one or multiple factors, the latter pushed by the growth of chronic-degenerative diseases, the epidemiology, being associated to Biology as its predominant explanation, has long been divorced

Table I - Distribution of the available production scientific on the components of health surveillance according to the databases (MEDLINE, LILACS and SciELO) in July 2012.

COMPONENT	DATABASES					
	MEDLINE		LILACS		SciELO	
	n	%	n	%	n	%
Environmental health	30,882	34.9	4,233	22.9	310	28.1
Worker health	51,178	57.8	5,420	29.3	310	28.1
Epidemiologic surveillance	5,360	6.1	5,970	32.3	290	26.3
Sanitary surveillance	1,107	1.3	2,877	15.6	194	17.6
TOTAL	88,527	100.0	18,500	100.0	1,104	100.0

from the disease's social determination, which used to be either ignored or assumed in the form of quantitative variables<sup>(7)</sup>. The evolution of the discipline until this period can be summarized into three stages<sup>(8)</sup>: (i) epidemiology of miasmas and pestilential constitution, related to pre-Pasteur theories from the first half of the nineteenth century, (ii) epidemiology of the transmission modes, which starts with the bacteriological era, from the late nineteenth century until the 1950s, and (iii) epidemiology of risk factors, developed until nowadays, in which chronic diseases are the main object of study.

Only from the second half of the twentieth century on, the social causation of health-disease process was resumed in Latin American countries, especially after the 1960s, in the branch called social (or critical) epidemiology, under the influence of political and social movements. This component sought to recover the notion of social causation of health-disease process from the perspective of historical materialism. Thus, the so-called historical-structural paradigm attempts to uncover relationships between: health-disease process and the social organization of health practices; health policy and needs of the accumulation process; and, overall, the State and health<sup>(9)</sup>.

However, despite the rescue of the social determinants of disease, the link between social sciences and epidemiology is surrounded by a series of theoretical and methodological difficulties<sup>(10,11,4)</sup>. The inclusion of social theories in epidemiology 'occurs through the appropriation of the terms in an ideological form, or by common sense, this happening not only at the time of reducing concepts into variables, but also in the incorporation of superficial and uncritical theoretical frameworks'<sup>(7)</sup>. The expansion of the object epidemiology has often meant a plain 'artificial juxtaposition of social sciences' methods and the epidemiology's<sup>(12)</sup>. However, the conceptual reformulation of epidemiology necessarily implies dialectic overcoming (deny and maintain) the methods traditionally used by it.

In summary, for their vital roles in the constitution of epidemiology, three disciplines shape its trajectory: Clinic,

Statistics and Sociology<sup>(12)</sup>. Along the way, there are signs of confrontation within the discipline, between quantitative and qualitative approaches<sup>(13,14)</sup>. It is important to know briefly the characteristics and possible uses of the two investigations, especially in the area of health.

### The qualitative and quantitative approaches

The modern science's model of scientific rationality was formed within the natural sciences since the scientific revolution of the sixteenth century and had its ideas condensed in Positivism, which became prevalent as philosophy and logic of science from the nineteenth century on. The new scientific rationality denies the rational - or scientific - feature to the forms of knowledge not guided by its epistemological principles and methodological rules. Hence, the separation between common sense and science and between nature and human being. The natural sciences have relied predominantly on quantitative methods as a tool to know the reality. The model of scientific rationality then prevailing was governed by the mechanistic determinism that assumes the ideas of order, stability in the world and mere repetition of the past in the future<sup>(15)</sup>. This assumption was extended to the study of communities from the belief that if it was possible to unveil the laws of nature, the same was possible regarding the laws of society<sup>(15)</sup>. In opposition to the dominant paradigm, the claim for an epistemological reference, proper for the Social Sciences, has emerged more recently. This demand has been founded in the very nature - and subjective - of social phenomena, not apprehensible by the objectivity of science. Thus, qualitative methods seek the meaning of relationships and human activities through fundamental approach and intimacy between subject and object<sup>(14)</sup>. In the health context, this corresponds to understand the meaning of individual and collective phenomena.

