

CHILD NUTRITION IN LATIN AMERICA (*Conclusion*)

## APPENDIX

A glance through the reports on nutritional disorders, dental caries, deficiency diseases, and milk consumption, as reflected in the *Boletín de la Oficina Sanitaria Panamericana* for the last 14 years (See especially the *Crónicas* or reviews on *Alimentación, Carencia, Puericultura, Leche*, and individual deficiency diseases; also, Moll's summary on "Natalidad, Mortalidad Infantil, y Mortalidad Puerperal en las Américas," *Bol.*, June 1930, p. 654) will give an idea of the child nutrition problem. Almost without exception, gastro-intestinal disorders are responsible for the greatest number of infant deaths under one or two years of age; the percentage varies from 11 to 80, but appears to average between 25 and 50. Examination of selected groups of school and pre-school children reveal mal-nutrition and avitaminosis of varying degrees in from 16.26 to 90%, and dental caries in from 20 to 92%, also in varying degree. The consumption of milk in all Latin American countries is admittedly too low, and this factor is considered to be of great importance in regard to the gastro-enteritis rate.

In considering the statistics below, summarized from the *Boletín*, it must be kept in mind that some of the percentages are based on studies of children in hospitals, clinics, or children's homes, and may not be representative of the whole child population of the country.\*

**Argentina.**—Aráoz Alfaro in 1931 attributed 80% of the infant deaths in Argentina to digestive and nutritional disorders, pointing out, however, that the percentage dropped to as low as one in some parts of Buenos Aires. Of 18,294 infant deaths from 1922-1926 in that city, 33.5% were due to digestive disorders; in 1940 the proportion had fallen to less than 20% (total infant deaths, 2,281; deaths from gastro-enteritis under two years of age, 518). During the same year, of 115,388 children examined in the maternal and child health centers (throughout the country) of the National Department of Health, 11,556 or 10% suffered from diseases of the digestive system. In Rosario, gastro-intestinal diseases were responsible for 52.1% of deaths of children from six to 12 months, 1900-1925; by 1931 the percentage had dropped to 18.8 of infant deaths. In Tucumán in 1922-26 the proportion was 37.3% of infant deaths. In Córdoba Province in 1937, the total number of infant deaths was 3,758, and of deaths from diarrhea-enteritis under two years, 1,247; in Santa Fe city there were 341 infant deaths, and 98 deaths (all ages) from diarrhea-enteritis.

Chaneles in 1932 reported that examinations of some 140,000 children in 1925 showed 70% with dental caries. Calmetto found 81% of caries in 50,000 school children in Buenos Aires Province in 1933-34, and reported that 17.5% came to school very poorly fed and that 3% had neither breakfast or lunch. Eseverri and Notti observed about 1937 that 60.8% of 1,000 Mendoza school children were underweight and 19.8% overweight.

Argentina's milk production was estimated at three billion liters in 1936 (250 liters per capita); the amount consumed directly was 600,000,000 lt (50 lt per

\* The term "infant deaths" refers to deaths 0-1 yr.; milk consumption figures are for fresh milk rather than condensed or powdered milk.

capita or 0.12 lt per capita per day), the rest being made into butter, etc. In Buenos Aires city, 787,271 liters were consumed daily (about 0.39 lt per capita), of which 300,000 were pasteurized. (See also *Bol.*, June 1935, p. 568, report on milk consumption of other Argentine cities.)

Deficiency and nutritional diseases reported in children in Argentina have included goiter (82.4% in school children in some provinces where the iodine content of food and water is low, especially Salta; others have reported 100% in some localities); urolithiasis (Barbuzza and Notti described 24 cases seen in Mendoza, 1918-1935; Repetto found four cases in 4,500 children in Buenos Aires; Oyuelo found four in 7,215; Macera and Messina, five among 25,138 cases 1911-19; Maidagan in Rosario saw nine cases in 12 years); and rickets (said to be rare; López Pondal has said that only isolated cases with light symptoms have come to his attention).

**Bolivia.**—It has been reported that 90% of the Bolivian population suffer from chronic avitaminosis. In Potosí in 1939 there were 971 infant deaths, and 85 deaths (all ages) from gastro-enteritis. Lara Quiroz about 1932 declared that rickets is rather common in middle class and miners' children of Potosí (attenuated form). In Cochabamba in 1930 and 1931 the amount of clinically evident rickets was low, and the cases seen were mostly from the city.

