

# Evaluation of the National Control of Diarrhoeal Disease Programme in the Philippines, 1980–93

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**Objective** To evaluate the impact of the National Control of Diarrhoeal Disease Programme (NCDDP) in the Philippines over the period 1980–93, describing levels and trends in programme activities, and relating them to severe diarrhoea morbidity and mortality among under-5-year-olds.

**Methods** Routinely collected data on morbidity and mortality trends were obtained from health statistics reports of the Health Intelligence Service and the NCDDP. Socioeconomic indicators, including annual average family income and expenditures, gross national product, and unemployment rates, were derived from the Philippine population census data collected by the National Statistics Office.

**Findings** In relation to baseline levels, diarrhoea mortality among infants and young children fell by about 5% annually over the 18-year period under review. The decline was faster than those related to acute respiratory infections (ARIs) among children of similar age and to perinatal causes. Diarrhoea hospital admission rates registered an annual decline of 2.4% relative to the baseline level.

**Conclusion** These findings suggest that the programme had a substantial impact; the period under review also witnessed some degree of improvement in other factors with positive influences on health, such as exclusive breastfeeding, nutrition and environmental sanitation. The quality, particularly completeness and reliability, of the existing data did not allow further analysis, thus, making it difficult to conclude beyond doubt that the observed trends indicate that they were solely due to NCDDP.

**Keywords** Diarrhea/epidemiology/mortality/prevention and control; National health programs/organization and administration; Fluid therapy/utilization; Breast feeding; Respiratory tract infections/epidemiology/mortality; Child, Preschool; Infant; Water supply; Sanitation; Confounding factors (Epidemiology); Program evaluation; Philippines (*source: MeSH, NLM*).

**Mots clés** Diarrhée/épidémiologie/mortalité/prévention et contrôle; Programme national santé/organisation et administration; Traitement par apport liquidien/utilisation; Allaitement au sein; Voies aériennes supérieures, Infection/épidémiologie/mortalité; Enfant âge pré-scolaire; Nourrisson; Alimentation eau; Assainissement; Facteurs de confusion (Epidémiologie); Evaluation programme; Philippines (*source: MeSH, INSERM*).

**Palabras clave** Diarrea/epidemiología/mortalidad/prevención y control; Programas nacionales de salud/organización y administración; Fluidoterapia/utilización; Lactancia materna; Infecciones del tracto respiratorio/epidemiología/mortalidad; Infante; Lactante; Abastecimiento de agua; Saneamiento; Factores de confusión (Epidemiología); Evaluación de programas; Filipinas (*fuentes: DeCS, BIREME*).

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Voir page 642 le résumé en français. En la página 642 figura un resumen en español.

## Introduction

Diarrhoeal disease is a major public health problem in developing countries. In the Philippines, for example, it continues to be an important cause of illness and death, having consistently ranked fifth- and second-leading cause of death for all age groups and for children, respectively. About 10% of all deaths of children are due to diarrhoea. Until the 1980s, diarrhoea remained the second-leading cause of death after acute respiratory tract infections (ARIs) among infants and children (1).

The National Control of Diarrhoeal Disease Programme (NCDDP), launched by the Philippine Department of Health in October 1980, was set up to reduce severe morbidity and mortality due to dehydration associated with acute diarrhoea among under-5-year-olds. The target for 1987–92 was to reduce diarrhoea mortality by 50% (from 8.5 to 4.3 deaths per 1000 population) and diarrhoea morbidity by 20% (from 2.8 to 2.2

episodes per child-year) (2). This paper evaluates the effects of NCDDP activities and coverage on severe diarrhoeal morbidity and mortality in the Philippines over the period 1980–93. The objectives of the evaluation were as follows: to describe levels and trends in programme activities and coverage, including oral rehydration therapy (ORT) use; to describe levels and trends in severe diarrhoeal morbidity and mortality among under-5-year-olds; to relate the levels and trends of programme activities (including ORT use) to severe diarrhoeal morbidity and mortality; and to consider alternative explanations for the trends in severe diarrhoeal morbidity and mortality.

Although many countries have diarrhoeal disease control programmes, their impact has only been evaluated by a few, e.g. Brazil, Egypt and Mexico. The studies in Egypt and Mexico clearly demonstrate the role of evaluation in programme improvement and replanning (3). In Brazil, diarrhoeal mortality fell sharply after ORT was introduced, and ecological analysis

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showed that ORT use rates were inversely correlated with infant diarrhoea mortality. These changes were apparently not due to socioeconomic changes nor to other interventions (4).

