

Public Health Chronicles

Brazil is now considered a rising economic power, rich in natural resources and innovative uses of agricultural products produced in its vast rural interior. One example, the use of ethanol as a major fuel source, has been hailed as a major achievement both economically and politically. Yet, as this article makes plain, this emergence is of very recent origins and was not accomplished without a major restructuring of its rural health system. In this installment of *Public Health Chronicles*, we learn of early efforts during World War II to provide health care to Brazil's rural population and to stabilize the rural economy. The effort to create an infrastructure for health was part of a larger effort to extract rubber and other needed wartime necessities and laid the groundwork for a more permanent health system.

David Rosner, MPH, PhD

Ronald H. Lauterstein Professor of Sociomedical Science and History
Columbia University, Mailman School of Public Health, New York, NY

LESSONS FROM A BRAZILIAN-U.S. COOPERATIVE HEALTH PROGRAM: THE SERVIÇO ESPECIAL DE SAÚDE PÚBLICA

AMELIA L. MAYBERRY, MHS
TIMOTHY D. BAKER, MD, MPH

While Brazil has seen enormous economic development in the last half of the 20th century and is now considered a middle-income country, this was not always the case. In 1942, Brazil had a per capita gross domestic product (GDP) that was similar to many African countries today. In constant 1990 Geary-Khamis international dollars, more than 20 African countries, including Nigeria, Ghana, and South Africa, had a higher per capita GDP in 2003 than Brazil did in 1940 (Table 1).¹ Furthermore, great disparities existed between the urban and rural areas in Brazil, as in many African countries today, with virtually no access to medical care or public health programs in rural areas. Thus, lessons learned from the highly successful Serviço Especial de Saúde Pública (SESP) rural comprehensive health service program in Brazil 70 years ago should have pertinence for programs in rural areas of low-income countries today.

The key lessons learned from the SESP, which were critical in the successful expansion and sustainability of the program and applicable to other programs, included the timely payment of health-care workers and personnel, the development of a strong *esprit de corps*, and a strong focus on personnel training. Additionally, a key component of the SESP was the cooperative effort and support from the Institute of Inter-American Affairs (IIAA) in the United States. This

cooperation paved the way for the program's success and sustainability and allowed control to be progressively turned over to the Brazilian Ministry of Health before SESP's transformation to the Fundação Serviço Especial de Saúde Pública (FSESP) in 1960. A recent

Table 1. Comparison of GDP per capita (in 1990 International Geary-Khamis dollars) in various countries^a

Country	Year	Population	Per capita GDP
Brazil	1940	41,114,000	1,250
Latin America			
Honduras	2008	7,639,000	2,323
Nicaragua	2008	5,786,000	1,674
Peru	2008	29,181,000	5,388
East Asia			
Cambodia	2008	14,242,000	2,482
Laos	2008	6,678,000	1,669
Philippines	2008	96,062,000	2,926
Sub-Saharan Africa			
Benin	2008	8,533,000	1,394
Ghana	2008	23,383,000	1,650
Lesotho	2008	2,128,000	1,952
Mozambique	2008	21,285,000	2,160
Namibia	2008	2,089,000	4,571
Nigeria	2008	146,255,000	1,524
Senegal	2008	13,343,000	1,456
South Africa	2008	48,783,000	4,793
Swaziland	2008	1,129,000	3,150

^aSource: Maddison A. Historical statistics for the world economy, 1-2003. Groningen (Netherlands): University of Groningen, Department of Economics; February 2007. Also available from: URL: http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_03-2007.xls [cited 2010 Apr 1].

GDP = gross domestic product

Lancet editorial highlighted the World Health Organization's (WHO's) recommendation that "donors need to increase their financial support of not only global health initiatives, but also comprehensive health systems."² The strong support, both organizationally and financially, of SESP by the U.S. provided the strength for this comprehensive Brazilian health system to grow and succeed, and these key lessons learned can provide insights for future program planning.

From the 1940s to the 1960s, the success of the SESP was widely known and praised.³ However, despite the program's major accomplishments, it remains virtually unknown in the U.S. health community today, and there are few English-language resources available that highlight it. A search conducted in PubMed and Google Scholar on June 1, 2009, found only five peer-reviewed, English-language articles on the SESP, none of which were complete accounts of the work of SESP, and only one of which was written within the last 20 years. However, the success of the international cooperative effort in the establishment, growth, and eventual integration of this program into the Brazilian Ministry of Health is an accomplishment from which there is much to learn.

