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INVITED ARTICLE

Diarrhoeal Disorders in the Philippines

by

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Abstract

The magnitude of the problem of diarrheas in the Philippines is discussed and presented, emphasizing that gastroenteritis ranks second as a cause of morbidity for Filipinos for all ages, and number two as a cause of mortality during infancy up to the year 1974. The mortality rate is highest for children under 5 years of age for all diarrheal diseases such as choleras, dysenteries and gastroenteritis with the exception of typhoid fever. From 1965 to 1974 there has been no significant decline in the morbidity as well as mortality rates of diarrheal disorders in the Philippines with the exception of gastroenteritis and dysenteries where advances in therapy, particularly rehydration account for the improved mortality rates. The picture is different in a government communicable disease hospital in Metro Manila.

Lactose malabsorption exists in almost half of Filipinos, however, diarrhea due to lactose malabsorption found in association with diarrheas is very com-

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monly encountered. This paper mentions solutions to the problem of diarrheal disorders, including early and accurate diagnosis and management. Specific management stresses both oral and intravenous rehydration, dietary management, correction of protein-energy malnutrition and antibiotic therapy, as necessary.

Rehydration programs through government and nongovernmental agencies are being done but is probably not adequate to cope with the problem. The emphasis should be on preventive measures such as nutrition programs, environmental sanitation, community health education, and maternal and child health campaigns. The various agencies involved in these programs are mentioned.

Research in the field of diarrheal disorders although being done is still insufficient and will have to be reinforced and encouraged.

The Magnitude of the Problem

The problem of diarrheas in the Philippines is of tremendous magnitude. The urgency of a massive health program versus diarrhea would be easier to understand if one looks at our vital and health statistics. Gastroenteritis ranks second as a cause of morbidity for Filipinos for all ages as shown in Fig. 1. As the cause of mortality, it ranks No. 2 during infancy. (Fig. 2).

The mortality rate is highest for children under five years of age when diarrheal diseases play a much more significant role (Fig. 3). A large proportion of the high infant mortality rate may be attributed to various diarrheal disorders. Figures 4 to 7 show us that except for typhoid fever, morbidity rates of all diarrheal diseases were highest among infants and young children in 1974.

Over a period of 10 years (1965 — 1974) there has been no significant decline in the morbidity as well as mortality rates of gastroenteritis, dysentery, typhoid and cholera in the Philippines (Figs. 8 and 9) with the exception of deaths from typhoid fever where antibiotics have played a very important role.

In contrast, the mortality rates of these condition in San Lazaro Hospital, a government communicable disease hospital in Metro Manila appear to decrease gradually from 1972 to 1975 (Fig. 10).
This would mean that cases outside Metro Manila are probably not receiving adequate medical attendance and care. Fig. 11 shows us that the case fatality rates are generally low except for bacillary and amoebic dysentery. This is probably due to the fact that the hospital gets the more serious cases of dysentery. San Lazaro Hospital admits between 2 - 4 thousand patients per month and are admitting from 100 to 200 cases of infectious diarrhea cases per month. (Fig. 12).

A downward trend in the number of infectious diarrhea cases has been observed in 1975. From Figures 13 to 17, it is noted that only gastroenteritis and cholera manifest seasonal variations, the peaks coinciding with summer (summer diarrheas) and the rainy season and that the only diseases with a marked decline in morbidity rates through the years are cholera and typhoid fever. Serotyping for E. coli has been done on and off but difficulty with obtaining sera has always been a problem.

A high incidence of lactose malabsorption is present in normal asymptomatic (40 - 50%) Filipinos but only a small number of diarrheas occur due to a primary lactose intolerance per se. However, when diarrhea is already present, lactose intolerance usually has to be dealt with.

It is very important that any program or solution which may afford relief to these depressing statistics should be very welcome not only to the government but to the private sector as well.

Solutions to the problem

Early diagnosis of the disease is essential. Initial symptoms caused by diarrhea and the degree of dehydration must be detected as early as possible. Thus proper training and education of medical, paramedical and nonmedical personnel including education of the parents are necessary. Government physicians and private medical practitioners should make use of all available laboratory facilities and procedures for the early diagnosis of the disease. However, unfortunately in the Philippines, these are limited in number.

Specific Management

Aside from elimination of etiologic factors, if these can be pinpointed, dietary measures and maintenance of fluid and electrolyte balance are the mainstays of management.