The method used in the evaluation was the stepwise approach proposed by Habicht et al. (5), starting with whether services were provided, and progressing through utilization measures, the programme coverage among the target population, and finally whether a possible impact was achieved. In view of the non-experimental nature of the data, the type of inference that may be made from this evaluation is limited to the adequacy and plausibility of the programme's effect.

## Methods

Routinely collected data on morbidity and mortality trends were obtained from health statistics reports of the Health Intelligence Service and the NCDDP. Socioeconomic indicators, including annual average family income and expenditures, gross national product, and unemployment rates, were derived from the Philippine population census data collected by the National Statistics Office.

### ORS data

Data on oral rehydration salt (ORS) production and distribution were taken from routine annual reports of the NCDDP. Information on ORS utilization, in terms of access rates, was collected from various sources. For example, the 1986 ORS access rate was taken from the routine NCDDP annual report, but the rate for 1990 was obtained from a comprehensive desk review of control of diarrhoeal diseases, involving interview of key management and support staff at the Department of Health and review of more than 80 programme documents. The 1992 ORS access rate was based on a health facility survey conducted by the Health Intelligence Service of selected *barangay* (smallest political unit or village) health stations of the 10 provinces in three regions. Some information on ORS use was also available from selected regional household surveys; for example, those conducted in Cebu in 1987 and 1989, and in Cagayan de Oro City in 1988 and 1991, and from nationwide surveys. The 1989 Cebu survey included mothers or primary caretakers of 7732 children under 5 years of age from the 120 clusters selected from a list of 247 *barangays* using a probability-proportionate-to-size scheme. The 1987 ORS use was cited in this survey but no details of methodology were given. In the 1988 Cagayan de Oro survey, mothers of 6112 children under 5 years of age from 120 clusters were sampled from a list of 32 urban and 24 periurban *barangays*, also using a probability-proportionate-to-size scheme. The nationwide surveys were the 1987 National Health Survey and the 1993 National Demographic Survey. In the 1987 survey, 18 000 households were selected using a stratified, two-stage cluster sampling design (with *barangays* selected in the first stage of the sample selection and households within the *barangays* as the second stage). The households included 5626 mothers and their 8458 children under 5 years of age in 14 of the 15 regions in the country and also used a stratified two-stage sampling design with urban/rural area of residence as a stratifying variable. Both nationwide surveys used interviewer-administered questionnaires.

### Other data

Pertinent information on ORT use rates, case management, treatment-seeking, costs and quality of health-worker training

were gathered from the household surveys, health facility surveys, and routine NCDDP annual reports. The 1985 comprehensive desk review was another important source of information, covering 11 131 children under 5 years of age in 9106 households. In this survey, 30 clusters formed by one or more *barangays* were chosen at random. In addition, members of the review group visited a random sample of health facilities at all levels of the health delivery system, from the regional hospitals down to the *barangay* stations, although the exact number visited was not reflected in the review. Information on water and sanitation coverage was taken from the routine annual reports of the Department of Health Environmental Health Service, which comprised collated regional health office reports.

To complement the record review, information on availability of supplies and services, perception about morbidity and mortality trends, admission policies and management practices, etc. was obtained through key informant interviews. The informants were the NCDDP regional coordinators and the chiefs of the paediatric wards or clinics in the private and government hospitals in almost all health regions in the country.

Available indicators of provision and utilization of CDD services include ORS production, distribution, and utilization/coverage; health education; health-seeking; knowledge and practices of mothers/caretakers; and total budget. Time trends for these indicators were described and analysed.

An ecological analysis was performed with 1993 data to determine the spatial association between diarrhoea mortality and the different programme indicators, and other factors that influence the frequency of diarrhoea, using Spearman's rank correlation coefficient.

## Results

### Indicators of provision and utilization of services

#### Oral rehydration

In 1992, it was estimated that the Philippines required 5.5 million packets of ORS per year to meet its basic needs. ORS was produced by the Department of Health from 1981 to 1986, after which decreasing production by the department was supplemented largely by commercial and external sources such as UNICEF. By 1991, ORS was available only through commercial production and external sources.

