

Leading countries in mental health research in Latin America and the Caribbean

Os países líderes em pesquisa em saúde mental na América Latina e Caribe

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Abstract

Objective: The prevalence and burden of mental disorders have been growing in Latin-American and the Caribbean countries and research is an important tool for changing this scenario. The objective of this paper is to describe the development of mental health research in Latin American and the Caribbean countries from 1995 to 2005. **Method:** The indicators of productivity were based on the ISI Essential Science Indicators database. We compared the number of papers and citations, as well as the number of citations per paper between 1995 and 2005 for each country ranked in the Essential Science Indicators. **Result:** Eleven Latin-American countries were ranked in the ISI database and six of them demonstrated a higher level of development in mental health research: Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela. Mexico produced the largest number of papers, while Brazil showed a larger number of citations per paper. **Conclusion:** Mental health research is still incipient in Latin American and the Caribbean countries, and many challenges remain to be overcome. Also, it is necessary to establish the research priorities, to allocate more funding, and to improve researchers training in research method and design.

Descriptors: Latin America; Mental health; Research; Science, technology and society; Psychiatry

Resumo

Objetivo: A prevalência e a carga dos transtornos mentais vêm crescendo nos países latino-americanos e a pesquisa tem sido considerada uma importante ferramenta para alterar este cenário. Este estudo descreve o desenvolvimento da pesquisa em saúde mental nos países latino-americanos e Caribe no período de 1995 a 2005. **Método:** Foram utilizados os indicadores de produtividade baseados no banco de dados "Essential Science Indicators" do ISI. Foram comparados o número total de artigos e citações e também o número de citações por artigo para cada um dos países classificados no Essential Science Indicators. **Resultados:** Foram encontrados 11 países latino-americanos e Caribe no ISI, e seis destes apresentaram um maior desenvolvimento em pesquisa em saúde mental: Argentina, Brasil, Chile, Colômbia, México e Venezuela. O México foi o que apresentou o maior número de artigos, enquanto o Brasil apresentou maior número de citações por artigo. **Conclusão:** A pesquisa em saúde mental nos países latino-americanos e Caribe ainda é incipiente e muitos desafios necessitam ser superados, como o estabelecimento de prioridades, maior alocação de fundos e aprimoramento do treinamento dos pesquisadores em metodologia e desenhos de pesquisa.

Descritores: América Latina; Saúde mental; Pesquisa; Ciência, tecnologia e sociedade; Psiquiatria

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Table 1 - Profile of mental health research and economic indicators of Latin American countries and the Caribbean

Latin American and the Caribbean countries (LAC)	Number of papers ⁽¹⁾	Number of citations ⁽¹⁾	Citation per paper ⁽¹⁾	Ranking among 80 countries in the world (number of papers) ⁽¹⁾	Population (million) ⁽²⁾	GDP per capita PPP (US\$) ⁽²⁾	GINI Index ⁽³⁾	Number of psychiatry & psychology papers 1995-2005 (per million people)	Research and development expenditures (1997-2002) (% of GDP) ⁽³⁾	Mental health expenditures (% of health budget) ⁽⁴⁾
Mexico	900	1,840	2.04	26 th	107.447	9,168	54.6	8.4	0.4	1.0
Brazil	586	3,131	5.34	29 th	186.112	7,790	59.3	3.1	1.0	2.5
Argentina	187	968	5.18	41 st	39.921	12,106	52.2	4.7	0.4	NA
Colombia	118	298	2.53	46 th	43.593	6,702	57.6	2.6	0.1	0.08
Chile	116	367	3.16	47 th	15.997	10,274	57.5	7.3	0.5	2.3
Venezuela	88	356	4.05	52 nd	25.730	4,919	49.1	3.4	0.4	#
Cuba	30	128	4.27	67 th	11.328	NA	NA	2.6	0.5	5
Jamaica	25	179	7.16	70 th	2.676	4,104	37.9	9.3	NA	5
Costa Rica	23	137	5.96	72 nd	4.075	9,606	46.5	5.6	0.4	8
Trinidad & Tobago	12	88	7.33	77 th	1.307	10,776	40.3	9.2	0.1	NA
Netherlands Antilles	7	86	12.29	79 th	16.227	NA	NA	0.7	NA	7.0

Sources: (1) Science Essential Indicators, ISI Thomson Scientific- January 1995 to June 2005 (accessed 09/09/2005); (2) CIA, The World Fact Book, 2005; (3) UNESCO, Human Development Indicators, 2005; (4) WHO, Mental Health Atlas Project, 2005. NA= not available; # = no budget allocation for mental health.