Oral feedings may be stopped in severe diarrhea to rest the gastrointestinal tract or if the child is vomiting and then restarted after 4 - 6 hours, utilizing diluted formulas initially and gradually concentrating, depending on the ability of the gastrointestinal tract to tolerate feedings. It may be necessary to use a low-lactose or lactose-free formula for a few days.

Plain "lugao" (boiled rice) saltines or crackers, bananas and apple-sauce may be given thereafter. The amount of oral fluid intake should be included in the calculated fluid intake. The amount and quality of food is gradually increased as tolerated.

If the diarrhea is a chronic one and the child is malnourished with signs of protein-energy malnutrition it is not wise to prolong starvation. Correction of the dehydration and acidosis is of course of vital importance but dietary implementation should be started as soon as possible. A nonfat low-lactose, and moderately high protein diet may be utilized as a start followed by gradual increase in the fat and protein content as needed.

Medications such as antibiotics will have to depend on the etiology. The success in isolating the bacterial microorganism in the child's stool is usually dependent on the manner of collection and the time of examination. If oral medications provoke vomiting, it is better that these are left out until such time that the child can tolerate feedings.

The main problem in diarrheas is the dehydration which usually follows :

1. For mild dehydration, oral fluids are given only if the child can tolerate oral intake. However, if the child is vomiting, the intravenous route is used. Amount of fluid given : 100 + 25 ml/kg bw/day.

Kind of fluid : oralyte/pedialyte/others

Formula of fluid :	NaCl	2 gm/L
	$NaHCO_3$	1.5 gm/L
	KCl	1.5 gm/L
	Glucose	50 gm/L

TABLE 1: *Schedule of fluid therapy in Relation to Severity of Dehydration*

	Volume of water to administer (fluid deficit)	Length of administration
Mild Rehydration		
3% wt. loss in older children	50 ml/kg	1st 6 - 8 hours
5% wt. loss in infants	30 ml/kg	
Moderate Dehydration		
10% wt. loss in infants	100 ml/kg	½ of the total amount in the 1st hour and the rest in 6 - 7 hours
6% wt. loss in older children	60 ml/kg	
Severe Dehydration		
15% wt. loss in infants	150 ml/kg	½ of the total amount in the 1st 2 hours and the rest in 6 hours
9% wt. loss in older children	90 ml/kg	

2. For moderate dehydration, intravenous fluid drip is given with butterfly needle.

Amount of fluid: In isotonic dehydration, the parenteral fluid to administer for the deficit therapy should contain approximately 50 mEq/l Na^+ ion. This is contained in O/3% NaCl (in D_5W). For hypotonic dehydration, the parenteral fluid should have a concentration of 75 mEq/l Na^+ or 0.45 NaCl (in D_5W or $D_{2.5}W$), and in hypertonic dehydration, 25 mEq/l Na^+ or 0.15% (in D_5W).

Scheme of fluid given: See Table 1.

3. For severe dehydration, without shock, intravenous fluid drip with butterfly needle is started.

Amount of fluid given: 100 + 75 ml/kg/day.

Kind of fluid: (Ringer's lactate in D_5W).

After the administration of the initial hydrating fluid to restore the contracted vascular volume, 0.3% NaCl in D_5W containing 50 mEq/l NaCl is given in patients suffering from isotonic dehydration. For hypotonic dehydration the fluid utilized is 0.45% NaCl in D_5W or $D_{2.5}W$- containing 75 mEq/l NaCl. The volume to give is the remainder of the deficit therapy which is 75 ml/kg for severe dehydration. This amount is given in the next 6 - 7 hours.

Rehydration Programs

Rehydration programs are being implemented both by the government and the private sectors with emphasis on oral rehydration. The government through the Department of Health has set up rehydration centers such as puericulture centers for oral and intravenous treatment of patients suffering from diarrhea. Intravenous fluids are given only for moderately and severely dehydrated patients. The Philippine General Hospital is equipped for parenteral hyperalimentation and for rehydration of complicated and severe cases. The City Health Department of Manila has a 24-hour rehydration center and two other centers for day-care rehydration treatment.

The Philippine Pediatric Society helps in the training of medical, paramedical, auxillary workers and parents through its chapters and members in the health campaign for rehydration. Rehydration committees have been created by both the Philippine Medical Association and the Philippine Pediatric Society to help out in the implementation of the rehydration program and at present trials are being conducted utilizing various oral electrolyte solutions.