Although ORS production was sufficient, there were problems in its distribution, which led to its underuse. An evaluation of the NCDDP in September 1988, for example, reported that ORS was unavailable in some areas and in excess supply in others. This was attributed to lack of funds, delays in fund release, the tedious process of procurement (6, 7), the absence of a reliable system of determining health facility ORS needs, inadequate warehousing, lack of transport, and a lack of a logistic information system (8). Nevertheless, access to ORS seemed to be quite high and sufficient to reduce diarrhoea mortality. Household surveys indicated an improvement in the use of ORS. The access rate increased from 60% to 85% over the period 1989–92, although initially there was a decline from 1986 to 1989 (2, 9).

Data from national surveys in 1985 and 1993 show that between one-third and one-quarter of diarrhoea cases, respectively, were treated with ORT using the pre-1993 definition (the percentage of caretakers who spontaneously

mention giving ORS, rice water, soups, coconut water or fruit juices to their children with diarrhoea) (2, 9, 10). There is no clear time trend in coverage. There are no surveys after 1993, when the definition of ORT use was revised to include continued breastfeeding.

Consolidated routine reports for total expected diarrhoea cases from all regions nationwide also show a very slight increase in rate of use of ORS from 1988 (2.7%) to 1989 (3.3%), while the nationwide surveys for ORS use rate based on the cases seen in government facilities indicated high use, increasing slightly from 1987 (88.4%) to 1989 (90.0%) (2, 9). However, caution must be observed in comparing these rates because use of ORS was defined differently in each instance. In the consolidated report, the rate was defined as the number of cases receiving ORS at a Department of Health facility divided by the number of diarrhoea cases expected in the community (based on 2–8 episodes per child per year). In the nationwide survey, ORS use rate was defined as the number of cases receiving ORS divided by the number of cases with diarrhoea in the community calculated using CDD household survey methodology.

Despite the increase, ORT and ORS use rates have remained low. A low coverage is not necessarily incompatible with an impact on mortality if ORT is used mainly for severe cases. This could not be determined, however, since there are no available local data on the use of ORS or ORT according to the mother's perception of severity.

### Training/health education

There were widespread training activities during the period studied, including the establishment of diarrhoea training units (DTUs) at the regional level, a child survival information centre, and ORT libraries, and the integration of training in the control of diarrhoeal diseases in professional promotions and curricula. From 1986 to 1992, clinical diarrhoea case management training and supervisory skills courses were conducted. Training coverage was generally high, especially at the regional level.

PRITECH (Technology for Primary Health Care), in collaboration with WHO and NCDDP designed and implemented a two-phase evaluation of DTUs and performance of the graduates. Results showed that training courses conducted at the DTUs were "adequate" in terms of content and methods of instruction; 60–80% of health workers adequately assessed and treated cases on the basis of knowledge testing, case observation, and case simulation (11).

Information dissemination and education campaigns were extensive. Over the years, the information campaigns on diarrhoea have evolved from printed materials only to those involving use of print, radio and television, and have also switched from mainly curative to preventive and promotive concerns. A major milestone in diarrhoea control promotion in the Philippines was the translation of information materials into five local dialects in 1991.

NCDDP also worked closely with the Department of Health's breastfeeding programme. Between 1987 and 1993 there was an increase (from 59.0% to 69.3%) in the rate of breastfeeding up to the sixth month of life. There also appeared to be an increase in exclusive breastfeeding at age 0–6 months between 1988 (22.0%) and 1993 (32.9%) and in the proportion of infants who had ever been breastfed between 1986 (82.0%) and 1992 (90.0%) (12).

In 1988 a survey conducted among 300 general practitioners and paediatricians in three selected regions showed a high frequency of inadequate prescribing and counselling. On the other hand, available data from regional DTUs show increasing trends of ORS use, with a corresponding decrease in use of intravenous fluids and antibiotics. The key informant survey carried out as a part of this research showed that knowledge and attitudes were largely adequate. ORT was identified as the first line of management for diarrhoea cases among outpatients in private hospitals. Oral rehydration solutions (e.g. Pedialyte (Abbott Laboratories (Philippines) Inc., Mandaluyong City, Philippines) and Hydrite (Westmont Pharmaceutical, Inc., Manila, Philippines)) were popular, as were substitutes such as rice water, weak tea or soup. Volume replacement was recommended for every bout of diarrhoea depending on the age of the patient (13).

