

AN ANALYSIS OF HEALTH PROGRESS IN CHILE¹

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Death rates in many Latin American countries, including Chile, have fallen sharply in recent decades. This article examines the Chilean data available in an effort to better understand this favorable trend.

Introduction

Over the past two decades, information from many developing countries has shown a clear decline in the risk of death, suggesting that the most serious health problems are being adequately controlled, and that in time the population's level of health will improve. In this vein, data reported by the Pan American Health Organization indicate that general mortality in Latin America has declined from 12-13 deaths per thousand inhabitants in 1955-1960 to 8-9 deaths per thousand in the latter 1970s (1), a good part of the decline being due to higher rates of survival in the first years of life. In this regard, again according to PAHO (2), infant mortality in South America fell from 85 deaths per thousand live births in 1960 to 49 per thousand live births in 1975. In other words, within a relatively short span of years significant reductions in the risk of dying have occurred.

Chile has been no exception to this Latin American trend. That is, over the past 20 years (between 1961 and 1981) general mortality in Chile fell by some 47 per cent (from 11.6 deaths per thousand population in 1961 to 8.7 in 1971 and 6.2 in 1981), while infant mortality declined by 75 per cent (from 108.9

deaths per 1,000 live births in 1961 to 70.5 in 1971 and 27.2 in 1981).

A number of circumstances make Chile a suitable place for studying the factors leading to these favorable developments. National information is available—including reasonably reliable data on the magnitude of health problems, the risks of dying, and the collection of conditioning factors affecting health. The availability of such general information is enhanced by the country's relatively small population (11.3 million people according to the national census of 1982), the high proportion of people living in urban areas (81 per cent in 1982), the absence of settled but hard-to-reach geographic areas, and the length of time that biodemographic registers and Chile's National Statistical Institute have been established (3). Furthermore, information about health, the operation of the health care system, services provided to individuals, and environmental health services is available because of the way the health system is organized, depending primarily as it does upon the Ministry of Health's National System of Health Services, which possesses 90 per cent of the hospital beds and delivers outpatient services to some 85 per cent of the national population (4, 5).

Health Status Indicators

Mortality

Table 1 shows changes in mortality in Chile between 1960 and 1980. During that period

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Table 1. Mortality in Chile per 1,000 population, by age and sex, 1960-1980.

	1960	1965	1970	1975	1980	% change 1970-1980
Overall mortality recorded	12.3	10.8	8.9	7.2	6.6	-26
Overall mortality, adjusted for age and sex	11.1	10.0	8.9	7.3	6.3	-29
Male mortality	13.3	11.7	9.8	8.1	7.4	-24
Female mortality	11.3	9.9	8.0	6.5	5.9	-26
<i>Mortality of specific age groups.</i>						
Infants (0-11 months)	120.3	95.4	79.3	55.4	31.8	-60
0-27 days	35.2	33.5	31.3	24.8	16.3	-48
28 days-11 months	85.1	61.9	48.0	30.6	15.5	-68
1-4 years	9.6	5.6	3.9	2.2	1.3	-67
5-14 years	1.4	1.0	0.9	0.7	0.6	-33
15-44 years	3.8	3.3	2.7	2.1	1.8	-33
45-64 years	14.7	14.4	13.3	11.0	10.5	-21
≥ 65 years	63.8	66.9	64.5	58.1	60.4	-6

there was a sustained decline in the overall risk of dying, adjusted by age and sex, amounting to a 20 per cent reduction in the 1960s and a 29 per cent reduction in the 1970s.

If attention is focused on specific age groups, it can be seen that the most significant reductions, especially in 1970-1980, occurred in the infant and 1-4 year age groups. Specifically, infant mortality fell 60 per cent in this latter period and young child mortality dropped 67 per cent. Lesser declines were also

registered for the 5-14, 15-44, and 45-64 age groups, but for the group 65 and over the reduction in the risk of dying was relatively slight. Overall, the improvements were not sex-specific; for even though the risk of death in 1970 was 20-25 per cent higher for males than for females, the declines registered for both groups over the decade were similar. In general, it may be concluded that marked health improvements, in both absolute and relative terms, occurred among infants and among children 1-4 years of age.