**Brasil.**—In Rio de Janeiro from 1903-1926, 40% of infant mortality was due to diarrhea-enteritis, and in 1937 and 1938 Fontenelle found the same percentage. In the same year, de Almeida and de Freitas attributed 27.6% of pre-school mortality to it. In Niterói, 1927-28, diarrhea-enteritis was responsible for 38% of infant deaths; in Manaus in 1938, for 50.3%. In Recife in 1940 there were 2,600 infant deaths, and 1,779 deaths from diarrhea-enteritis under two years; in Porto Alegre, 1,263 and 756; in Fortaleza, 1,371 and 1,351.

Bourrel said that milk consumption in Rio de Janeiro in 1939 was less than 100 cc per capita (another estimate, 1935, was 137 cc). In October, 1939, the city was consuming 6,313,554 liters, or about 11 gm. per capita daily. São Paulo city was reported in 1941 as consuming about 150,000 liters per day (about 0.12 lt per capita). In 1933, Curitiba consumed 13,000 bottles of milk daily, about 65 gm per capita.

Goiter has been reported from most of Brazil. Rickets has been reported, in children living under very unfavorable conditions, but is said to be not common.

**Chile.**—In 1925, 10.8% of infant deaths in Chile were attributed to diarrhea-enteritis, and in 1929, 14.7%. In a study of groups of infants in 1927-28, 28.2% of deaths were found to be due to digestive disorders. In 1929, 89% of 150 Valparaíso children had dental caries; Urrutia S. reported 44% of 1,007 children aged 1-18 in Concepción as having poor teeth, whereas but 19.5% had good teeth; Silva and Louvel in 1929 found 40% of 2,238 children examined had poor teeth. Honorato about 1934 found "4th degree" caries in 40% of children in one institution, in 38% of children in another, and in 74% of those in a home for vagabond children.

Coutts and Morales, studying 111 Santiago homes in 1931, found that in 30, with 57 children under five, no milk was consumed; in 25 without children under 10, the members consumed an average of  $\frac{1}{4}$  liter each; and in 56 homes with 107 children under five and 316 adults, the milk consumption was 118.1 cc daily per person, which meant that if the children got all of it their share would be  $\frac{1}{4}$  liter. Only 15 homes received enough milk for the children.

Seroggie has pointed out that to the effects of deficient nutrition are often added those of over-crowding, poor ventilation, and lack of sunlight—an observation which would also apply to many other countries. In Valparaíso in 1928 the annual milk consumption was estimated at 54 liters per capita; in 1936 that of

Santiago was said to be 50.7 liters. In 1939 the milk production in the Santiago area was reported as 90,000 liters daily, or about  $\frac{1}{2}$  glass per person. Landa in 1940 stated that the milk production of Chile was 227,762,000 liters (50 per person yearly), which, after deducting quantities used for butter and cheese, left about 27-30 liters of fresh milk per inhabitant per year, or 82 cc daily. Egg consumption was 2.5 gm., fish 1.1 gm., fruit, 1 gm., butter 1-1.2 gm., and cheese, 1.9 gm. per capita.

Goiter has been reported in parts of Chile, such as O'Higgins Province. Alessandri *et al.* described 19 cases of pellagra observed in four years (1934-1937, 13 of the cases in the final year) in the Santiago vicinity. Low salary was indicated as an underlying factor in about eight cases and alcoholism in another eight. Calcium and phosphorous deficiency have been reported in connection with dental caries (see above).

**Colombia.**—In 1920, 34.6% (325) of infant deaths in Bogota were due to diseases of the digestive tract; in 1927, 15.6% of deaths in children under one year, and 16.2% of deaths of children under two, in Colombia, were attributed to the same cause. In 1939, there were 45,423 infant deaths in the country (excluding certain territories), and 16,615 deaths from diarrhea-enteritis (1003 in Bogota), most of which were undoubtedly in children. From 1928-1932, 34.37% of infant deaths were reported due to gastro-intestinal affections, and from 1925-1934, 30%.

In Bogota (330,000 inhabitants) in 1938, 13,727,943 bottles of milk (723,002 pasteurized) were sold (about 3,200 daily). Some milk was also sold by other sources, not registered with the Food Inspection Department. Medellin, population 175,000, consumed 2,297,560 liters of milk in 1929.