Nationwide surveys indicated that mothers' knowledge and use of ORS for diarrhoea appeared to increase between 1987 and 1993, with a notable decline in drug use for this condition (10, 14). Data on the correct use of ORS were limited to those collected during a nationwide survey in 1987; in about 90% of 636 226 episodes of diarrhoea treated with Oresol (WHO formulation) the solution was prepared correctly (one packet to one litre of water). The practice of continued feeding during episodes of diarrhoea also increased, although the frequency of children receiving more fluids was generally low. A nationwide household survey of children under 5 years of age indicated that continued feeding during episodes of diarrhoea also increased from 62.9% in 1987 to 88.0% in 1993, while the frequency of children receiving increased fluids decreased from 43.5% to 21.0% (10, 14).

### Mortality trends

Trends in the major causes of mortality over an 18-year period (1975–93) were compared to determine whether or not the change observed in diarrhoea mortality was also due to other reasons. Fig. 1–3 present the trends of diarrhoea and ARIs among infants and young children, as well as in perinatal mortality.

Diarrhoea mortality in infants registered an annual decline of 24 per 100 000 population, i.e. 5% of the baseline level of 486 per 100 000 population (Fig. 1). Among young children, the annual decline of 5 per 100 000 also represents a 5% decline from the baseline level of 108 per 100 000 population (Fig. 2). There was no significant change in the diarrhoea case fatality rates among hospitalized infants and young children.

Trends in ARI-related deaths showed that among infants the decline was 4%, while among young children the corresponding level was only 2% (Fig. 1 and Fig. 2). Thus, among young children diarrhoea mortality declined twice as much as ARI; but among infants the rate of decline was similar for both diseases.

Perinatal mortality exhibited an average annual decline of 0.5 per 1000 live births, i.e. a 2.5% decline relative to the baseline level of about 20 per 1000 live births, half that for diarrhoea mortality.

### Morbidity trends

The proportions of hospital admissions due to diarrhoea among infants and young children declined steadily between

Fig. 1. Mortality rates for diarrhoea and acute respiratory infections (ARI) among infants (<1 year old), Philippines, 1975–92

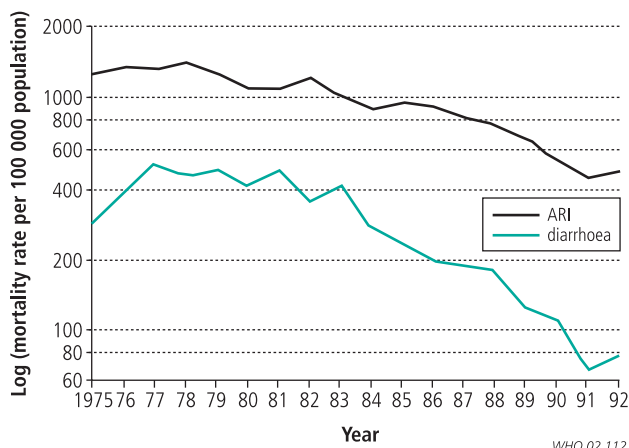
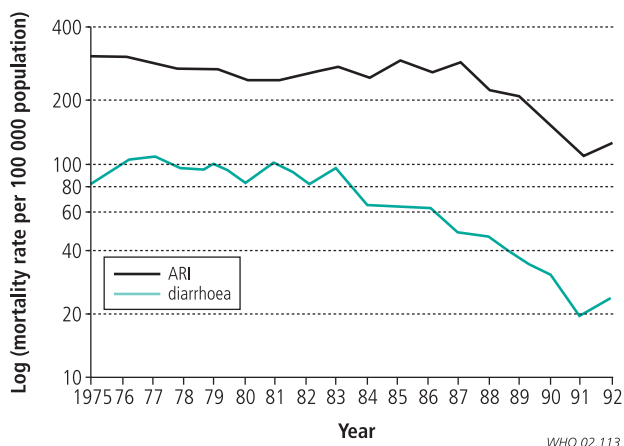


Fig. 2. Mortality rates for diarrhoea and acute respiratory infections (ARI) among young children (1–4 years of age), Philippines, 1975–92



1980 and 1993, with relative annual declines of 2.5% and 2.4%, respectively. The corresponding declines for admissions due to ARI were 1.8% and 0.4% (Fig. 4 and Fig. 5).