As time passes, the dichotomy of quantitative and qualitative methods is being overcome. With different basis and proposals, these two approaches present distinctions -

sometimes contradictions - on issues related to ontology, epistemology, axiology, rhetoric and methodology<sup>(16,17)</sup>. In spite of having different natures, 'from the methodological point of view, there is no contradiction, as there is no continuity between quantitative and qualitative research<sup>(14)</sup>. Beyond the common idea of complementation or supplementation between the two approaches, it is necessary to think about the interaction between them, whereas, from the operational point of view, both the collection and the analysis of data can be performed according to the two ways and in different combinations during all phases of the research project<sup>(18)</sup>.

Following this line of reasoning is that a combination of approaches has been considered a viable and fruitful alternative in the health field, particularly in epidemiology. The nature of the object determines the approach and thus the problem is not in theory nor in the methods. Thus, the instruments must be adapted to the understanding of the data and answer fundamental questions<sup>(14)</sup>. The interaction between approaches requires a dialogical effort from the part of the researcher to understand and explain the object in its multiple dimensions<sup>(20)</sup>. Regarding the sanitary surveillance, the very nature of the object requires different forms of research. The reflection should examine the reality as it presents itself: complex, heterogeneous, contradictory, seeking global understanding and apprehension of relations within the object, beyond its appearance<sup>(21)</sup>. The following description presents the characteristics of the object sanitary surveillance that can support the understanding of its nature and, therefore, the most appropriate methodological approaches for its analysis.

### **The object sanitary surveillance: an old (un)known**

The installed capacity in health research in Brazil is quite expressive. In 2004, research activities on health accounted for about one third of all research activity in the country. At the same time, several indicators suggest growth of research activities in public health in the country, such as the number of research groups and postgraduate programs in this area<sup>(22)</sup>. However, the troubled trajectory of sanitary surveillance in Brazil and the resulting aspects that make it up might be related to the mismatch between the time of institutionalization and the production of knowledge in this field. Despite being considered one of the founding practices of public health in Brazil, since the supervision of ports in colonial Brazil, sanitary surveillance still maintains a fledgling link with the National Health Policy. In general, the institutional weakness of the *Sistema Nacional de Vigilância Sanitária* (National Sanitary Surveillance System) affects the control of health risk and undermines the regulatory action of government, with negative repercussions on other sectors<sup>(3)</sup>.

Moreover, the specific characters of the object sanitary surveillance also contribute to distancing the actions and health services, as the close link to the economic and legal sectors, the relationship between the public and private sectors, and the need to operationalize the concept of health risk and transversality of their actions<sup>(23)</sup>. These specificities lead to different understandings, even proposing its separation from the concept of health surveillance, assuming that its core activity is more related to the control rather than to the surveillance itself<sup>(24)</sup>. Thus, the sanitary surveillance seems to have been on the fringes of the whole process of theoretical reflection occurred within epidemiology and public health.

The challenge of producing knowledge in this field therefore includes technical and political aspects that are intertwined. From the methodological point of view, additional issues must be taken into consideration in the approach of this object. Some of these methodological issues will be addressed briefly below and are highlighted because of their importance for understanding the object: the complexity of the health/disease process, the concept of risk, the performance in the levels of promotion and protection, the management model of sanitary surveillance, the availability of information, and the relationship with epidemiology.

*Complexity of the health-disease process:* although widely studied and classified in various ways and in its diverse dimensions, the health-disease process constitutes a complex phenomenon that involves the most various determination clippings: biological, economic, social, cultural, and psychological, among others. The very concept of health is quite varied and is classically associated to the occurrence of diseases, unfolding in various components<sup>(25)</sup>. Understanding the role of sanitary surveillance in this process corresponds to the attempt to separate this aspect in complex scenarios and outcomes determined by interventions of different natures. In the task of deepening this conceptual debate, projects related to the transformation of the population's health status should 'require (...) methods characterized by plurality of research and analysis techniques, providing a comprehensive understanding of the historical systems (...)'<sup>(25)</sup>.

*Measuring the concept of risk:* the sanitary monitoring subsystem, among other public administration entities, operates with the responsibility of regulating the health risk, an object too complex and of ambiguous character. In health, this concept is usually operationalized through probability. However, conceptions of economic, political and ideological nature derived from it, along with the different perceptions adopted on common sense by different social groups. The characterization and evaluation of this risk can be a difficult task when there is not an immediate



relationship between an injury and its cause. That occurs in most situations involving the onset of injury, especially, in the face of the new challenges posed by the process of rapid industrialization and urbanization of the country, coupled with the increasing globalization<sup>(3)</sup>.