Introduction

Mental health research is an essential tool to approach the current gap between the growing burden of mental disorders and the scarcity of adequate psychiatric services in Latin American and the Caribbean countries (LAC).¹⁻⁶ The number of people with mental disorders in the Americas in 2010 is estimated to increase by more than 50% over 1990, mainly due to an increasing ageing population,^{3,7} though 60 to 80% of these people will have no access to mental health care.³ However, policy makers have not yet identified mental health research as a priority in a scenario where many cost-effective interventions are available and could readily be applied for reducing the burden of psychiatric morbidity.^{1-2,8-9}

High-income countries have been responsible for 94% of all mental health research produced whereas low and middle-income countries, with more than 85% of world population and a higher rate of mental disorders, have produced the remaining 6%.¹⁰ Latin America countries were reported to be underrepresented in most leading psychiatric journals, accounting for less than 1% of the psychiatric literature.¹¹

Despite this unfavorable context, the development of mental health research in Latin America has been changing in the last decade. The number of psychiatry and psychology publications in ISI indexed journals has raised from 10 to 50% in LAC countries, mainly in Brazil, Chile, Argentina and Colombia.¹² This growth can be explained, in part, by political and economical changes in these countries, such as the end of dictatorial regimes, the beginning of mental health policies implementation, the modest improvement of investment in science and technology and lately, the PAHO efforts in stimulating Member States to develop national programs of mental health.¹³

The objective of this paper is to compare the development of mental health research among Latin-American countries and discuss the priorities for future research.

Method

This study was approved by the Research Ethics Committee of the Federal University of Sao Paulo (number 0261/05).

The indicators of research productivity used to compare the development of mental health research among LAC countries were the total number of papers and citations, the number of citations by paper, and the ranking of countries in psychiatry and psychology category according to ISI Essential Science Indicators database from 1995 to 2005.

The ISI Essential Science Indicators database of Thomson Scientific allows ranking countries in all knowledge fields.¹⁴ This database provides the indicators described above. For this study, we considered data from January 1st, 1995 to June 30th, 2005.

Other economic indicators like Gross Domestic Product (GDP), GINI index (measure of income inequality in a society),¹⁵ mental health expenditures, and research and development expenditures were extracted from The World Fact Book,¹⁶ the Human Development Indicators,¹⁷ and the Mental Health Atlas Project 2005.⁴

Data analysis

The SPSS version 11.5 was used to analyze the results. Frequencies and percentages of the total number of papers and citations were compared between 1995 and 2005 for each country. Spearman coefficient (rho) was used to verify the correlation between the number of papers and GDP, GDP

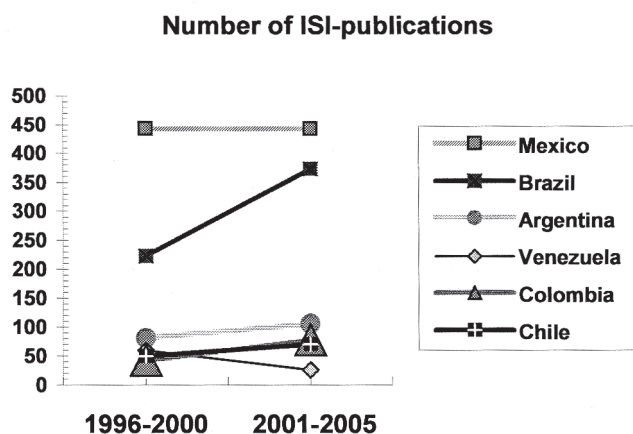


Figure 1 - Comparison of number of publications in ISI indexed journals by country in two periods: 1996 to 2000 and 2001 to 2005

per capita, population, and percentage of the research and development expenditures from GDP; and between the number of citations and GDP, GDP per capita, and percentage of the research and development expenditures from GDP. The significance level was 0.05.