### Ecological analyses

Data available to permit ecological analyses for the association between the proportion of deaths from diarrhoea and the different programme indicators, and with other factors that influence the frequency of diarrhoea, were limited. However, region-based ecological analysis showed no significant association between the level of knowledge of ORS in the 14 health regions and the proportion of deaths due to diarrhoea among infants ( $r = 0.0988$ ;  $P = 0.757$ ) and young children ( $r = 0.2262$ ;  $P = 0.437$ ). Similar analysis of the use of ORT and the proportion of deaths due to diarrhoea among infants ( $r = 0.0902$ ;  $P = 0.759$ ) and young children ( $r = 0.0197$ ;  $P = 0.95$ ) in 1993 also failed to show a significant correlation.

Annual measles immunization coverage showed a constant increase from 1987 to 1993 and was negatively associated with the declining diarrhoea mortality ( $r = -0.94$ ;  $P = 0.005$ ). However, available regional data for 1993 did not

Fig. 3. Perinatal death rate, Philippines, 1976–93

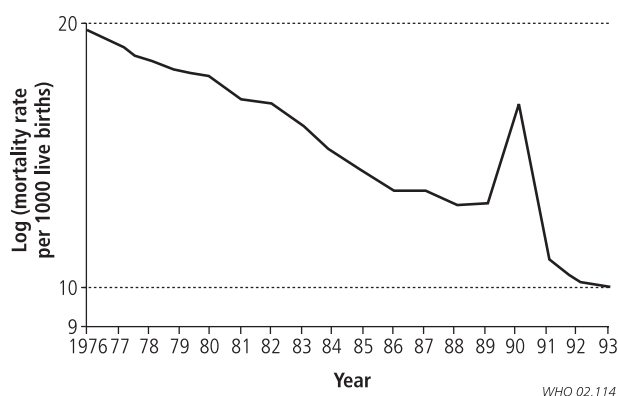


Fig. 4. Proportion of admissions due to diarrhoea and acute respiratory infections (ARI) among infants (0–11 months) in selected private and government hospitals, Philippines, 1980–93



show a significant correlation between measles immunization coverage and diarrhoea mortality among infants ( $r = 0.0549$ ;  $P = 0.852$ ) and young children ( $r = 0.3451$ ;  $P = 0.227$ ).

Regional data for 1993 showed a significant correlation between the proportion of diarrhoea deaths among under-5-year-olds and the prevalences of wasting ( $r = 0.5112$ ;  $P = 0.051$ ) and stunting ( $r = 0.6273$ ;  $P = 0.012$ ) (Fig. 6 and Fig. 7). The scattergrams show that regions with a low proportion of deaths due to diarrhoea tended to have a lower proportion of stunting and/or wasting. Caution must be observed in interpreting the correlation coefficients, however, since data available for stunting and wasting included children aged 0–6 years, while those for the proportion of diarrhoea deaths included those aged 0–4 years.

### Changes in external factors

During the period under review, although diarrhoea mortality registered a relative annual decline of 5%, there was an increase in the provision of safe water supply and sanitation facilities. Safe water coverage increased from 59% in 1980 to 86% in 1992; provision of sanitation facilities increased from 50% to 76% in 1992.

From 1987 to 1991, there was a general improvement in the average income of families and the proportion of families whose annual average income was  $\geq$  P 30 000 increased. Data

Fig. 5. Proportion of admissions due to diarrhoea and acute respiratory infections (ARI) among young children (1–4 years) in selected private and government hospitals, Philippines, 1980–93

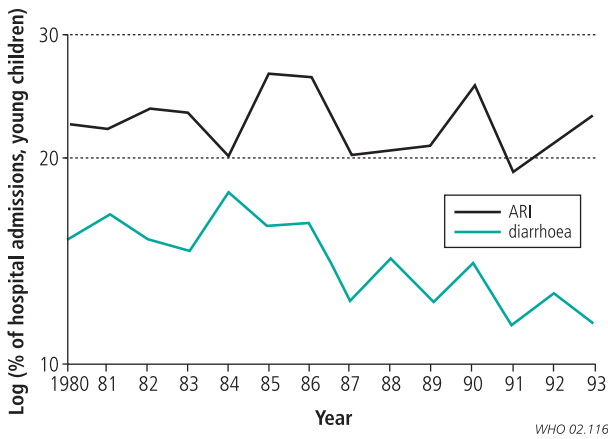
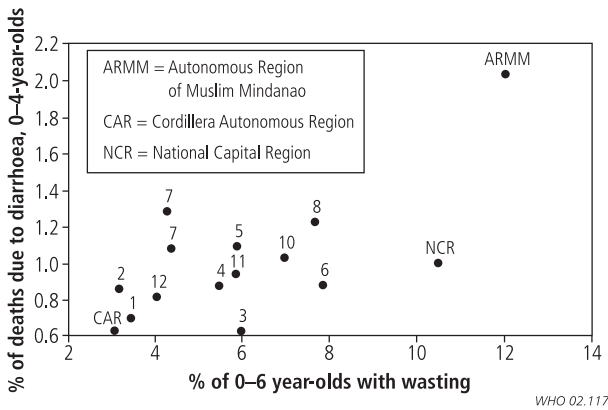