Table 2. General and infant mortality in regions of Chile classified according to the percentage of people living in "urban" areas.

% of population in urban areas	1982 population (in thousands)	General mortality (deaths per 1,000 inhabitants)				Infant mortality (deaths per 1,000 live births)			
		1970	1980	Change in rate	% change	1970	1980	Change in rate	% change
95% urban ^a	4,295	7.8	5.8	-2.0	-26	51	22	-29	-57
90-94% urban ^b	930	8.2	6.4	-1.8	-22	62	29	-33	-53
70-89% urban ^c	3,206	8.8	7.0	-1.8	-20	79	40	-39	-49
50-59% urban ^d	2,844	10.4	7.6	-2.8	-27	94	39	-55	-59
Total (all of Chile)	11,275	8.9	6.6	-2.3	-26	79	32	-47	-59

^aMetropolitan region of Santiago.

^bRegions of Tarapacá, Antofagasta, Atacama, and Magallanes.

^cRegions of Coquimbo, Valparaiso, Bio-Bio, and Aysen.

^dRegions of O'Higgins, Maule, Araucania, and Los Lagos.

As in many developing countries, mortality risks appear associated with areas of residence and appear greater in regions where a higher proportion of the population is rural. For census purposes, all localities in the country with concentrated populations, paved streets, and some public utilities are considered urban. According to our observations, this is roughly equivalent to considering every locality with a population of 1,000 inhabitants or more urban, the margin of difference between these two criteria being less than 1 per cent of the population. As indicated in Table 2, from 1970 to 1980 mortality was most sharply reduced in those areas classified as 50-59 per

cent urban, the most rural areas covered. This finding is probably attributable to a policy adopted by the Ministry of Health that has provided a large number of rural communities with basic services—through rural health posts manned by nursing auxiliaries and periodically visited by a midwife, a university-trained nurse, and a physician.

Morbidity

As in many parts of the world, information based on systematic studies of the frequency of disease in the general Chilean population is not available. The existing data are based on

Table 3. Morbidity indicators in 1970, 1975, and 1980: Reported communicable disease cases; the prevalence of malnutrition among infants and young children; and the disease case rates perceived by inhabitants of Santiago.

	1968	1970	1975	1978	1980
No. of communicable disease cases reported nationwide		69,300	69,900		83,200
Reported cases per 100,000 population		740	681		750
Influenza (reported cases per 100,000 population)		183	53		230
Diphtheria, whooping cough, poliomyelitis, and measles (reported cases per 100,000 population)		267	111		62
Other communicable diseases (reported cases per 100,000 population)		290	517		458
No. of infants and children 0-6 years old examined for malnutrition ^a			1,014,000		1,047,000
% malnourished (total)			15.5%		11.5%
% with slight malnutrition			12.1%		10.0%
% with moderate malnutrition			2.7%		1.4%
% with severe malnutrition			0.7%		0.1%
Morbidity perceived by the population of Santiago: Annual average of episodes of illness per person ^b	4.50			4.13	
Episodes receiving medical care	2.40			1.71	
Demand for care not satisfied	1.20			0.76	
No care requested	0.90			1.66	

^aChildren checked by the National Health Service and classified according to the Sempe table (normal = less than one standard deviation below the norm; slight malnutrition = at least one but less than two standard deviations below the norm; moderate malnutrition = between two and three standard deviations; and severe malnutrition = more than three standard deviations.)

^bStudies made in 1968 and 1978 and based on similar criteria (6, 7).

notifications of infectious disease cases; on data from regular checkups given some four-fifths of the child population under six years of age by the National Health Services System; and the results of household surveys carried out by the Ministry of Health at the end of the 1960s (6) and by ourselves a decade later (7-11). A summary of this information appears in Table 3. As may be seen, unlike the sharp decline in mortality, morbidity due to reported infectious disease cases showed no overall decline, even though a sharp decline was registered in infectious disease cases controlled by vaccination (those covered by the PAHO/WHO Expanded Program on Immunization). Along similar lines, overall perceived morbidity only declined about 10 per cent in terms of the number of illness episodes involved. Even the somewhat greater reduction of malnutrition (26 per cent) among infants and young children was small compared to the sharp drop in mortality among this age group; it should be noted, however, that substantial progress was made in reducing moderate and severe cases of infant and young child malnutrition.