Goiter is common in certain areas of Colombia. Bejarano has pointed out that in Colombia there are social groups in fairly comfortable circumstances which are nevertheless poorly fed, due to lack of nutritional education. This is of course true of other countries as well.

**Costa Rica.**—In 1927, 41.9% (2,266) of infant deaths in Costa Rica were caused by gastro-intestinal disturbances; and in the Province of San José, the proportion was given as 54.8%. In 1931, Saenz estimated that 23.23% of deaths in Cartago were due to diarrhea-enteritis. In 1939 there were 1,584 deaths from diarrhea-enteritis in children under two. Of 14,746 children examined in 1937 at the San José child health center, 4% suffered from gastro-intestinal disorders. The daily milk production in Costa Rica (630,000 inhabitants) was estimated at 62,000 liters in 1937.

Sprue has been observed in Costa Rica, but Pupo was not able to find a definite connection with nutrition. Peña Chavarría and Rotter reported an "avitaminosis edema" which began to appear at the end of 1933, probably as a result of the depression; 31 of the 43 cases studied were under five years of age, and the mortality was 39.5%.

**Cuba.**—From 1902-1913, the infant mortality in Cuba varied from 50.2% (1912) to 25.8% (1903); in 1924 it was 56.7%. In 1935 the rate per 100,000 population for infantile diarrhea-enteritis was 87.18. Martínez Fortún, in pointing out that diarrhea-enteritis is the most important cause of infant deaths in Cuba, has reported that the rate per 100,000 of the whole population has sometimes exceeded 300 (as in 1920). Habana (550,000 inhabitants) was reported in 1935 as consuming 150,000 liters of milk daily, of which 60,000 to 70,000 were pasteurized. Deficiency diseases reported included pellagra (Castellanos described in 1937 a "pellagroid-beriberic syndrome" seen in poor children, especially Negroes), beriberi (Aballí and Escobar in 1941 reported nine cases in infants, and said the disease was fairly common) and rickets (of 596 children entering one ward of the Children's Hospital, only three showed clinical symptoms of rickets, and among more

than 1,000 examined in the outpatient clinic, only 10, which would make the incidence of the disease in Habana about 1 or 2%; all were Negroes or mestizos, although rickets has been seen in white children also).

**Dominican Republic.**—In 1927, 38.4% of infant deaths were due to diarrhea-enteritis; in 1939, 21%.

**Ecuador.**—About 1935 the Red Cross reported that 47% of infant deaths in Ecuador were due to gastro-enteritis. In 1940, there were 1,822 infant deaths in Guayaquil, and 997 deaths from gastroenteritis in children under two years of age. Cabrera in 1932 reported that scarcely 30% of Quito working-class families drink milk, and that the quantity is not over  $\frac{1}{2}$  liter per person; Caceres in 1931 reported that 40% of the children from 10 months to two years of age did not have milk. In 1928 Quito (175,000 inhabitants) was reported as consuming 22,000 liters daily (1,000 pasteurized); in 1931 the pasteurizing plant was furnishing about 3,000 liters a day. Rickets is said to be rare in Ecuador; among 1,500 children attended in two years at a hospital in Quito, only one case was found. Goiter is prevalent in certain areas.

**El Salvador.**—In 1927 there were 2,061 deaths from diarrhea-enteritis among children under two in El Salvador. In San Salvador, 42.4% of infant deaths in 1929 were due to diseases of the digestive tract. In 1935, 17% of deaths under two years were from diarrhea-enteritis. In 1940 in San Salvador there were 781 infant deaths, and 385 deaths from diarrhea-enteritis (children under two). In 1937 Romer reported that pellagra is not rare in El Salvador, and described two cases, referring also to Calvo, who had seen more than 100 cases. The age of the patients was not stated. Palacios reported cases of sprue in 1924, 1925, and 1927, and from 1931 to 1936, some 15 cases (mostly in young people).

**Guatemala.**—From 1922–1926, 39.4% of deaths among children under five years of age were due to diseases of the digestive system. Of 10,000 children examined about 1938 (ages 6–14), 92.9% had caries; 23.2% of the bad teeth had to be extracted (61.5% milk teeth). The percentage of caries in boys was 53.5; in girls, 46.5. Sprue was not reported in Guatemala until 1916. Pacheco Luna observed 6 cases in three generations of the same family; one was cured by dietary treatment.