Fig. 6. Correlation between wasting and proportionate deaths due to diarrhoea among infants and young children, by region, Philippines, 1993



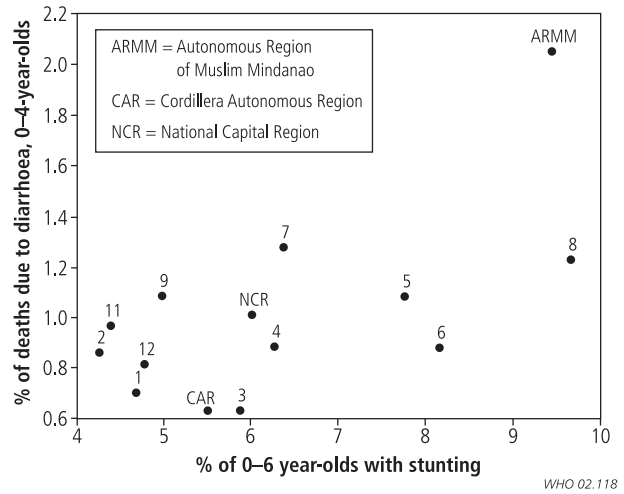
from the *Philippine statistical yearbook* show that the trends of gross national product and unemployment rate have been rather unstable and were worst in the period 1985–1987 (10).

As mentioned above, there were positive changes in several factors related to the health service, including an increase in exclusive breastfeeding rates (from 22% in 1988 to 33% in 1993) among infants under 6 months of age (12); increased measles vaccine coverage from 67% (1987) to 88% (1993) (15); and a reduction in the rate of stunting from 17% in 1982 to 5% in 1993 (16). However, these three indicators may have been affected by the NCDDP, so they cannot be considered as factors external to the programme.

## Discussion

Evaluation of nationwide programmes is markedly affected by the type and quality of the available data. The lack of reliable information, especially on ORT use and on mortality rates across the years, has limited the present analysis. Available surveys, undertaken at provincial, regional or nationwide levels, may not provide comparable information for examining trends in relevant variables. Ecological analyses can be particularly affected by data quality, as discussed below.

Fig. 7. Correlation between stunting and proportionate deaths due to diarrhoea among infants and young children, by region, Philippines, 1993



For many decision-makers, the demonstration of programme adequacy (4) is sufficient to determine whether or not activities should continue. In the present case, the adequacy of programme performance is supported by the increase in ORS production and access rates, the existence of widespread training activities, and the large-scale mass-media campaigns that resulted in improved knowledge and practices among health workers and caretakers. Household survey data showed that about one-third of diarrhoea episodes were treated with ORS, which may indicate that the programme had a substantial impact if the more severe episodes were more likely to receive ORS, as shown in studies from other countries (17). Furthermore, evidence for impact adequacy is provided by concomitant and steady declines in diarrhoea mortality rates and in the proportion of deaths due to diarrhoea among under-5-year-olds.

The fact that diarrhoea mortality and hospital admission rates fell faster than those related to ARI among children aged 1–4 years (although not so markedly for infants), and that diarrhoea mortality also dropped much faster than deaths due to perinatal causes, indicate that the programme had an impact. Although hospital data were collected from selected private and government hospitals and may not accurately reflect general trends, trends for both mortality and hospital morbidity were remarkably similar.

It should be noted that there were concomitant programmes for improving ARI management and for promoting breastfeeding — which affects both diarrhoea and ARI — which would limit demonstrating an isolated impact of the NCDDP on diarrhoea. Improvements in nutritional status were clearly documented, and could also affect both diarrhoea and ARI mortality.

