Visualization of knowledge production on public health research work in Latin America and the Caribbean

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Introduction

Public health research has been defined as the scientific activity related to the interaction between health conditions and social responses to improve well-being (Frenk, et al, 1986). Indeed, while biomedical research refers to the study of health conditions and clinical research refers to the study of individual responses to such conditions, public health research refers to the conditions and responses to health status at the social level. This approach of public health research takes into account not only the objectives of research (conditions and responses) but also the different levels of analysis; that is, the individual and the population.

Public health research in developing countries is particularly important due to existing epidemiological transitions, scarce resources and increasing budget cuts among these countries (Londono and Frenk, 1997). This situation is worsen by external pressures related to the globalisation of the world economy, extreme social changes and political constraints. The challenge to promote public health research in developing countries was addressed in the Global Forum on Health Research that was organised by the World Health Organisation in 1999 (WHO, 1999). This situation continues as an important issue of discussion up to date (Lancet, 2004).

In the last two decades, multiple health care reforms have emerged in the Latin American and Caribbean regions (Gonzalez Garcia, 2001; Macías-Chapula, 2002). In these countries, new tools and managerial models have been developed and applied. Most health care researchers and managers in these countries however, are not aware of the results derived from public health research interventions, both at the national and international levels. No information exists regarding for example, public health research lines; benchmarking; visibility of research results; or impact on public health programmes. Clearly, less information exists on the relationship between public health research and interventions leading to social change and improvement of well-being.

Purpose

The purpose of this work is to present the preliminary results of a bibliometric research in progress on the production and visibility of public health research work in Latin America and the Caribbean (LAC) for the period 1980-2004. The final goal is to establish the basis for a scientific communication model in public health research in the above mentioned regions. It is hoped that this model will be used to improve existing public health research actions and decision making on public health policies among participating countries.

Method

A soft systems approach (Checkland and Scholes, 1990) was used to obtain a rich image of the perception of the existing situation regarding public health research in the LAC regions. This perception leads to the following questions: How much public health research has been conducted in the LAC regions for the last two decades? Are there any public health research lines identified in this period? Which are the leading countries and institutions in the field? Public health research results are visible both, nationally and internationally? Which is the influence of Spanish, English, and Portuguese languages in public health research? Which is the model of scientific communication that emerges from analysing public health research results? Is there a relationship between public health research results and social change/well-being?

In order to answer the above mentioned questions, a bibliometric analysis was planned to be conducted at three stages, covering the period 1980-2004. In the first stage the regional bibliographic database LILACS-SP (The Pan American Health Organisation's Latin American and Caribbean Literature on Public Health) was used in order to identify the production and regional visibility of public health research results. The second stage consisted in searching MEDLINE; and the third stage will incorporate a literature search in ISI's Web of Science. This approach allows for the identification of the production and the visibility of such production; that is, whether the production is only local, regional, or mainstream. Furthermore, at the third stage of analysis the worldwide research contribution of the LAC regions in the field of public health will be clearly identified. For the purpose of this presentation, only results derived from stages one and two will be described.

The literature search conducted for stages one and two, considered the use of public health controlled terms, as described by the US National Library of Medicine's Medical Subject Headings (MeSH) and its Spanish translation version of *Descriptores en Ciencias de la Salud* (DeCS). The use of this thesaurus allowed for the search of geographic regions and countries as a subject of content within published documents. This procedure leads to the elimination of overlaps and the identification of documents where more than one region or countries were described. No limitations to language check tags, nor type of documents was applied to each search strategy.

Subsets of records by country were then created and analysed using Microsoft Excel (2000) and Bibexcel (2001) in order to identify the following data from each country file: (1) Production distribution throughout the period of study; (2) Language of publication; (3) Subject content of documents; (4) Countries and leading institutions.

Main journals were analysed according to journal title and country of publication. When possible, the editorship or publishing institutions were also obtained from the source fields. The subject content analysis of records was conducted according to the structure of MeSH/DeCS thesaurus. Analysis of data retrieved from MEDLINE and LILACS-SP allowed for the comparison of scientific production of countries by distribution ranks, subject content, and local/regional visibility, accordingly. A preliminary pilot study was conducted in LILACS-SP (1980-2002) to explore the viability of this research (Macías-Chapula, 2003).

Results
A total of 34 countries publishing research results on public health were identified in LILACS-SP, and 26 in MEDLINE. The former database retrieved 100,883 records and the latter 29,751. Table 1 provides the rank distribution of those countries with major production in both databases.

Table 1. Public health research productivity of Latin and the Caribbean in LILACS-SP and MEDLINE

r	Countries	LILACS-SP	%	MEDLINE	%	Total
1	Brazil	43,336	42.96	9,516	31.99	52,852
2	Mexico	8,824	8.75	6,438	21.64	15,262
3	Chile	9,153	9.07	2,169	7.29	11,322
4	Argentina	8,405	8.33	2,010	6.76	10,415
5	Colombia	4,481	4.44	1,137	3.82	5,618
	Total	74,199	73.55	21,270	71.49	95,469

Five countries (Brazil, Mexico, Chile, Argentina, and Colombia) contributed with 73.08% of the total production in both databases. The results described below are based on these findings. Overall, the type of documents corresponded to journal articles (76.63%); other relevant documents included monographs (15.29%) and thesis (5.37%). Journal articles were mainly published in the following journals in descending order: *Revista de saúde pública (Brazil); Cuadernos de saúde pública (Brazil); Salud Pública de México (Mexico); Revista médica de Chile (Chile); Gaceta Médica de Mexico (Mexico); Revista chilena de pediatria (Chile); Boletín del Hosp. Inf. de Mex (Mexico).; Medicina de Buenos Aires (Argentina); Ginecologia y Obstetricia de México (Mexico); and*

Biomédica (Colombia). Fourteen different languages were used to publish 94,975 documents. Portuguese was the dominant language with 44.68%; followed by Spanish, 37.07% and English, 17.59%. Subject content was mainly related to the fields of *Risk Factors; Comparative Studies; Socioeconomic Factors; Prevalence; and Health Policy.*

Discussion
The production and visibility pattern of public health research results in Latin America and the Caribbean varied according to the database used. While LILACS-SP included more local and non-conventional literature in its database, MEDLINE reflected a highly academic and structured pattern of production. LILACS-SP was also more comprehensive in the inclusion of countries, while MEDLINE excluded most of Central American and Caribbean countries. Overall, leading countries were Brazil, Mexico, Chile, Argentina, and Colombia. Due to the high production of Brazil, the dominant languages were Portuguese and Spanish. The subject content found reflects the type of research lines conducted and visible in both databases throughout time.

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