Results

Of the 80 countries ranked for psychiatry and psychology, only eleven were from LAC countries. Mexico and Brazil accounted for 71% of the total number of publications from LAC countries. Mexico was ranked as the first LAC countries in number of papers, whereas Brazil had the highest average of citations per paper. Jamaica, Mexico, Trinidad Tobago, and Chile had a good performance as measured by the number of publications by million inhabitants (Table 1).

Comparisons of the number of mental health publications in ISI indexed journals among the six leading LAC countries between two periods (from 1996 to 2000 and from 2001 to 2005) revealed the following growth in the psychiatry and psychology category: Argentina 31% (81 to 106); Brazil 67% (223 to 373); Chile 42% (50 to 71), and Colombia 86% (42 to 108); while the numbers for Mexico remained stable (443 to 442), and in Venezuela there was a decrease of 56% (60 to 26) - Figure 1. An increase in the total number of citations was also observed for publications from Argentina (94 to 364), Brazil (430 to 1140), Colombia (20 to 184), Chile (33 to 163), Mexico (285 to 649), and Venezuela (48 to 64) - Figure 2. Conversely, other countries did not present a real improvement in the number of papers during the same period: Costa Rica (from 9 to 11), Cuba (from 13 to 18), Jamaica (from 13 to 7), Netherlands (from 5 to 1), and Trinidad and Tobago (from 6 to 6).

There were strong correlations between the number of papers and GDP (Spearman rho = 0.92; $p < 0.0001$), and between the number of papers and population (Spearman rho = 0.95; $p < 0.0001$). There was not a correlation between the number of papers and the percentage of research and development expenditures from GDP (Spearman rho = 0.29; $p = 0.22$), as well as between the number of papers and GDP per capita (Spearman rho = 0.17; $p = 0.48$). There was not a correlation between the number of citations and GDP per capita (Spearman rho = 0.78, $p = 0.42$), but there was a strong correlation between the number of citations and GDP (Spearman rho = 0.87,

$p < 0.0001$). The correlation calculated between the number of citations and the percentage of research and development expenditure from GDP was not significant at 0.05 level (Spearman rho = 0.47; $p = 0.10$), but in this case, the analysis of scatter plot graph showed a linear trend. Probably, the sample was too small to achieve the significance level.

Discussion

Regarding all indicators of productivity (the total number of paper and citations), it is plausible to suggest that Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela had the most competitive pattern of scientific production in mental health research in LAC countries. These leading countries accounted for 95% of the ISI-publications from Latin-American countries. Trinidad and Tobago, Jamaica and Cuba comprise a group of countries with moderate scientific production. The remaining LAC countries are not represented in the international literature probably due to the lack of mental health professionals, few specializations and graduate courses, and the absence of an infrastructure for mental health services and research.

It is noteworthy that Brazil showed a remarkable development in the extent and nature of publications. Changes in the international visibility of Brazilian publications in psychiatric journals have also been observed: for the period 1981-1995, only 13% of Brazilian publications were found in international journals, whereas for the period 1999-2003, this rate raised to 49.8%.¹⁸⁻²⁰ Additionally, a larger number of Brazilian psychiatric publications were accepted by higher impact journals (50% for impact > 2 and 10% for impact > 4).²¹

The growth of the scientific production in Brazil has been linked to a successful expansion of graduate programs and a rigorous evaluation system set up by the Ministry of Education (CAPES).²¹⁻²² This evaluation system is based on the analysis of the content and proposal of each program, the extent and distribution of articles produced by its supervisors, and the number of publications by students and researchers.²¹ In addition, the number of students in master's and doctorate programs has also increased remarkably, and, consequently, the resulting 481 theses

Total number of citations by country (ISI)