Preventive Measures

The Department of Health has programs on nutrition, environmental sanitation, community health education, maternal and child health with campaigns on deworming, immunizations and breast feeding. Environmental sanitation has emphasized establishment of potable water supply, proper solid and liquid waste disposal, prevention of water pollution, food sanitation, vermin and insect control, and personal hygiene. Obvious problems like sanitation, water supply and waste disposal are mainly entrusted to the government with some assistance from the private sectors, the community, and some agencies such as the UNICEF and the World Bank. The UNICEF financially assists the Department of Health in the improvement and construction of water supply. Loans from the World Bank through the local Water Utility Administration are extended for the improvement of a water works system of a certain region.

The Department of Local Government and Community Development (DGLCD) has organized cooperatives, also for the construction and improvement of the community water supply. Campaigns for the construction of new sanitary latrines and for the improvement of the unsanitary ones are in the hands of the Rural Health Units through the efforts of the Sanitary Inspector and his team.

The Department of Public Services under the office of the City Mayor has Refuse and Environmental Sanitation Centers for garbage collection and disposal. In Metro Manila alone, hundreds of garbage trucks collect refuse daily.

President Marcos has taken further steps to intensify the sanitation drive by

updating and codifying our scattered sanitary laws to ensure that they are in keeping with modern standards of sanitation and to provide a handy reference and guide for their enforcement. Thus Presidential Decree No. 856 better known as the Code on Sanitation was issued on December 1975. It has for its ultimate objective, the improvement of the health of Filipinos by directing public health services towards the protection and promotion of health of our people. Another decree, No. 522 was earlier promulgated prescribing sanitation requirements for the operation of establishments and facilities for the protection and convenience of the travelling public.

The Department of Education and Culture incorporates in the school curriculum, subjects on nutrition, hygiene and sanitation. More emphasis is given on environmental sanitation, preventive and social medicine and rehydration in the medical school curricula. Assignments of new medical and nursing graduates to rural areas are now implemented to solve the lack of trained medical manpower in the rural areas.

Other government and semigovernment agencies involved in nutrition and environmental sanitation directly or indirectly are the National Commission on Pollution Control (NCPC), the Department of Social Services and Development (DSSD), the National Media Production Center (NMPC), the National Science Development Board (NSDB), the National Nutrition Council (NNC), and the Food and Nutrition Research Institute (FNRI).

Significant assistance and support in the drive against diarrheas are received from other government agencies, private entitis and individuals. Campaigns against diarrheas are being done through community health education with the aid of government sponsored seminar and training for medical, paramedical and auxillary health workers, and house-to-house campaigns with active participation of private specialists. Information drives are being made through public health personnel, Youth Civic Action Program (YCAP) volunteers, public school teachers and "barangay" members. Health services like deworming, immunization, and encouragement of breast feeding are offered in all puericulture centers throughout the land. Pamphlets written in the dialect and in English are readily available.

The government has formulated an expanded immunization program for the country's children through the Department of Health and the National Immunization Committee. Immunizations are likewise available in private clinics and hospitals. Routine immunizations are compulsory procedures for public and private school children. Deworming campaigns are implemented through the Rural Health Units and public schools. The National Nutrition Program of the National Nutrition Council conducts nutrition education and activities in prima-

ry mothercraft nutrition centers and secondary centers. Encouragement of breast feeding is started during prenatal check-ups. There are now 20 nutrition rehabilitation wards known as malwards in government hospitals in different parts of the country. The Department of Agriculture and Natural Resources in waging and all out campaign for food sufficiency. Family planning is carried out by several organizations with the Population Commission as the main coordinator.

Research

Both the government through the National Science Development Board (NSDB) and National Research Council of the Philippines (NRCP) and the private sectors through professional societies, medical schools and centers, and drug firms help out in doing applied research along various lines relevant to gastroenteritis or diarrheas and rehydration. However, more research projects in the following fields should be encouraged:

1. Etiologic agents and factors
2. Other epidemiologic studies
3. Rehydration particularly with oral solutions

   Rehydration solutions must be economical, safe without danger of hypernatremia, must be suited to the type of dehydration, must be palatable and acceptable.
4. More effective public information and education.