Major Health Problems

Changes in the impact of major pathologies can be judged by assessing the number of hospital admissions for various causes and overall mortality from those specific causes. Table 4 provides such data, starting with hospital admissions for specific causes in 1965 and then in 1975 (the last year for which detailed information is available). It also shows the mortality attributed to each cause in 1970 and 1980. These data show that overall hospitalization rates changed little in 1965-1975, falling 3.9 per cent, while mortality (see Table 1) declined sharply. Thus, the decline in mortality cannot logically be attributed to increased hospital admissions (increased secondary and tertiary care), since no such increase was observed. Examination of the disease-specific mortality figures indicates that of the path-

ologies listed in Table 4, the mortality attributed to eight fell by more than 20 per cent in 1970-1980 (see Table 4, groups 1-3), mortality from 17 others (groups 4-6) changed by 20 per cent or less, and mortality from one cause (lung cancer) rose by over 20 per cent.

What this shows is that mortality due to certain problems—especially communicable diseases, malnutrition, maternal problems, and stomach cancer—has dropped sharply, while mortality caused by an extensive range of other problems, most of them of a chronic nature, has remained relatively stable. The implication is that health efforts made or strategies pursued to combat these latter problems have failed to greatly modify the mortality involved.

Mental Health

By and large, it is difficult to quantify the mental health status of any group unless data on reliable and representative indicators are available. In Chile, information is available only on mortality caused by problems whose genesis normally involves a change in mental health. This happens in the case of alcoholism and cirrhosis of the liver, the latter generally being caused in Chile by excess alcohol consumption. Accidents and violent acts have also been associated frequently in this country with excess alcohol consumption and emotional disturbances. In addition, arterial hypertension, peptic ulcer, and bronchial asthma are known to have important psychosomatic components.

Data from surveys on the prevalence of mental illness do not make it possible to establish trends, either because they are not representative of the general population or because varying diagnostic criteria are used. With the exception of mortality attributed to alcoholism, which increased by 0.3 deaths per hundred thousand inhabitants between 1970 and 1980, mortality caused by the rest of the

Table 4. Frequency of hospitalization and death in Chile from the most common types of diseases, 1965-1980 (rates per 100,000 population). Rates changing by less than 20 per cent over the periods cited are considered "stable."

	Rates per 100,000 population			
	Hospitalizations		Deaths	
	1965	1975	1970	1980
<i>I. Both hospitalizations and mortality decreasing:</i>				
Measles	65	37	6.4	0.1
Rheumatic heart disease	60	36	7.0	4.8
Maternal causes	2,570	1,792	4.7 ^a	1.7 ^a
Abortions	688	433	1.8 ^b	0.6 ^b
<i>II. Hospitalizations stable and mortality decreasing:</i>				
Cancer of the stomach	26	27	33	23
Influenza and other upper respiratory viruses	194	164	20	6
<i>III. Hospitalizations increasing and mortality decreasing:</i>				
Infant diarrheas	295	373	50	8
Malnutrition	17	44	12	2.2
<i>IV. Hospitalizations decreasing and mortality stable:</i>				
Appendicitis	234	186	1.0	0.8
Coronary heart disease	64	45	64	58
Typhoid	77	57	1.0	1.1
<i>V. Both hospitalizations and mortality stable:</i>				
Adenoid and tonsil pathologies	102	102	-	-
Arterial hypertension	53	56	10	9
Arthritis and rheumatism	77	63	2.7	2.4
Cirrhosis of the liver	49	48	31	30
Chronic glomerulonephritis	20	22	4.9	5.2
Neuroses	98	114	1.6	1.9
Trauma	680	676	86	79
<i>VI. Hospitalizations increasing and mortality stable:</i>				
Chronic bronchitis	128	160	9.5	8.4
Stroke	51	64	59	61
Psychosis	49	61	1.0	1.2
Diabetes mellitus	30	47	10	12
Respiratory problems of the newborn	22	84	19	17
Cervical cancer	27	35	6.3	6.4
Breast cancer	12	17	4.6	5.2
Esophageal cancer	6.4	7.8	5.4	5.0
<i>VII. Both hospitalizations and mortality increasing:</i>				
Lung cancer	6.5	9.2	7.6	9.7
Total	9,595	9,221	890	660

^aDeaths per 1,000 live births.