BACKGROUND

During World War II (WWII), the U.S. established cooperative health programs with a number of Latin American countries. The SESP, which was established in July 1942, was the largest and most successful of the 18 cooperative health programs developed between the U.S. and Latin American countries. This program was developed under the joint sponsorship of the Brazilian Ministry of Health and the IIAA in 1942 to promote U.S. interests abroad.

Under the cooperative bilateral health agreements designed at a meeting in Rio de Janeiro, Brazil, in 1942, the host governments established a unit, usually within the Ministry of Health, referred to as a *servicio* (or *serviço* in Portuguese, in the case of Brazil). The concept of a *servicio* as an autonomous part of a ministry to work with bilateral assistance programs might have applications to the current concept of public-private partnerships.⁴ While most of the *servicios* were entirely U.S.-led, the *servicio* in Brazil was unique in that it was a true joint collaboration, with authorization required from both the American (i.e., IIAA, a predecessor to the U.S. Agency for International Development [USAID]) and Brazilian (i.e., Ministry of Health) counterparts in the program.⁵

Brazil was particularly important strategically for the U.S. war effort, providing access to vital raw mate-

rials such as natural rubber in the Amazon and iron ore, optical quartz, and mica in Minas Gerais. Furthermore, it was essential to prevent Germany from establishing a base in southern Brazil, with its strong German heritage. Doing so would require improving health conditions and implementing malaria-control programs for the labor force and American soldiers stationed in Brazil.

With the end of WWII in 1945, the SESP's objectives shifted to concentrate on the role of strengthening health facilities in the promotion of economic development, particularly in the rural, underserved hinterlands of Brazil.^{4,6,7} This objective fit well with both the American interest in foreign aid for developing countries around the world under the Point IV Program, as well as with the Brazilian objectives of developing its considerable resources in the extensive rural areas of the country.⁸

After WWII, the program's basic purpose was to protect and promote the health of populations of small communities. The programs included maternal and child health, adolescent and adult health, dental health, water systems, privies, sewer systems, improvement of habitations for the control of Chagas disease, epidemic intelligence, and collection of statistical information. SESP also developed training programs for auxiliary and professional personnel, as well as a nursing school and special training programs for sanitary engineers and sanitarians. Small rural hospitals and a research institute were constructed, and health units in 374 *municípios* (or municipal districts within the country's 26 states) that covered a population of almost 12 million people were established.⁹

Initially, the overall budget for all SESP activities was primarily funded by the IIAA, with \$3 from the IIAA for every \$1 from the Brazilian government. This budget quickly shifted to contributions of only \$1 from the IIAA for every \$3 from the Brazilian government by 1949, with financial contributions of 40 million *crúzeiros* (equal to \$2 million in 1949 U.S. dollars) from the Brazilian Ministry of Health and a little more than \$600,000 (in 1949 U.S. dollars) from the IIAA, for an overall annual budget of more than \$2.6 million (in 1949 U.S. dollars).³ By 1959, the financial contributions to the program by the U.S. were symbolic, with the majority of the SESP budget financed by Brazil.⁹

This cooperative program followed groundbreaking work in tropical medicine and disease-control efforts in Brazil by the Rockefeller Foundation and Brazilians such as Carlos Chagas and Oswaldo Cruz at the turn of the 20th century. However, the unique aspect of the SESP's cooperative work was its focus on primary

health care and establishment of curative and preventative facilities.

GENERAL PROGRAM ACHIEVEMENTS

The SESP's first area of concentration in 1942 was Brazil's vast Amazon basin. By the end of 1947, 11 health centers (including one hospital), 10 doctors' residences, three public water supplies, and five drainage systems had been constructed.¹⁰⁻¹² The Amazon program was followed by the Minas Gerais program in the resource-rich Rio Doce Valley in 1943. The Northeast and Bahia had programs established by 1949. Combined, these programs covered 45% of the national territory and served millions of Brazilians.¹³

One of the program's initial goals was to collect and ship native rubber from Amazonia to the U.S., and a plan was developed to bring migrant workers from the impoverished Northeast region of Brazil to Amazonia. The SESP played a major role in conducting health screenings and immunizing these 50,000 migrants. An additional goal was combating malaria in both Amazonia and the Rio Doce Valley through distribution of the drug Atabrine.