**Haiti.**—Sylvain in 1941 estimated that 79% of the deaths of children under one year of age in Haiti are due to gastro-enteritis, largely because of the use of inadequate substitutes for mothers' milk. Athrepsy and avitaminosis were responsible for 8.5% of deaths under one year. During 1940 there were 78 deaths from diarrhea-enteritis in children under two, in the Haitian hospitals, and 28 deaths outside the hospitals. Milk consumption in Haiti is low, and many rural inhabitants do not use it. It is always boiled. Rickets is said to be rare, but spasmophilia relatively common, in Haiti.

**Honduras.**—During 1926, 279 deaths reported in children under two in Honduras were attributed to diarrhea-enteritis. There were 4,330 infant deaths in Honduras in the fiscal year 1938–1939, and 699 deaths from diarrhea (age not stated) during 1939–40. Rickets is said to be rare, but avitaminosis (B) is common in children; Membreno about 1940 reported 10 cases with a 20% mortality. Caries is said to be common, especially in white children.

**Mexico.**—During 1922–1925, 15.7% of infant deaths were said to be due to diarrhea-enteritis. In Orizaba in 1941 there were 181 infant deaths, and a total of 403 deaths from diarrhea-enteritis (all ages); in 1939, 206 and 338. The total number of deaths from diarrhea-enteritis (all ages) in Mexico in 1937 was 83,811 (437.6 per 100,000). Escontria in 1928 reported that 47.2% of 765 children examined at a clinic were undernourished, and Mazzotti found 62% of 1,000 children at a clinic undernourished, with gastrointestinal disturbances, 16.26% of them

revealing marked avitaminosis. Castañeda examined 8,000 children about 1937, finding only 50 of them well nourished; he stated that about 90% of the children attending child welfare centers are undernourished.

Milk consumption in Mexico City about 1936 was said to be  $\frac{1}{4}$  liter per capita. In that year the Federal District was reported as consuming 125,124,987 liters (78,136,529 certified and 46,988,458 pasteurized), or about one liter per capita. In 1938 the District consumed 132,420,253 liters of pasteurized and certified milk ( $\frac{1}{4}$  liter per capita daily).

Goiter has been reported in Mexico and the incidence is high in some regions. Ruiz in 1938 reported that pellagra was frequently seen in the country (ages not given). Opinion varies as to the amount of rickets, though the consensus appears to be that it is not common. Sprue has been observed in Yucatán, as has xerophthalmia (Carrillo ranks it as the second most common nutritional disorder there, pellagra being first. The principal victims are children two to three years old, and mortality runs about 16%). Carrillo has described "*culebrilla*" or tetter as found in Yucatan, and considers it due to a diet almost exclusively of corn. Other conditions reported include gallstones (Silva observed 21 cases in children one to 11; Carrillo Gil reports that every year from six to eight cases of urolithiasis in children are seen in the Yucatán hospital; he has found vesical stones in children with xerophthalmia).

Nicaragua.—Diseases of the digestive tract are reported to be the most important cause of infant deaths in Nicaragua.

Panama.—In 1928, 26.1% of infant deaths in the Canal Zone, Panama City, and Colon, were due to diseases of the digestive tract. In 1939 there were 76 deaths from diarrhea-enteritis in Panama City and 55 in Colon (ages not given).

Paraguay.—During 1914-1925, 23.45% of infant deaths from one to five years were due to diarrhea-enteritis. In 1933 in Asuncion, 11% of deaths under one year were due to gastro-enteritis. In 1940 there were 1,174 infant deaths in Paraguay, and 313 deaths from diarrhea-enteritis in children under two. Milk consumption in Asuncion in 1936 was reported as 17,733 liters daily, about 12% of which was inspected and 8% pasteurized. Scurvy was reported in 1934 in the Paraguayan army during the Chaco war, but it was not stated whether children in some parts of the country were also affected.

Peru.—From 1918-1921 in Lima, 39% of infant deaths were due to diarrhea-enteritis, as were 31.2% of those in Callao. In 1928 the proportions were 32.8 and 34.3%. Yori, studying 134 children (7-17) found 55.22% undernourished and 79.1% with dental defects (10.4% very marked), in 1933. About 1936 he reported that 56.43% of a group of 651 middle-class school children were undernourished, either from lack of vitamins or from metabolism disturbances. Suares found 0.18% rickets among some 32,000 children in Lima in 1933, and 0.16% in 1934; percentages for spasmophilia were 0.11 and 0.09. Sprue has been reported in Peru.