Acknowledgement

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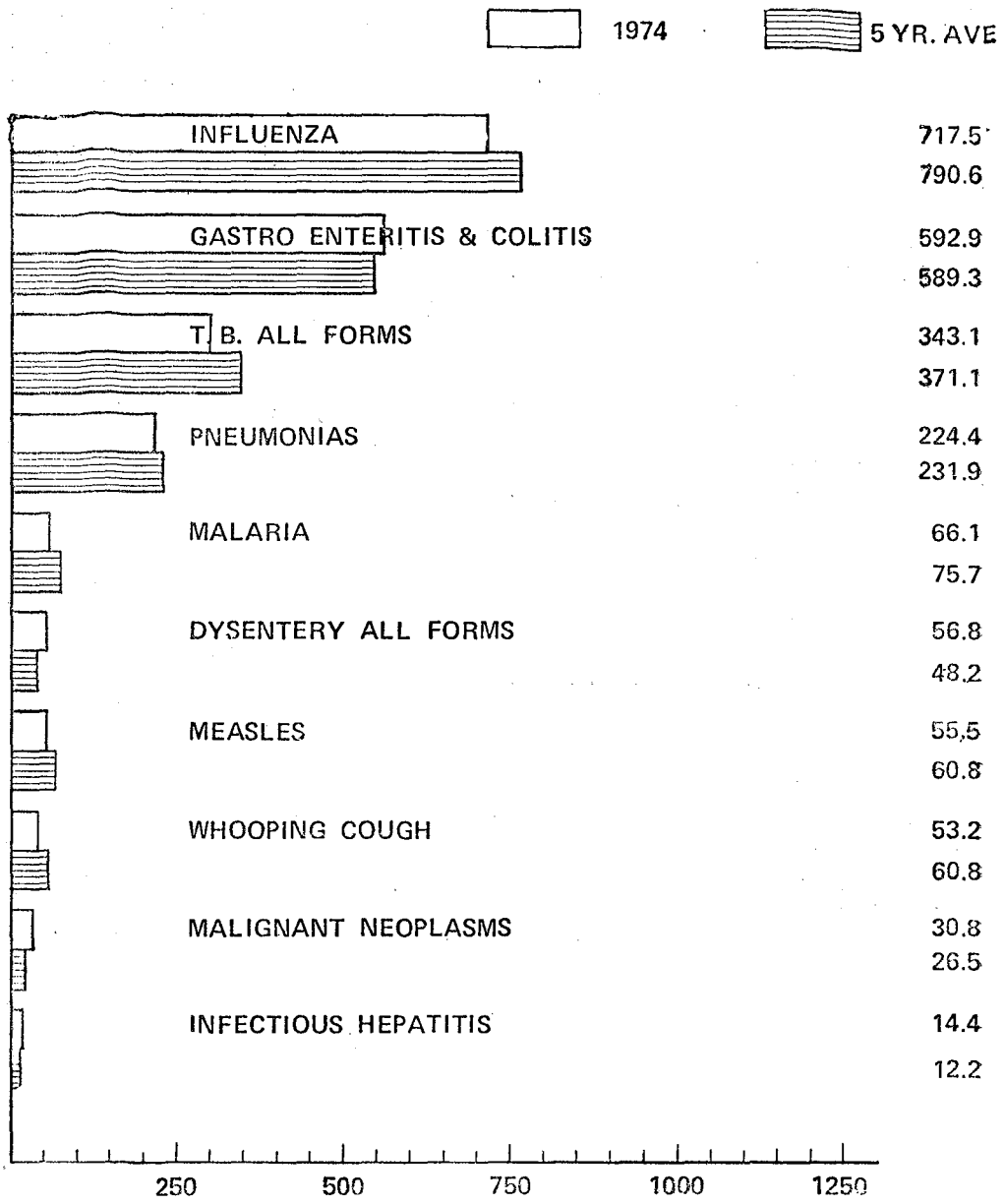

FIG. 1: *Morbidity: Leading Causes, Rate/100.000 Pop. Philippines 5 Yr. Ave, 1 (1969 — 1973) & 1974. Source: Philippines Health Statistics, 1974.*