THE FIRST DECADE, 1942-1957

The first 10 years of the SESP was a period of remarkable development and change. The staffing, which was primarily North American in 1943, was essentially all Brazilian by 1951. A major sustainable and long-lasting effort of the SESP was the construction of health units, small hospitals, and water supply systems throughout Brazil. The health units built by the SESP included health posts, health centers, and health centers with beds. The most essential component of the early SESP program (and also throughout its lifetime) to support these health units was personnel training and development of the concept of teamwork and *esprit de corps*.⁴

One area of importance and relevance to today's health program development was the establishment of SESP's public-private partnerships and collaborations.⁴ The program was linked with the national leprosy service and the malaria service in Amazonia. The division of engineering joined with River Basin Development Projects to study the possibility of linking water supplies to river development. The SESP also worked with state projects to develop major water supply programs. Above all, these collaborations allowed for the orientation and development of the sanitary engineering profession in Brazil.

Within the first decade of the SESP, its achievements were measurable and remarkable. Programs

were established for maternal and child health; dental health; health promotion; and the control of transmissible diseases, including malaria, tuberculosis, leprosy, sexually transmitted diseases, schistosomiasis, and Chagas disease. Fourteen water supplies served 100,000 people, and 20 more systems were under construction. Forty-one health units, seven hospitals, and four sewage systems had been constructed throughout Brazil, and more than 1,700 health professionals and paraprofessionals were employed by the SESP. This number included 480 *visitadoras* (similar to community health workers) and hospital auxiliaries, 260 physicians, 70 engineers, and 130 nurses serving a population of more than four million people.^{14,15} The SESP also gave more than 200 of its personnel advanced training in the U.S. and assisted in the founding of 20 accredited schools of nursing by 1953.^{13,15}

1957 TO THE PRESENT

This rate of accomplishment was sustained for the next five decades, with the SESP continuing to construct new health facilities and train health-care professionals to provide health care to millions of Brazilians.⁹ The Figure shows the distribution of SESP health units throughout Brazil in 1987. These health units included

Figure. Distribution of Serviço Especial de Saúde Pública health units by region: Brazil, 1987^a



^aBastos NCB. SESP/FSESP: evolução histórica, 1942-1991. Recife (Brazil): Ministério da Saúde, Fundação Nacional de Saúde; 1996.

rural health posts, larger health centers, and health centers with beds and inpatient services. With more than 794 health units distributed in the four largest regions of the country, the SESP covered a wide range of demographic and geographic areas.⁹ Table 2 gives a detailed breakdown of the distribution of SESP health units. The South was the only region not included in the SESP program because it was largely urban.

THE FSESP—1960

In 1960, the SESP became the FSESP and came under the complete control of the Brazilian Ministry of Health.⁶ While the program was run entirely by the Brazilian Ministry of Health after this point, the cooperative efforts of the SESP and the IIAA provided a strong foundation for the future efforts of the FSESP. By becoming a more integrated component of the Ministry of Health and government, the FSESP had the opportunity to extend to additional Brazilian states; in the process, however, some of the program's independence was lost.⁸

Special programs

Research. From its earliest years, the SESP integrated research into its programs and had an amazing record of productivity, with 48 scientific studies, 33 technical research projects, and 32 operations research projects between 1942 and 1991.⁹ The research projects focused on diseases of importance in the areas in which the SESP worked, including malaria leishmaniasis and other tropical diseases. Additional studies were conducted on the effectiveness of dichlorodiphenyltrichloroethane (better known as DDT) and new antimalarial drugs in malaria control. The SESP established the Instituto Evandro Chagas in Belem, Brazil, which served as a reference center for studies in bacteriology, epidemiology, parasitology, virology, and pathology. The program also established a regional center for statistics for northern Brazil and a national center for primate studies. This research was an important part of the SESP's contribution to improving health in Brazil.