^bDeaths per 1,000 live births.

Table 5. Deaths per 100,000 inhabitants attributed to pathologies linked with mental health problems in Chile, 1970-1980.

	Deaths per 100,000 in:			% change 1970-1980
	1970	1975	1980	
Alcoholism	1.6	1.6	1.9	+19
Cirrhosis of the liver	30.8	26.1	29.6	-4
Traffic accidents	15.7	9.1	12.9	-18
Suicide	6.1	6.7	4.9	-20
Homicide	3.6	2.1	2.6	-28
Other accidents	2.4	2.0	1.7	-29
Arterial hypertension	10.0	9.5	8.8	-12
Peptic ulcer	3.4	3.2	2.7	-21
Bronchial asthma	2.8	1.9	1.8	-36

mentioned conditions associated with mental problems decreased during the decade (Table 5).

Overview

Improvements in Chilean health over the past decade were reflected principally in reduced mortality, especially among infants and children under five years of age. This dramatic decline in infant and young child mortality has been due primarily to progress made against malnutrition and infectious diseases, including infant diarrheas (12-14).

By comparison, the progress made in reducing mortality among other age groups has been rather small. Moreover, the declines in mortality were not accompanied by significant declines in the general morbidity perceived by the population, or in the morbidity attributed to an important group of diseases that preferentially afflict adults and that tend to produce chronic conditions. Regarding mental health, the information available does not make it possible to accurately determine changes during the decade, especially since a decline in mortality from conditions associated with mental problems is not necessarily associated with a decline in the morbidity due to mental illness.

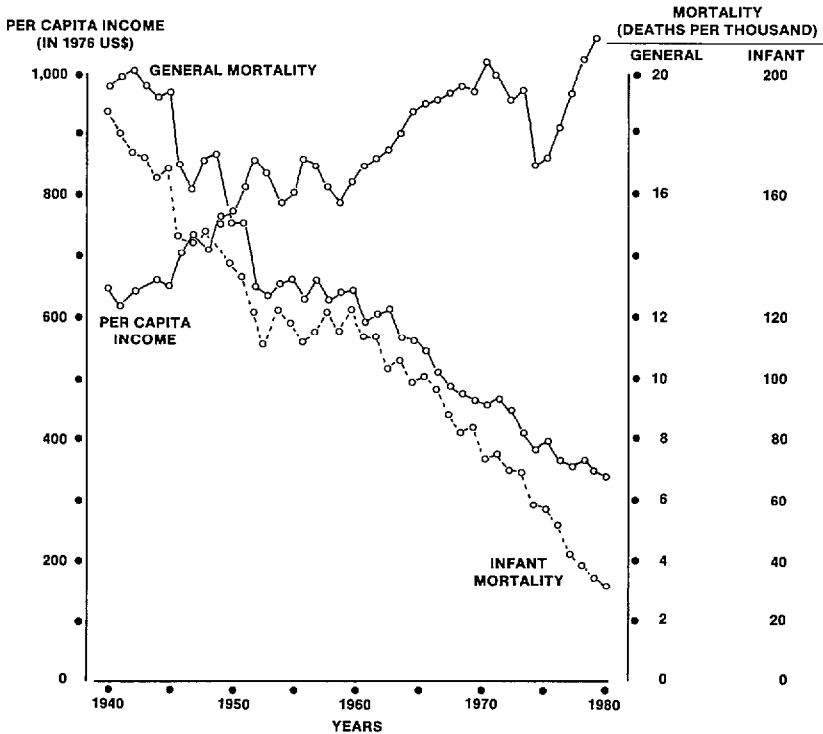
Factors Involved in Reduced Mortality

Per Capita Income

Studies in Chile (15-18), as well as worldwide experience, have generally shown an inverse relationship between the economic situation of a community (as indicated by per capita income) and mortality in that community. However, this relationship does not appear to explain the sustained drop in mortality in Chile during the period 1970-1980. It is true, as Figure 1 shows, that between 1940 and 1970 the traditional inverse association between per capita income and mortality was apparent, and that periods of rising per capita income saw declines in mortality—declines that tended to level off in periods of economic stagnation.