The geographical analyses based on the 14 regions of the country were limited to a few available variables, and were not very consistent. There was no association between the proportion of deaths due to diarrhoea in 1993 with either knowledge or use of ORS. Associations between diarrhoea mortality and measles vaccine coverage were statistically significant by year but not by region. On the other hand, associations with the prevalences of wasting and stunting were positive and significant. The ecological analyses therefore did

not support that the NCDDP had an impact. The possible limitations of the ecological data include well-recognized regional variation in the completeness of registration of vital events in country areas. Estimation of mortality rates may be affected by underreporting, particularly in remote provinces. The indicators, mostly based on annual reports, health facilities survey and household surveys, can have different levels of validity. This may have contributed to the absence of a correlation between ORS use and diarrhoea mortality.

The difficulty of establishing whether or not the decline in diarrhoea mortality was due to the NCDDP is complicated by the absence of adequate (and accurate) data that could quantify the programme's several process indicators, both in the regions and nationwide. Because of the lack of information, these process indicators have been indirectly measured through ORS and ORT use rates. Other promotive and preventive measures could provide alternative explanations for the observed trend. These include campaigns for breastfeeding, and personal hygiene such as hand-washing, proper food preparation, and curriculum integration. Successful information and education campaigns could improve diarrhoea case management in terms of home and care-seeking behaviour. Also, improved provision of governmental health services in general — particularly the incorporation of the diarrhoeal disease control programme into the primary health care at the *barangay* level — could affect the decreasing trend in diarrhoea mortality and morbidity.

Changes in external factors, including improvements in water and sanitation, and the trend towards higher wage levels,

may have contributed to the reduction in mortality among under-5-year-olds. However, the lack of data precluded estimating the likely impact of such factors.

In conclusion, our evaluation demonstrated that implementation of the NCDDP was adequate and that the expected reductions in diarrhoea morbidity and mortality were clearly documented. The plausibility that the observed impact was due to the programme could not, however, be established beyond doubt.

This study provides a useful example of the advantages and limitations of a national evaluation of a large-scale programme. It is hoped that these results may stimulate similar evaluations elsewhere, and in particular help raise awareness of the importance of consistent and regular data collection during programme implementation, with a view to subsequent evaluation. ■

### Acknowledgements

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**Conflicts of interest:** none declared.

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## Résumé

### Evaluation du programme national de lutte contre les maladies diarrhéiques aux Philippines, 1980-1993

**Objectif** Évaluer l'impact du programme national de lutte contre les maladies diarrhéiques (NCDDP) aux Philippines pendant la période 1980-1993, en décrivant le niveau et les tendances des activités du programme et en les reliant à la morbidité et à la mortalité dues à la diarrhée sévère chez les moins de cinq ans.

**Méthodes** Les données de routine sur les tendances de la morbidité et de la mortalité ont été tirées des rapports de statistiques sanitaires du service d'information sanitaire et des rapports du NCDDP. Les indicateurs socio-économiques, notamment le revenu et les dépenses annuels moyens par famille, le produit national brut et les taux de chômage, ont été calculés à partir des données du recensement de la population des Philippines recueillies par l'office national de la statistique.

**Résultats** Par rapport aux taux de référence, la mortalité par diarrhée chez les nourrissons et les jeunes enfants a baissé

d'environ 5 % par an pendant la période de 18 ans couverte par le programme. Cette baisse a été plus rapide que pour la mortalité due aux infections respiratoires aiguës chez les enfants du même âge et pour la mortalité due à d'autres causes périnatales. Les taux d'hospitalisation pour diarrhée ont enregistré une baisse annuelle de 2,4 % par rapport au taux de référence.

**Conclusion** Ces résultats indiquent que le programme a eu un impact sensible. Pendant la période considérée on a pu également constater une amélioration d'autres facteurs ayant un impact positif sur la santé, comme l'allaitement au sein, la nutrition et l'assainissement. La qualité des données existantes, notamment en ce qui concerne leur exhaustivité et leur fiabilité, n'a pas permis de procéder à une analyse plus poussée. Il est donc difficile de conclure de façon certaine que les tendances observées sont uniquement le résultat du NCDDP.

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## Resumen

### Evaluación del Programa Nacional de Lucha contra las Enfermedades Diarreicas en Filipinas, 1980-1993

**Objetivo** Evaluar el impacto del Programa Nacional de Lucha contra las Enfermedades Diarreicas en Filipinas durante el periodo 1980-1993, describiendo los niveles y las tendencias de las actividades del programa y relacionándolos con la morbilidad grave y la mortalidad por diarrea entre los menores de 5 años.