Training. A key component in the development of a strong public health program is health worker training. The SESP recruited key health officers for training

Table 2. Distribution of Serviço Especial de Saúde Pública health units in Brazil, by region and city, 1987^a

Region	Number of health units				Population served
	Total	Health posts	Health centers	Health centers with beds	
North	132	67	42	23	3,274,794
Rondônia	15	2	9	4	850,759
Amazonas	31	19	9	3	524,277
Roraima	4	2	1	1	16,536
Pará	82	44	23	15	1,882,634
Northeast	524	318	180	26	6,837,223
Maranhão	55	38	12	5	993,503
Piauí	38	17	20	1	593,340
Ceará	77	49	24	4	1,252,466
Rio Grande de Norte	64	52	8	4	296,625
Paraíba	30	14	11	5	327,311
Pernambuco	59	33	25	1	726,972
Alagoas	50	28	21	1	472,208
Sergipe	66	39	27	0	574,534
Bahia	85	48	32	5	1,600,264
Southeast	63	42	15	6	861,504
Minas Gerais	58	39	13	6	834,123
Rio de Janeiro	5	3	2	0	27,381
Central-West	75	39	33	3	544,861
Goiás	59	37	20	2	456,868
Mato Grosso	10	2	7	1	35,744
Mato Grosso do Sul	6	0	6	0	52,249
Total	794	466	270	58	11,517,794

^aSource: Maddison A. Historical statistics for the world economy, 1-2003. Groningen (Netherlands): University of Groningen, Department of Economics; February 2007. Also available from: URL: http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_03-2007.xls [cited 2010 Apr 1].

from the schools of public health at the University of Michigan, Yale University, University of North Carolina, Johns Hopkins University, and Harvard University. Other personnel were sent to schools of medicine, nursing, and engineering both abroad and within Brazil with the aid of SESP-sponsored fellowships and travel grants.^{4,9} In addition, a number of technical training programs in the fields of nursing, sanitary engineering, and public health were established in Brazil, and a number of courses were taught by SESP personnel to train lower-level technical workers. From 1942 to 1959 alone, 1,300 professionals were trained in the SESP program—more than 200 of them in the U.S.—and an additional 2,300 auxiliary paraprofessionals and *visitadoras* were also trained.⁶

Personnel

American personnel. More than 200 American health personnel worked in the SESP health program from its launch in 1942 until 1960. These included nurses, doctors, administrators, bacteriologists, entomologists, dentists, architects, hospital administrators, health educators, nutritionists, statisticians, parasitologists, anthropologists, and, possibly the most important, more than 60 engineers. The strong engineering program was one of the SESP's major accomplishments. An anthropologist named Kalvero Oberg also worked for the SESP. He and Dr. Reba Campbell, a psychiatrist and the wife of Gene Campbell, the U.S. chief of party working with the SESP, developed and described the concept of "culture shock." Thus, the SESP might be said to be responsible for developing an important modern anthropological concept used to orient U.S. professionals working in foreign countries.^{8,16}

The American personnel serving with the SESP came from varied backgrounds including the U.S. Public Health Service, the Rockefeller Foundation, state health departments, and universities. Many of the engineers went on to distinguished careers in research, administration, and teaching in the U.S. and elsewhere. In this way, their experience with the SESP benefited not only Brazil, but also their own future careers.

Brazilian personnel. By 1944, the SESP had developed the educational infrastructure to shift its training policy to promote training in Brazilian schools rather than abroad.¹⁷ This infrastructure created a strong, well-educated workforce with local training resources available and became one of the program's strongest and most successful components. In total, tens of thousands of Brazilians had worked for the SESP over the years, from cleaners and laborers to Dr. Marcolino Candau,

who became the second Director General of the WHO, and Dr. Paulo Antunes, who became the Dean of the School of Public Health in São Paulo.

The FSESP had more than 10,000 employees in 1986. Of these, 70% were working in Amazonia in northeast Brazil.¹⁷ One of the hallmarks of the FSESP has been an extensive use of paraprofessionals, whose output is enhanced by well-thought-out supervision and excellent teamwork. Throughout the program, a specific emphasis has been placed on maintaining timely payments to professional and paraprofessional health-care workers. This practice not only created a strong *esprit de corps*, but also produced a cadre of workers who formed a strong and stable base for the program.