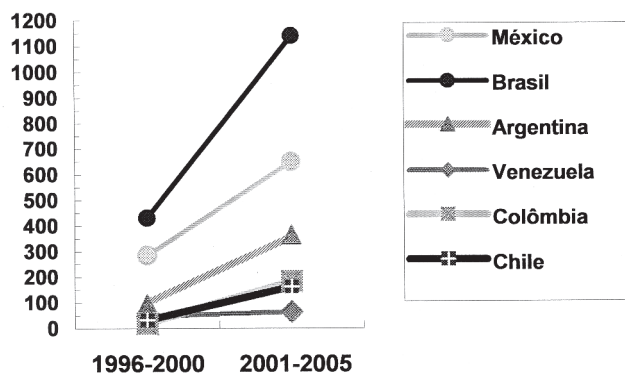


Figure 2 - Comparison of number of citations by country in two periods: 1996 to 2000 and 2001 to 2005

(186 doctoral dissertations and 295 Master's theses) produced in the mental health area between 1998 and 2002 have substantially contributed to the increase in publications.²³

However, a concentration of mental health research has been observed in the wealthiest geographic areas of Brazil, especially Sao Paulo (southeast), where the State of Sao Paulo funding agency (FAPESP) was responsible for 53.2% of the funding for mental health research in 2002.¹¹⁻¹² The Ministry of Health and the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq, Brazilian National Council for Scientific and Technological Development) have granted sporadic funding for specific mental research projects; however, not usually based on priorities and needs.^{17,21-23}

The mental health research in LAC countries is still incipient; the six most productive countries are among the wealthiest, have more trained mental health professionals and better availability of services. According to the WHO Atlas Project,⁴ even for the upper middle income countries like Argentina, Chile and Mexico the percentage of investment in mental health was less than 2.5% of the total health budget. Moreover, there is a paucity of mental health services research in LAC countries mainly due to a lack of adequate infrastructure and funding.²² Since 2002, many efforts have been made to establish a research Network of Mental Health Services in Latin America in order to promote a higher engagement of Latin American research centers in this field.²⁴ Another objective of this initiative is to stimulate projects based on cultural contexts and focused on mental health services needs and priorities.

Furthermore, a recent joint statement of journal editors and the WHO has set up recommendations to improve dissemination of mental health publications from low- and middle-income countries.⁶ The dissemination of mental health research in the region is cumbersome,^{11,25-27} and only three psychiatric journals are indexed in the ISI database: *Salud Mental* (Mexico), *Arquivos de Neuro-Psiquiatria* (Brazil) and *Revista Brasileira de Psiquiatria* (Brazil). The vast majority of scientific publications from these countries remain available only in regional databases.^{17,26} A successful initiative to enhance the visibility of LAC countries journals, especially for Brazil, was the launching of the Scientific Electronic Library Online (SciELO) in 1997, a continental database of scientific publications on health sciences developed by the Latin American and Caribbean Center on Health Sciences Information (BIREME) and the *Fundação de Amparo à Pesquisa do Estado de São Paulo* (FAPESP, State of São Paulo Research Foundation, Brazil).^{6,21} Moreover, SciELO has recently been expanded to other LAC countries such as Chile and Cuba.

Despite current growth, many challenges remain to be addressed in order to fulfill the LAC countries needs. There are several important constraints to the development of mental health research in the LAC countries: lack of mental health professionals, lack of trained researchers and research culture, poor quality of research, low manuscript submission rates, little participation of researchers in international editorial and advisory boards, lack of bibliographic access, low investment in research and, most importantly, lack of a mapping research priorities.^{1,4,6,11,25-28}

Therefore, these countries needs for improving mental health research are very heterogeneous, and therefore, recommendations to promote changes should be tailored accordingly.

Conclusions

Overall, studies focused on the burden of mental disorders and the efficacy of comprehensive mental health services should be promoted by expanding opportunities for training in methodology and research design. Stakeholders should be more aware of the impact of psychiatric morbidity in the global burden of diseases to allocate more funding for mental health.

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