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# Review of health research on indigenous populations in Latin America, 1995-2004

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## Abstract

**Objective.** To review health research conducted among indigenous populations in Latin America during the period 1995-2004. **Material and methods.** The search strategy was purposely broad to ensure the identification of all relevant studies indexed in the PubMed and Lilacs databases. **Results.** Six-hundred ninety citations were included. One hundred fifty-nine (23.0%) papers dealt with indigenous populations in Central America and 509 (73.8%) papers with South American populations. Three hundred two (43.8%) of the studies were quantitative, 39 (5.7%) qualitative, 259 (37.5%) mainly based on laboratory work and 24 (3.5%) dealt with policy analyses. The most common researched theme was human biology with 200 (29.0%) papers, followed by communicable diseases (150 papers, 21.7%). **Conclusions.** There is a special need for policy studies in the field of indigenous health. An increased commitment to resources and capacity building will be the real challenge for indigenous health research in the nearest future.

Key words: review; indigenous health; Latin America

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Revisión de la investigación en salud en poblaciones  
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## Resumen

**Objetivo.** Revisar la investigación en salud realizada en poblaciones indígenas de Latinoamérica, de 1995 a 2004. **Material y métodos.** La estrategia de búsqueda fue amplia para asegurar la identificación de todos aquellos estudios relevantes catalogados en las bases de datos PubMed y Lilacs. **Resultados.** Se incluyeron 690 citas; de ellas, 509 (73.8%) artículos trataron sobre poblaciones indígenas sudamericanas y 159 (23.0%) sobre poblaciones indígenas de Centroamérica. Trescientos dos (43.8%) de los estudios fueron cuantitativos, 39 (5.7%) cualitativos, 259 (37.5%) basados principalmente en trabajo de laboratorio y 24 (3.5%) trataron sobre análisis de políticas de salud. El tema de investigación más estudiado fue el de biología humana con 200 artículos (29.0%), seguido de enfermedades transmisibles (150 artículos, 21.7%). **Conclusiones.** Existe una necesidad especial de estudios de políticas de salud en el campo de la salud indígena. Un mayor compromiso de recursos y formación de capacidades son los grandes desafíos para la investigación de la salud indígena en un futuro próximo.

Palabras clave: revisión; salud indígena; Latinoamérica

In 1993, the United Nations proclaimed the International Decade of the World's Indigenous Peoples (1995-2004) with the objective of strengthening international cooperation for the solutions of problems faced by indigenous people in areas such as human rights, the environment, development, education and health.<sup>1</sup>

The same year, the Pan American Health Organization (PAHO) proposed a more careful consideration of the health and well being of indigenous peoples in the Americas. Following a consultation workshop held in Winnipeg, Canada, with the participation of representatives of indigenous populations and governments

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and others from 18 countries, recommendations were incorporated into a proposal, the Health of Indigenous Peoples Initiative.<sup>2</sup> This initiative aimed mainly to encourage countries to detect and monitor inequities based upon ethnicity and to put programs and processes into place. Along these years, different strategic directions have been formulated, the latest one for 2005-2007.<sup>3</sup> Recent reports about indigenous health in Latin America consider poverty, discrimination, lack of water and sanitation and inadequate access to health services as the main determinants of this population health. High mortality and morbidity rates in women and children related to reproductive health, malnutrition and infectious diseases (diarrhoea, acute respiratory infection, tuberculosis and malaria) are major health problems.<sup>4,5</sup>

Although progress has been made in raising awareness about inequities in health status and access to care, significant disparities between the health of indigenous peoples and that of the general population continue to exist, particularly in Latin America.<sup>6</sup> A recent review from the World Bank in five Latin American countries with the largest indigenous populations concluded that although indigenous people in the region have increased their political power since 1994, virtually no reduction in the proportion of indigenous people in poverty was achieved. Less access to basic health services and high rates of malnutrition among children were also observed.<sup>7</sup> Health research can assist not only in assessing why these differences persist and how to solve them but also in improving the health information of and for the indigenous people. The end of the Decade of the World's Indigenous People provides an appropriate time to examine and evaluate the focus of the research among indigenous populations of the region.

The aim of this paper is therefore to review health research on indigenous populations of Latin America during the period 1995-2004.

## Population

Although the term indigenous people in the Americas is widely used, that generalization encompasses more than 400 different ethnic groups, with different beliefs and different health practices. Based on the estimates and sources available, the indigenous population of the Americas is approximately 42 million. This represents around 6% of the total population of the region and slightly less than 10% of the population of Latin America and the Caribbean. Of these, approximately 80% live in Central America and the central Andes. The majority of indigenous people live in Mexico (12 million or 14% of the national population), Guatemala (5.3 million, or

66%), Peru (9.3 million or 47%), Bolivia (4.9 million or 71%) and Ecuador (4.1 million or 43%).<sup>8</sup>

Demographic estimates of indigenous populations, however, must be carefully handled. Both census criteria to define who is indigenous and dates diverge. Several additional problems have to be taken into consideration: there are people about whom there is simply no information at all and very little is known about the indigenous that live in urban areas. Numbers can also be modified because some isolated indigenous groups are now recognised or because some people start to claim their indigenous background.