The nursing program

The nurse-training program was another example of the SESP's efforts and focus on personnel and training. The nursing program was established within the SESP to produce nurse practitioners for SESP's programs, as well as to increase the number of skilled nurses in the country. In the early days of the SESP, American nurses acted as consultants in public health, nursing education, and hospital services. However, within the first decade of the SESP's existence, most of these responsibilities had been turned over to their Brazilian counterparts. Beginning with just one American nurse in 1942, the program quickly grew to 102 Brazilian nurses and five American nurses by 1953.¹³

The nursing division had links with several nursing schools to enhance the training of public health nurses to serve SESP programs, as well as to strengthen the profession within Brazil. By 1953, 15 students had received scholarships from the SESP to take basic nursing courses at schools in the U.S., including Johns Hopkins University and Washington University. Furthermore, during this time frame, 48 additional trainees were awarded fellowships and travel grants for post-graduate studies in nursing.¹³

Additional in-service training was another crucial element of the nursing education under the SESP. The in-service training comprised both shorter and longer programs, lasting from one week to three months, that trained almost 100 nurses between 1946 and 1953. The importance of SESP's cooperation with schools of nursing within Brazil was recognized early in its history, and financial support was given to existing and new institutions, including the School of Nursing of São Paulo and the Niteroi School of Nursing, providing a strong base for future training efforts.¹³

The *visitadora* program

Visitadoras, or community health workers, were an important component of the SESP from the very beginning. It was recognized early on that the preventive and health education components of primary health care could best be carried out by planned home visits rather than by sporadic patient visits to the health posts. *Visitadoras* provided immunizations and information on oral rehydration therapy, nutrition, pre- and post-natal care, well-baby checks, and growth monitoring. *Visitadoras* spent half of their time conducting home visits and the other half at health posts providing simple treatments and referrals. An article by Rice-Marquez et al. states, “The willingness of people to accept the preventive work of community health workers is often contingent on the people’s perception that immediate needs for curative services are also being met.”¹⁸

Candidates for the *visitadora* program were recruited from the community and had, as a prerequisite, six years of education; however, this level of education may be difficult to replicate in some poor countries. In the impoverished rural areas of Brazil, there was great competition for the *visitadora* positions. Once recruited, *visitadoras* had four months of training, mostly practical with some didactic teaching. Training focused on the areas of maternal health, communicable-disease control, infant and child health, community health education, nursing care, first aid, and environmental health and sanitation, with a required one-month internship. As measures of quality, approximately three-quarters of children received the full series of diphtheria, pertussis, and tetanus combination shots and three-quarters of pregnant women received a prenatal visit before the fifth month of pregnancy.¹⁸

Independent evaluation

In 1961, after the SESP became a permanent autonomous Brazilian agency within the Ministry of Health (the FSESP), the Johns Hopkins School of Hygiene and Public Health, under contract to the International Cooperation Administration (the predecessor to USAID), conducted an evaluation. As a result, recommendations were made for the FSESP to establish closer relationships with state departments of health and plan projects to provide demonstrable examples of successful local health programs.¹⁷ It was also suggested that, wherever possible, the FSESP should plan its projects in conjunction with economic development projects to maximize efficiency. Most of these suggestions were implemented by the FSESP.

Many of the key findings from the evaluation highlighted the timely payment of health-care workers and personnel, the development of a strong *esprit de corps*,

and a strong focus on personnel training. Key points from this evaluation included, but were not limited to the following:^{4,6}

1. “The value of the SESP experience is that it provides us with the opportunity to look at the operation of an international cooperative health program, which continued over [a] considerable length of time . . . surprisingly large dividends in co-operative effort resulting from relatively small United States dollar expenditure.”
2. “The single most important achievement of the SESP is its record of training public health personnel. . . . Improvements in public health could be made only if Brazilian personnel were trained and if administration and operation of the programs were the responsibility of Brazilians. It has substituted technical competence for political favoritism.”
3. “Equally far-reaching significance has been SESP’s contribution to the development of the professions of sanitary engineering, nursing, and dentistry.”
4. “Of special importance was the recognition that auxiliary personnel were necessary to the development of the program. . . . Personnel are often recruited locally and provide an important link between the health centers in the local community.”
5. “The *esprit de corps* among SESP personnel in their devotion to the SESP program is unique in Brazilian public service and would be outstanding in any country.”

CONCLUSIONS

Achieving the remarkable sustainability and growth of this program in a poor, mostly rural country was a major accomplishment. Effective linkages among local communities, centralized technical support, and international assistance were essential for the program’s success. The emphasis on a comprehensive health system rather than separate disease-control programs was a major factor in the program’s sustainability. Furthermore, the SESP’s emphasis on training was critical to the strength of the program and the development of Brazil’s health workforce.