However, from 1970 onward no such relationship between income and mortality is observed. The major economic crisis of the 1970s seemed to have no effect on the mortality trend, so that declining mortality appears independent of the significant variations in per capita income during this period. Furthermore, comparison of the figures for per capita income and infant mortality in 13 Chilean regions in 1978 (22) does not show any correlation between these variables ($r = 0.181$). This

Figure 1. A comparison of per capita income, infant mortality, and general mortality in Chile from 1940 through 1980.



evidence strongly supports the hypothesis that of the marked changes in mortality occurring in the 1970s, neither the 26 per cent decline in general mortality nor the 60 per cent drop in infant mortality were associated with changes in the country's general economic condition.

Health Care

Since the 1960s, Chilean health policy has assigned top priority to maternal and child health, emphasizing periodic checkups for expectant mothers, infants, and young children, together with establishment of peripheral centers to provide outpatient care (19). This policy, which is still in force, was characterized in the 1970s by increased emphasis on maternal and child health, extension of health services coverage, and augmentation of ser-

vices provided through the combined activities of professional personnel and health auxiliaries (20, 21).

As Table 6 shows, the 1970s saw a noteworthy increase in health care coverage. This is indicated by the increased proportion of deliveries receiving professional health care (91 per cent in 1980), and by the markedly greater proportion of infants (some 85 per cent in 1980) covered by a care system that regularly checks their growth (weight and stature) and psychomotor development, gives supplementary food (powdered milk), administers systematic vaccinations, and provides health education for mothers. The decade also witnessed emergence of a system in which the work of physicians was combined with extensive and active participation by other university-trained professionals (nurses, midwives,

Table 6. Indicators of pediatric health care in Chile, 1970 and 1980.

	1970	1980
<i>I. Coverage indicators.</i>		
% deliveries provided with professional care (physician or university-trained midwife)	81.0%	91.4%
% fatalities receiving a physician's death certificate	81.4%	90.4%
% of infant population receiving growth and development checkups	60.2%	84.7%
<i>II. Medical care indicators:</i>		
Pediatric beds per 1,000 children <15 years old	0.66	0.67
Hospital pediatric discharges per 1,000 children <15 years old	47	64
Pediatric consultations provided by the National Health System per 1,000 children <15 years old	990	1,740
<i>III. Indicators of care by health personnel other than physicians:</i>		
Pediatric consultations per live birth provided by university-trained midwives	5.2	13.4
Pediatric consultations per child <15 years old provided by university-trained nurses	0.29	0.71
Pediatric consultations per 1,000 children <15 years old provided by nutritionists	No data	0.88
Pediatric consultations per child <15 years old provided by nursing auxiliaries	No data	0.53
<i>IV. Indicators of health promotion and development.</i>		
BCG vaccinations in the first year of life as a percentage of live births	70.0%	93.4%
Poliomyelitis (3rd dose) vaccinations in the first year of life as a percentage of live births	69.3%	82.4%
DPT vaccinations (3rd dose) in the first year of life as a percentage of live births	76.0%	90.9%
Measles vaccinations in the first year of life as a percentage of live births	71.0%	96.2%
Kilograms of powdered milk provided annually by the supplementary feeding program per child under 5 years of age	2.9	3.2
Users of contraceptives in the National Health Service system (percentage of women 15-44 years old)	13.2%	19.2%

nutritionists) and auxiliary nursing personnel; in which high levels of coverage were achieved with the vaccinations called for by the Expanded Program on Immunization and with the food supplements provided by the supplementary feeding program; and in which infants received increased hospital care in addition to the attention provided through the significantly expanded program of primary care.

Two basic recommendations for improving infant health are to extend primary health care services and to improve the quality of the health activities involved. This point has been supported in Chile by investigations

(22-24) showing that low infant mortality in Chilean communities is associated in a statistically significant way with extension of coverage, per capita availability of medical services, and a low prevalence of infant malnutrition (Table 7).