## Material and methods

The search strategy was purposely broad to ensure the identification of all relevant studies. Searches were made via the PubMed and Lilacs electronic databases using the following terms: "Indian", "indigenous", "aboriginal", "native", "Amazon" and all the different countries of Latin America (18 countries). All published papers between 1995 and 2004 relating to health in indigenous populations in Latin America were included. Citations without abstracts and clinical case reports, corresponding to less than 5% of the citations, were eliminated. The abstract of all articles was independently examined by the two authors to ensure that inclusion and exclusion criteria were considered. Information on aboriginal identity, age-gender group, comparison group, geographic location of research, main research group and research topic was collected. Research topics were broadly divided into nine groups using a similar division as a previous review on indigenous health research in Canada:<sup>9</sup> human biology, communicable diseases, nutrition, non-communicable diseases, traditional medicine and history, physical environment, oral health, reproductive health and others.

## Results

After considering the inclusion and exclusion criteria, 690 citations generated by PubMed and Lilacs were included. The mean number of publications per year in this period was 69 (range 45-96), with a slight increase after 1997 (Table I). One hundred fifty-nine (23.0%) papers dealt with indigenous populations in Central America and 509 (73.8%) papers with South American populations; a further 22 (3.2%) papers included both regions. The country distribution of these papers is presented in Table II. Four hundred four (58.6%) of the papers had a national researcher or research group as the lead author, 126 (18.3%) from the United States of America and 116 (16.8%) papers were led by European

**Table I**  
**DISTRIBUTION OF PUBLISHED PAPERS ON INDIGENOUS**  
**HEALTH IN LATIN AMERICA BY YEAR**

<i>Year of publication</i>	<i>Frequency</i>	<i>Percent</i>
1995	45	6.5
1996	59	8.6
1997	46	6.7
1998	77	11.2
1999	68	9.9
2000	69	10.0
2001	96	13.9
2002	74	10.7
2003	84	12.2
2004	72	10.4
Total	690	100

**Table II**  
**DISTRIBUTION OF PUBLISHED PAPERS ON INDIGENOUS**  
**HEALTH IN LATIN AMERICA BY COUNTRY**

<i>Country</i>	<i>Frequency</i>	<i>Percent</i>
Argentina	43	6.2
Belize	3	0.4
Bolivia	33	4.8
Brazil	189	27.4
Chile	37	5.4
Colombia	38	5.5
Costa Rica	7	1.0
Ecuador	23	3.3
Guatemala	31	4.5
Guyana	3	0.4
Mexico	100	14.5
Nicaragua	4	0.6
Panama	12	1.7
Paraguay	14	2.0
Peru	49	7.1
Surinam	1	0.1
Venezuela	46	6.7
Central America (several countries included)	2	0.3
South America (several countries included)	33	4.8
Other combinations of more than one Latin American country	22	3.2
Total	690	100

researchers; the remaining 44 (6.3%) were from various other countries. Five hundred thirty six (77.7%) of the papers were published in English, 91 (13.2%) in Spanish, 59 (8.6%) in Portuguese and 4 (0.6%) in other languages. Three hundred sixty six (53.6%) papers

presented local studies, the remaining 324 (47.05%) national or international studies. Two hundred forty seven (35.8 %) studies compared the indigenous population with a non-indigenous population in the same country or internationally.

Three hundred two (43.87%) of the studies were quantitative, 39 (5.7%) qualitative, 259 (37.5%) mainly based on laboratory work and 24 (3.5%) dealt with policy analyses. The remaining 66 (9.6%) articles were review articles or used a mixed set of methods.