Observers stated that, “SESP is a school.” The SESP’s consistency in paying workers adequate wages on time was a vital component to building program loyalty and developing the strong *esprit de corps* seen among SESP employees. These factors made it possible for the SESP to provide health care to Brazilians across large areas

of rural and sparsely populated regions and adapt to the wide range of demographic and geographic differences present in Brazil. Hopefully, global health planners will find elements of the SESP of value in creating programs in developing nations today.

Amelia Mayberry is a graduate of the Department of International Health, Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. She is currently a fellow at The Children's Investment Fund Foundation in London. Timothy Baker is a Professor Emeritus of the Department of International Health, Johns Hopkins Bloomberg School of Public Health.

Address correspondence to: Amelia L. Mayberry, MHS, The Children's Investment Fund Foundation, 7 Clifford St., London, UK W1S 2WE; tel. +44-0-207-121-9202; fax +44-0-207-440-5515; e-mail <amayberry@ciff.org>.

REFERENCES

- Maddison A. Historical statistics for the world economy, 1-2003. Groningen (Netherlands): University of Groningen, Department of Economics; February 2007. Also available from: URL: http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_03-2007.xls [cited 2010 Apr 1].
- Who runs global health? *Lancet* 2009; 373:2083.
- Brazil: men in white. *Time* magazine. 1948 Sep 13 [cited 2010 Feb 24]. Available from: URL: <http://www.time.com/time/magazine/article/0,9171,888477,00.html>
- Public Health Service, Bureau of State Services (US). 10 years of cooperative health programs in Latin America: an evaluation conducted by the U.S. Public Health Service for the Institute of Inter-American Affairs. Washington: USPHS; 1953.
- McKinzie RD. Oral history interview with Henry Van Zile Hyde (Director of IIAA Division of Health and Sanitation, 1950-52). 1975 Jul 16. Bethesda (MD): Harry S. Truman Library; 1975.
- The Johns Hopkins University. Brazil-United States cooperative health & sanitation program, 1942-1960. Washington: International Cooperation Administration; 1961.
- Ministério da Educação e Saúde. Boletim comemorativo do 10 aniversário do Serviço Especial de Saúde Pública. Rio de Janeiro (Brazil): Ministério da Educação e Saúde; 1952.
- DuBois C. "Culture shock" panel discussion. First Midwest Regional Meeting of the Institute of Internal Education; 1951 Nov 28; Chicago.
- Bastos NCB. SESP/FSESP: avaliação histórica, 1942-1991. Recife (Brazil): Ministério Saúde, Fundação Nacional de Saúde; 1996.
- Baity HG, Wagner EG, Ferreira ABG. Um plano de construção para de vale Amazônico 1945-1956. Belem (Brazil): Serviço Especial de Saúde Pública; 1948.
- Moraes N. Avaliação de um programa de profilaxia geral estudo de 18 cidades do interior da Amazonia. São Paulo (Brazil): Universidade; 1954.
- Ministério de Educação e Saúde, Serviço Especial de Saúde Pública. Levantamento referente ao agua e esgotos. Rio de Janeiro (Brazil): Ministério de Educação e Saúde; 1959.
- Institute for Inter-American Affairs/Serviço Especial de Saúde Pública. Report on nursing in the Brazil-United States cooperative public health service known as the Serviço Especial de Saúde Pública, 1942-1953. Rio de Janeiro (Brazil): IIAA; 1953.
- Fundação Serviço Especial de Saúde Pública. Relatório geral de 1962. Rio de Janeiro (Brazil): FSESP; 1963.
- Ministério de Educação e Saúde, Serviço Especial de Saúde Pública. 15 anos de cooperação Brasil—Estados Unidos no campo da Saúde Pública. Rio de Janeiro (Brazil): Ministério de Educação e Saúde; 1957 Jul 17.
- Paige RM, editor. Education for the intercultural experience. 2nd ed. Ann Arbor (MI): Intercultural Press; 1993.
- De Campos ALV. International health policies in Brazil: the Serviço Especial de Saúde Pública, 1942-1960 [dissertation]. Austin (Texas): University of Texas, Department of History; 1997.
- Rice-Marquez N, Baker TD, Fischer C. The community health worker: forty years of experience of an integrated primary rural health care system in Brazil. *J Rural Health* 1988;4:87-100.