Conversely, in studying Chile's infant mortality during the second half of the 1970s, we found a very low degree of correlation between these infant mortality figures and average per capita income in different regions (-0.181). This correlation clearly increased (to -0.475) when public health expenditure per capita was considered (22).

Table 7. Correlations between infant mortality and a variety of factors in the various regions^a of Chile.

Correlation coefficients	Factor
-0.87	% of deliveries attended by health professionals
-0.81	% of infants provided with medical care for their last illness
-0.63	Pediatric hours per 1,000 children under 15 years of age
-0.61	No. of health checkups per child under 15 years of age conducted by a physician
+0.60	Prevalence of moderate and advanced malnutrition
-0.56	Number of consultations about morbidity per child
-0.46	Average wage of workers and employees
-0.31	Number of hospital discharges per 100 children
-0.09	Number of pediatric beds per 100 children

^aSee Table 2, footnotes a-d

Taken together, these facts lead to the conclusion that adequate allocations of resources for public health, which has made it possible to extend health coverage and increase infant health services (especially primary care services), appear to be the factors most responsible for the recent reduction of infant mortality in Chile.

Other Factors

Other factors significantly associated with infant risk, according to our studies (22), are the mother's level of education (-0.81) and home sanitation (-0.76). Both of these circumstances have improved over the past decade (24). In 1980 approximately 90 per cent of the female population over five years of age was literate; and 96 per cent of the children in the appropriate age groups were receiving basic education in grades one through eight, as compared to 87 per cent in 1970. Equally important, the percentage of children receiving a high-school education (in grades nine through 12) rose from 41 per cent in 1970 to 57 per cent in 1980. This high proportion of children

receiving a secondary education has particular significance for health, because it has been shown that, in general, only those with access to this level of education find it possible to change the traditional beliefs about health that are passed on by their elders.

The health of Chilean children has also been enhanced by family planning programs, most of which have been organized and administered by the National Health Services System. These programs began around 1964; since then they have produced significant changes and a parallel decline in the annual number of births. (More specifically, the number of births fell from 308,014 in 1965 to 253,581 in 1980, these numbers being equivalent to 36.3 and 22.8 births per 1,000 inhabitants, respectively). As a result of this decline in the birth rate, the absolute number of children born each year has been relatively stable, while the average family's size has decreased from 5.24 members (in the 1970 census) to 4.49 members (in the 1982 census). Furthermore, births are occurring less frequently among women over 35 years of age and among multiparas. Specifically, women over 35 accounted for 17.6 per cent of all births in 1965, as compared to 9.4 per cent in 1980; and 32.6 per cent of all births were fifth or subsequent deliveries in 1965, as compared to only 8.8 per cent in 1980. It is noteworthy that the percentage of children born to mothers with a secondary education or better rose from 22 to 39 per cent in this period. Since maternal age, multiparity, and maternal education have all been shown to have an important influence upon infant mortality in Chile (20), it seems clear that the changes in these factors wrought by the family planning programs have contributed significantly to the marked decline in infant mortality (25).

Raczynski and Oyarce have sought to quantify that portion of the change in infant mortality that can be attributed to changes in the pattern of births during 1969-1979 (26). For that purpose, they took infant mortality figures at the start of this period and estimated

what they would have been at the end if some particular factor had not changed. The difference between this estimated rate and the actual rate then indicated the extent to which the actual decline could be attributed to that factor. Between 1969 and 1979 the actual rate decreased by 45.2 points. Changes in the mother's age appear to have accounted for 0.7 per cent of the total change in infant mortality; changes in family size appear to have accounted for 5.4 per cent; and changes in maternal education appear to have accounted for 26 per cent. This latter finding is related to the fact that the largest relative birth-rate declines have occurred among population groups with the least education.

We ourselves have noted that maternal age and family size have an important bearing on the demand for medical care. That is, morbidity studies we conducted in Santiago (9, 11) showed that children of women 15-24 years old, adjusted by the family group's size and children's age, received health care an average of 5.0 times annually, whereas children of women over 44 years old received such care an average of only 1.2 times annually. Similarly, when there was only one child in the household, it received care an average of 6.3 times annually, while a child belonging to a family with four or more other children received care an average of 0.9 times annually.