*Performance in the levels of promotion and protection:* for acting essentially as health promotion and protection actions, despite its intervening role being more strongly recognized, sanitary surveillance has certain peculiarities. Thus, the measure of its performance, although aimed at the improvement of health conditions cannot always be expressed through traditional epidemiological indicators such as mortality and morbidity<sup>(26)</sup>. On the other hand, the indicators of health status with regard to products and services under sanitary surveillance are poorly systematized, being restricted to the report of events in which there was damage to the population's health, or to the description of irregularities identified in those goods and actions<sup>(27)</sup>.

*Management model of sanitary surveillance:* although sanitary surveillance activities in all three spheres represent a privileged space to guarantee the right to health, they also highlight historical problems still existing. Among them, the need for a more robust configuration of a system model that results in a better match between these instances, still fragile<sup>(3)</sup>. Also the historical conformation of these actions, traditionally based on monitoring actions, only recently incorporating the notion of guarantee to the social rights, led to a decoupling of sanitary surveillance from the health practices. Thus, while it is clear the response capacity of these actions on health indicators, it is not always possible to quantify its degree or intensity.

*Availability of information:* the collective effort to build the National Sanitary Surveillance System, still quite heterogeneous, did not respond to the implementation of a system to organize the information in the three levels of management. The *Sistema Nacional de Informação em Vigilância Sanitária* (National Information System for Sanitary Vigilance) is also under construction, with a long way to go before its actual deployment. This results in difficulties in obtaining the information needed to manage risks to public health, among other legal, strategic and social control.

*Relationship with epidemiology:* the epidemiological approach is still rarely used in sanitary surveillance, with differences, including the concept of risk in both fields. The effort to identify interfaces between the two surveillances failed as to an effective institutional articulation in all three spheres of management. In the theoretical field, sanitary surveillance did not even constitute a discipline itself, which would express the intersectoral character of its action, nor did proper use of instruments and tools available in the field of public health surveillance.

## CONCLUSIONS

The historical distancing of health practices and low utilization of the epidemiological approach rendered the visualization of the object sanitary surveillance in the field of health a complex task. However, the proximity between social sciences and epidemiology, as well as the possibility of combining quantitative and qualitative approaches, points paths for research in public health that must also be seized in the field of sanitary surveillance. Sanitary surveillance presents two methodological aspects that particularly require a combination of two approaches: the management model and the complexity of the health-disease process. Of technical and political, social and natural order, sometimes linear and sometimes nonlinear, these two aspects require a dialectic reflection that might express historical links contained in these dimensions. The qualitative methods are essential for this analysis since they seek to understand not the phenomenon itself, but its meaning, and this may contribute to the understanding of the political and institutional relations that underlie the approach of the health-disease process concerning the sanitary surveillance.

The third aspect identified is the poor organization of information, which, again, would require the use of a qualitative approach to its apprehension. Additionally, two other methodological aspects - the performance in the levels of promotion and protection, and the difficulty of measuring the health risk - prompt the search for alternatives to the objectification of these phenomena, given the importance of identifying the magnitude and evaluating the real contribution of sanitary surveillance activities in the health field. At the same time, it is important to know and use secondary data sources available in the health field, like large systems of health information, and enhance their use for sanitary surveillance. The quantitative approach, to compose large population profiles or macroeconomic and social indicators, can support the task of measuring the sanitary risk and the effects of sanitary surveillance actions on the population's health.

Thus, while the combination or interaction of quantitative and qualitative approaches is a promising possibility in certain areas of study, for sanitary surveillance this can be considered a requirement for the apprehension of the object in its entirety. The features identified here - namely, the complexity of the health/disease process, the concept of risk, the performance in the levels of promotion and protection, the management model of sanitary surveillance, the availability of information, and the relationship with epidemiology - express quantitative and qualitative aspects of equal importance to the reflection on the phenomena occurring within the sanitary surveillance. The combination of approaches is therefore relevant (and even necessary) for studies that propose to investigate this object in its essential characteristics and comprehensively.

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