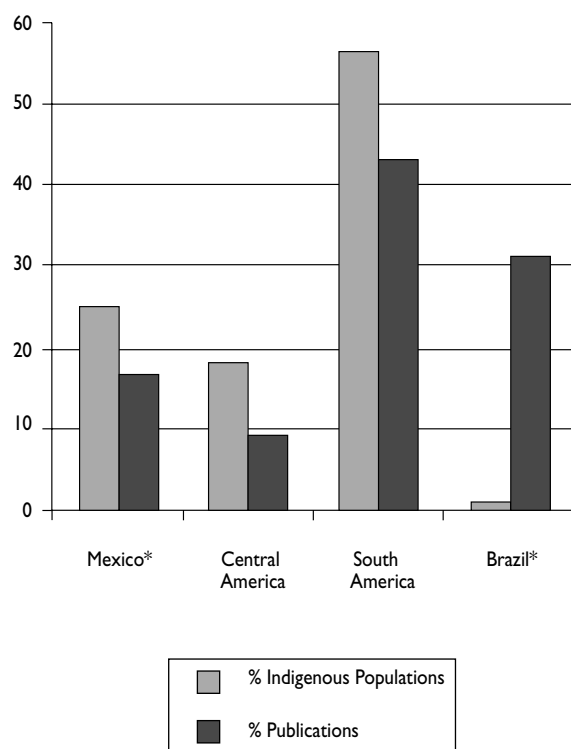
The most common researched theme was human biology with 200 (29.0%) papers, followed by communicable diseases (150 papers, 21.7%), traditional medicine and history (94 papers, 13.6%), and nutrition 64 (9.3%) (Table III). Forty three (6.2%) papers dealt especially with women's health although only 11 (1.6%) papers dealt with reproductive health among women. Sixty five (9.4%) papers presented research on the health of children with a focus on nutrition.

In 182 (91.0%) of the papers on human biology, genetics was studied. Among communicable diseases, human T-cell leukemia virus (HTLV) 1 and 2 were most commonly studied (36 papers, 24.0%), followed by hepatitis (21 papers, 14.0%) and tuberculosis (16 papers, 10.6%).

Figure I shows the relationship between the proportion of indigenous population by regions (Brazil and Mexico considered as regions) and the percentage of publications during the last decade. Only in Brazil was the proportion of publications higher compared to its share of indigenous population in Latin America.

**Table III**  
**CLASSIFICATION OF PUBLISHED ARTICLES ON INDIGENOUS**  
**HEALTH IN LATIN AMERICA BY RESEARCH TOPIC**

<i>Research topics</i>	<i>Frequency</i>	<i>Percent</i>
Human biology	200	29.0
Communicable diseases	150	21.7
Traditional medicine and history	94	13.6
Nutrition	64	9.3
Non-communicable diseases	60	8.7
Physical environment	36	5.2
Oral health	12	1.7
Reproductive health	11	1.6
Other	63	9.1
Total	690	100



\* Mexico and Brazil are considered as regions

**FIGURE I. COMPARISON OF PERCENTAGE OF PUBLICATIONS AND PROPORTION OF INDIGENOUS POPULATIONS BY REGION IN LATIN AMERICA**

## Conclusions

The purpose of this review was to have an understanding of what are the main issues regarding indigenous health that the researchers are focusing on. Only research that was reported in journals indexed in PubMed or Lilacs was considered. It is not, therefore, an exhaustive review and government and non-governmental sources, master and doctoral thesis were not included. The authors do also recognise that there are anthropological and social science journals, among others, not indexed in these databases that might deal with indigenous health. We think, however, that the majority of peer-reviewed research articles communicated to medical and public health practitioners are covered in this review.

The methodology used to study health problems were dominated by epidemiology and laboratory-based methods. Just 5.7% of the studies used qualita-

tive methods and 3.5% policy analysis. To discuss if these methodologies were best suited to elucidate the particular problems to be studied is out of the scope of this review. It is however likely that there is a special need for policy studies in the field of indigenous health.

Over one fourth of all studies dealt with genetics and very few focused on the unique health needs of women and children. It is also worthwhile to note that the most common studies on communicable diseases were those of HTLV 1 and 2, for which interest mostly lies in that it was the first retrovirus to be linked to human disease<sup>10</sup> rather than its public health impact. Articles exploring the socioeconomic determinants of health were few. These findings reflect a biomedical approach and the dominance of a reductionist use of epidemiology when applied to indigenous health research. A broader perspective is required within the disciplines of public health and epidemiology to identify the health needs of the indigenous populations as a basis for public health interventions meaningful for these groups.

The research failed to reflect the demographic composition of Latin America indigenous populations, with severe under-representation of indigenous groups from Mexico, Central and South America. The exception of Brazil might be explained by the strong research tradition in the Brazilian society and also by the commitment of national government and research groups to their indigenous populations. The implementation of special indigenous health districts all across the nation or the recent formation of the Committee on the Demography of Indigenous Peoples in the Brazilian Association for Population Studies and the Working Group on Indigenous Health in the Brazilian Association of Graduate Studies in Collective Health are examples of these efforts.<sup>11</sup> Lessons from the experiences of the Canadian Institute of Aboriginal People's Health<sup>12</sup> regarding capacity building and research translation should make international organizations and governments in Latin America reflect on the pathway of indigenous health research in the region. Their commitment to resources and training support will be the real challenges for indigenous health research in the nearest future.

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