Uruguay.—In 1927, diseases of the digestive system were responsible for 24.7% of infant deaths in Uruguay; for 28.3% of those in 1928, and for 26.9% of those in Montevideo in the latter year. For 1921-1925 the percentage as given by Bauzá was 39. In Montevideo in 1940 there were 1,235 infant deaths, and 423 deaths from diarrhea-enteritis in children under two, and in Uruguay in 1939, 3,521 and 1,072. Schiaffino in 1930 reported that examinations of three groups of kindergarten children revealed 18, 18.5, and 13.7% with debility and anemia and 73, 91, and 76% with caries. Saldán found that of 102 children (3 to 6) attending a nutrition clinic, 43 were underfed, 36 had poor quality meals, and 25 had poorly arranged meals (irregular hours, etc.). In 1928 school medical examinations revealed dental defects in 20% of the 23,609 children examined. Hormacche,

Carrau, and others have studied infantile diarrheas, and Zerbino in 1940 reported that 41.9% of enteritis and 12.6% of diarrhea in children were due to *Salmonellae*. Among 39,386 children observed in Montevideo clinics 1926-1936, 38 cases of thyroid disturbance were found. Ricketts is said to be uncommon in Uruguay.

Venezuela.—In 1924 there were 2,946 deaths in Venezuela from diarrhea in children under two, and in 1927, 2,826. In Caracas there were 253 deaths from this cause in children under one. In 1935 there were 234 deaths (all ages) from diarrhea-enteritis in Caracas. In 1940 there were 16,234 infant deaths, and 3,225 deaths from diarrhea-enteritis in children under two. Goiter is prevalent in certain areas of Venezuela. Ricketts is said to be rare. Franco in 1939 reported 25 cases of avitaminosis in Caracas children.

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**Noted Brazilian Library.**—The Library of the Instituto Oswaldo Cruz, Manginhos, Rio de Janeiro, thanks to the vision of the founder of the Institute and to the work of its Librarian, Sr. Assuerus H. Overmeer, and others, has become one of the world's great medical libraries. It had in 1940 a total of 77,983 volumes including books and journals (28,678 books), and received 2,623 journals, among them 72 "reference" journals and publications, many of them coming in exchange for the *Memorias* of the Institute. The greatest number of periodicals were Brazilian (464), and other American countries were well represented (United States, 336, Argentina, 116, Mexico, 51, Colombia and Cuba, 38 each, Peru, 17, Paraguay, 12, etc.). Due to the constant use of library facilities by the Institute staff, volumes are not loaned for outside use, but the library is available to all readers. The library maintains a reference service for members of the Institute and others. In cataloguing the classification of the International Institute of Bibliography based on the Dewey Decimal Classification, is used.—MARIO ARAUJO FILHO, *Rev. Bras. Biol.*, dbre. 1941, p. 463.

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**Sunlight and man.**—"Man's life appears to subsist through the internal stimuli of his thoughts, passions, and necessities, and the external influence of the impressions of the things which surround him. Both cause his organs to carry on their various functions, so long as inevitable death permits: *Morte morietis. Genes.* Sunlight occupies first place among external stimuli. There is no life where the rays of this beneficent star fail to penetrate; its absence weakens that which exists in the regions it illuminates, and with the night comes sleep, the image of death. Dawn brings the renewal of light, warmth, and the vitality which awakens sleeping Nature. The sun's rays revive the vital organs; their activity is renewed, their operation is quickened, life returns, and man is reminded of the labor which will nourish his body, and of the contemplation of this beautiful Universe which nourishes the immense capacity of his soul."—HIPÓLITO UNANUE: "Observaciones sobre el clima de Lima y sus influencias en los seres organizados, en especial el hombre," 1806, 4th ed., 1914, p. 11.

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**War Gas Cases.**—Most gas casualties can be avoided. Proper gas discipline and use of protective equipment can reduce to a very small percentage the number of persons put out of action by chemical agents. The timely administration of first aid may prevent death. Each chemical agent produces certain conditions which require special treatment. However, there are certain first aid principles which, if applied early, will give relief.—ALDEN H. WAITT, *The Am. Jour. of Nurs.*, May, 1942.