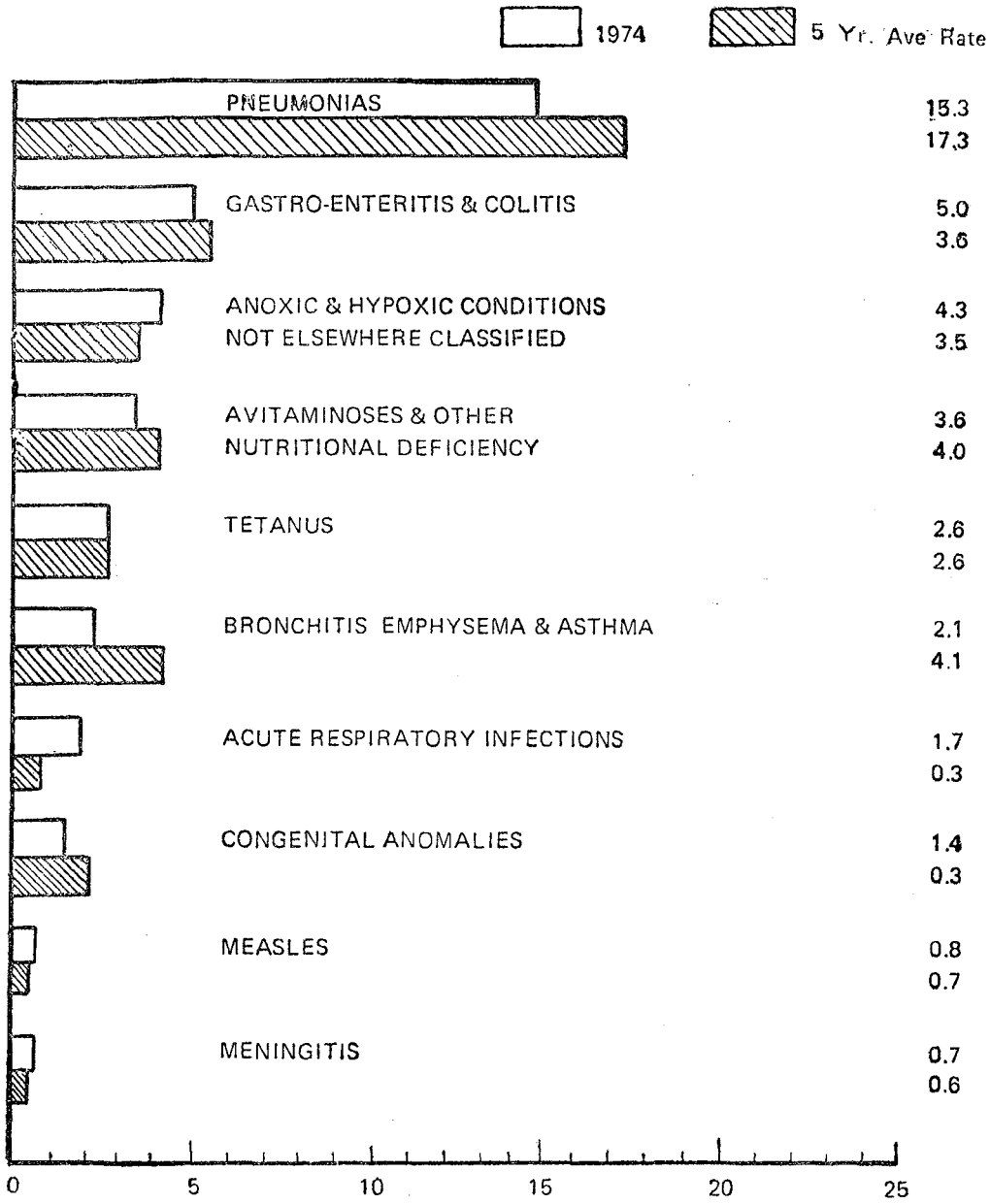

FIG. 2 : *Infant Mortality: Leading Causes, Rate/1000 Live Births 5 Yr. Ave, (1969 — 1973) & 1974. Source: Philippines Health Statistic, 1974.*