**Métodos** Se obtuvieron datos sistemáticos sobre las tendencias de la morbilidad y la mortalidad a partir de los informes de estadísticas sanitarias del Servicio de Inteligencia de Salud y del Programa Nacional. Los indicadores socioeconómicos, incluidos los

ingresos y gastos familiares medios anuales, el producto nacional bruto y las tasas de desempleo, se extrajeron de los datos del censo demográfico de Filipinas reunidos por la Oficina Nacional de Estadística.

**Resultados** En comparación con los niveles basales, la mortalidad por diarrea entre los lactantes y los niños pequeños descendió alrededor de un 5% anual a lo largo del periodo de 18 años analizado. La disminución fue más rápida que la observada para las infecciones respiratorias agudas (IRA) entre niños de edad

semejante y para las causas perinatales. Las tasas de ingreso hospitalario por diarrea registraron una disminución anual del 2,4% respecto al nivel de referencia.

**Conclusión** Los resultados obtenidos indican que el programa tuvo un impacto considerable, y además durante el periodo de estudio se observó cierto grado de mejora de otros factores

beneficiosos para la salud, como la lactancia materna exclusiva, la nutrición y el saneamiento ambiental. El grado de calidad de los datos, sobre todo en lo tocante a la integridad y fiabilidad, no permitió hacer un análisis más detallado, lo cual impide asegurar con rotundidad que las tendencias observadas se debieran exclusivamente al Programa.

## References

1. *Philippine health statistics, 1970–1993*. Manila: Department of Health–Health Intelligence Service; 1993.
2. *A Joint DOH/WHO/UNICEF/USAID Control of Diarrheal Diseases Comprehensive Desk Review, Philippines, 3–4 December 1990*. Manila, Department of Health–Maternal and Child Health Services Programme for the Control of Diarrhoeal Diseases; 1991.
3. *Programme for Control of Diarrhoeal Diseases Interim Programme Report 1990*. Geneva: World Health Organization; 1991. WHO document WHO/CDD/91.36.
4. Victora CG, Olinto MTA, Nobre LC, Barros FC. Falling diarrhea mortality in northeastern Brazil: did ORT play a role? *Health Policy and Planning* 1996;11:132-41.
5. Habicht JP, Victora CG, Vaughan JP. Evaluation designs for adequacy, plausibility and probability of public health programme performance and impact. *International Journal of Epidemiology* 1999;28:10-8.
6. *Regional ORS supply monitoring surveys*. Manila: Department of Health; 1990. Unpublished report.
7. Loevinsohn BP. *Ensuring the supply of oral rehydration salts in the Department of Health*. Manila: Department of Health–Maternal and Child Health Services Programme for the Control of Diarrhoeal Diseases; 1992. Unpublished report.
8. Alt D. *Improving ORS supply and distribution in the Philippines*. Quezon City; Philippine Pediatric Society; 1994. Unpublished report.
9. *Control of Diarrheal Diseases Annual Reports*. Manila: Department of Health; 1985–1993. Unpublished reports.
10. *1993 National Demographic Survey*. Philippine National Statistics Office and Macro International Inc: Calverton (MD); 1994.
11. Casazza LJ, Endsley S. *Linking training and performance: an evaluation of diarrhea case management training in the Philippines*. Quezon City: Philippine Pediatric Society; 1994. Unpublished document.
12. *Breastfeeding program annual reports*. Manila: Department of Health, Maternal and Child Health; 1987–1993. Unpublished reports.
13. *Survey of KAP among physicians in regions 6, 7 and 10*. June to July 1988. Consumer Pulse Inc. Newsletter.
14. *1987 National Health Survey*. Manila: Department of Health, Health Intelligence Service; 1988.
15. *Accomplishment report of the Expanded Immunization Program, 1987–1993*. Manila: Department of Health. Unpublished report.
16. Villaneja GM, Molano WL, Cerdeña CM, Laña RD, Constantino AS, Tarrayo ER, et al. *Fourth National Nutrition Survey of the Philippines*. Manila: Food and Nutrition Research Institute – Department of Science and Technology; 1995. Technical Report Series No. 2.
17. Barros FC, Victora CG, Forsberg B, Maranhao AG, Stegeman M, Gonzalez-Richmond A, et al. Management of diarrhoea in children at household level: a population-based survey in the Northeast of Brazil. *Bulletin of the World Health Organization* 1991;69:59-65.