As indicated earlier, in Table 2, the rate of infant deaths in Chile, by region, appears to be associated with the proportion of the regional population living in rural areas. It thus appears that the phenomenon of increasing urbanization (the urban percentage of the population rose from 76 per cent in 1970 to 81 per cent in 1982), through various mechanisms, has been having favorable effects on infant health.

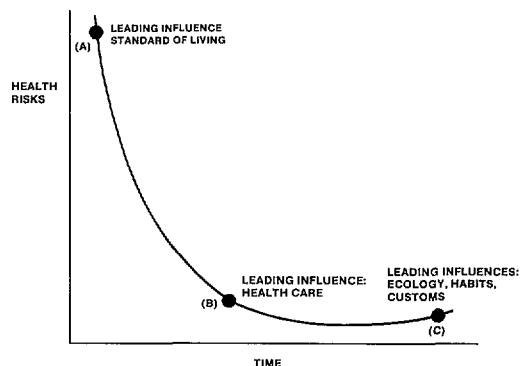
Comments and Conclusions

As Figure 2 illustrates in a general way, the most important factors promoting public health tend to vary according to the affected

population's standard of living. Where there are very precarious conditions of development and high health risks (as at point A in the figure), organized health care does not produce satisfactory results because of serious limitations imposed by low family income, unsatisfactory environmental conditions, and lack of individual education. When these limitations are partially overcome (as at point B), the most important factor promoting health is the appropriate organization of health care services, with emphasis on the extension of coverage and development of primary health care. Nevertheless, after a certain point, as in many developed countries at present, further expansion of health services will not solve prevalent community health problems associated with harmful habits and customs or with radical ecological changes present in the industrialized world (see point C in the figure).

Overall, the available health indicators show that most of Latin America is between points A and B. The Chilean case, which can be studied and analyzed in some detail because appropriate information is available, illustrates this intermediate stage of health development, a stage in which the isolated factor of greatest importance for progress is the ade-

Figure 2. A schematic diagram of principal factors promoting improved health as time passes, under differing living conditions and levels of health risk.



quate organization and administration of health services. In this particular case, according to the results of our study, the country has continued to make progress in health as a result of the improved organization of health care, particularly in the area of maternal and child health. Our findings also demonstrate that when the organization of health care is making good headway—with integrated services providing high levels of primary care coverage, with key maternal and child health care activities increasing, and with referrals to secondary and tertiary care levels being made as needed—it is possible to successfully confront serious economic vicissitudes while continuing to improve maternal and child health.

It also appears that mortality in Chile has exhibited a much more pronounced decline than morbidity, and that this progress in reducing mortality has been especially marked in the 0-5 year age group. This fact is important for various reasons—among other things because once infant and young child mortality has been reduced to relatively low levels, such mortality no longer provides a good indicator of the overall health situation. It must also be recognized that reductions in mortality do not necessarily go hand in hand with reduced morbidity; and if morbidity remains high it will be necessary to maintain and even strengthen the health services required to deal with that situation.

SUMMARY

Over the past two decades, information from many Latin American countries has shown a clear decline in general mortality. Chile's recent history exemplifies this trend, and the availability of relatively complete Chilean data provides a good basis for more detailed evaluation.

Adjusting for age and sex, overall mortality in Chile fell by 20 per cent in the 1960s and 29 per cent in the 1970s. However, the most marked declines, especially in the latter decade, occurred among infants (a 60 per cent reduction) and children 1-4 years old (a 67 per cent reduction). In contrast, morbidity indicators suggest that overall morbidity declined little, although considerable reductions were observed in infectious disease cases preventable by immunization as well as in moderate and severe cases of malnutrition.

Data on deaths attributed to specific causes show

that mortality due to certain causes—including communicable diseases, malnutrition, maternal problems, and stomach cancer—dropped sharply, while mortality caused by a wide range of mostly chronic problems remained relatively stable. This implies that the health efforts made to combat those latter problems failed to greatly modify the mortality involved.

An examination of the factors responsible for the dramatic drop in infant and young child mortality suggests that changes in per capita income played no major role. Instead, the available evidence strongly supports the idea that a notable extension of coverage provided by the Chilean health services, especially primary care and infant-oriented health services, was principally responsible for this rapid decline of infant and young child mortality.

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