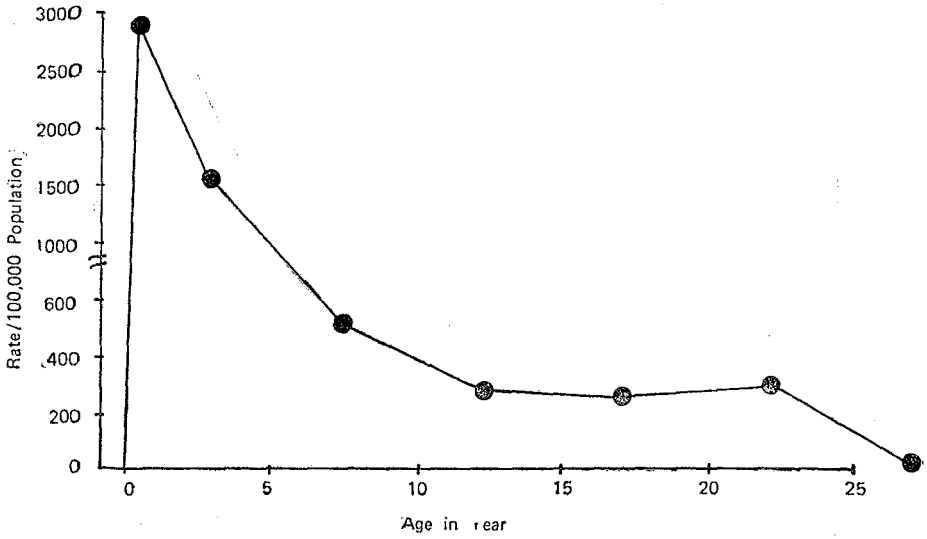

FIG. 3 : *Mortality Rate/1000 Population by Age Groups Philippines, 1974.*

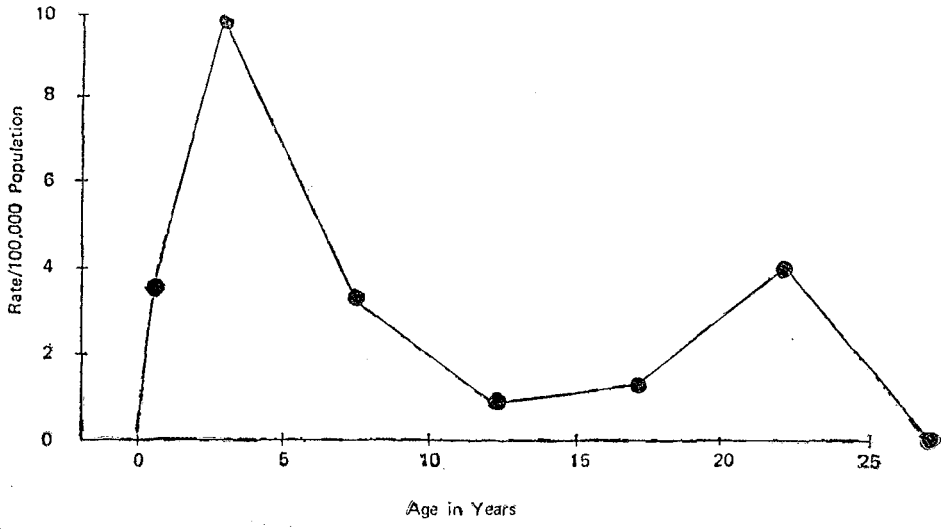

FIG. 4 : *Morbidity Rate of Cholera by Age Groups Philippines, 1974.*

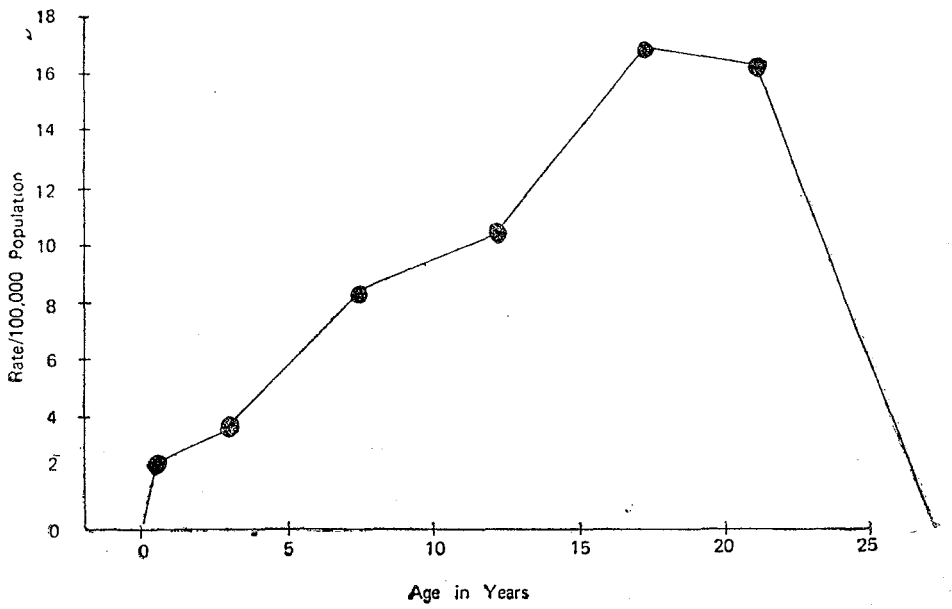

FIG. 5 : *Morbidity Rate of Typhoid Fever by Age Groups Philippines, 1974.*

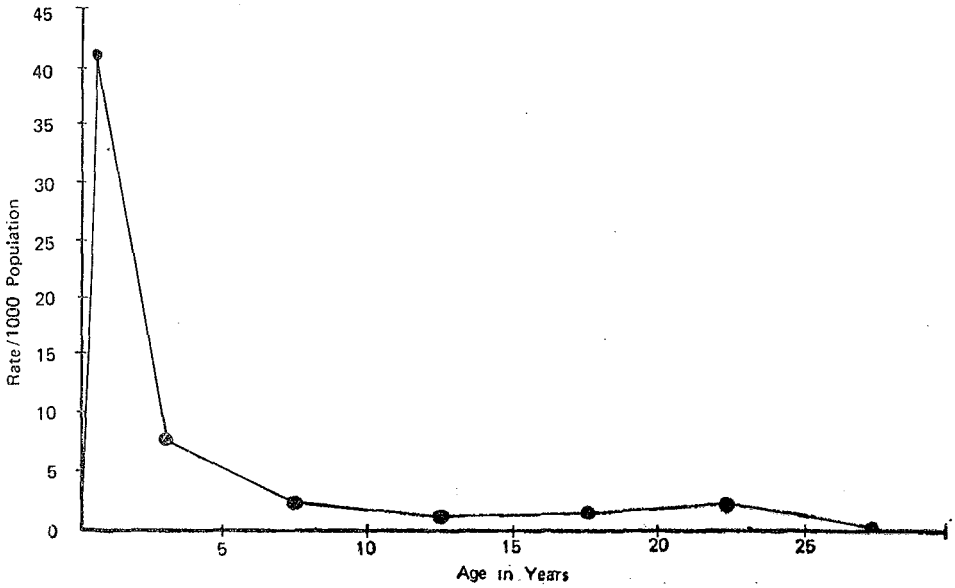

FIG. 6 : *Morbidity Rate of Gastroenteritis by Age Groups Philippines, 1974*

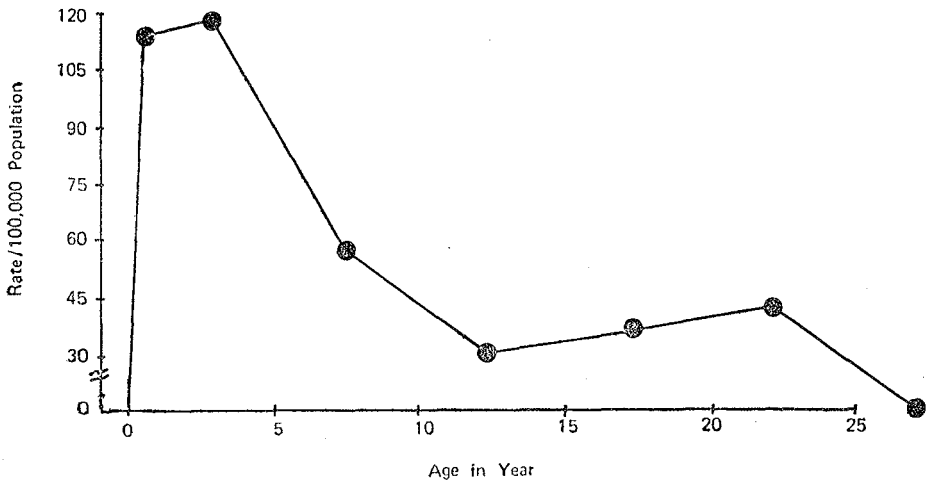

FIG. 7 : *Morbidity Rate of Dysentery by Age Groups Philippines, 1974*

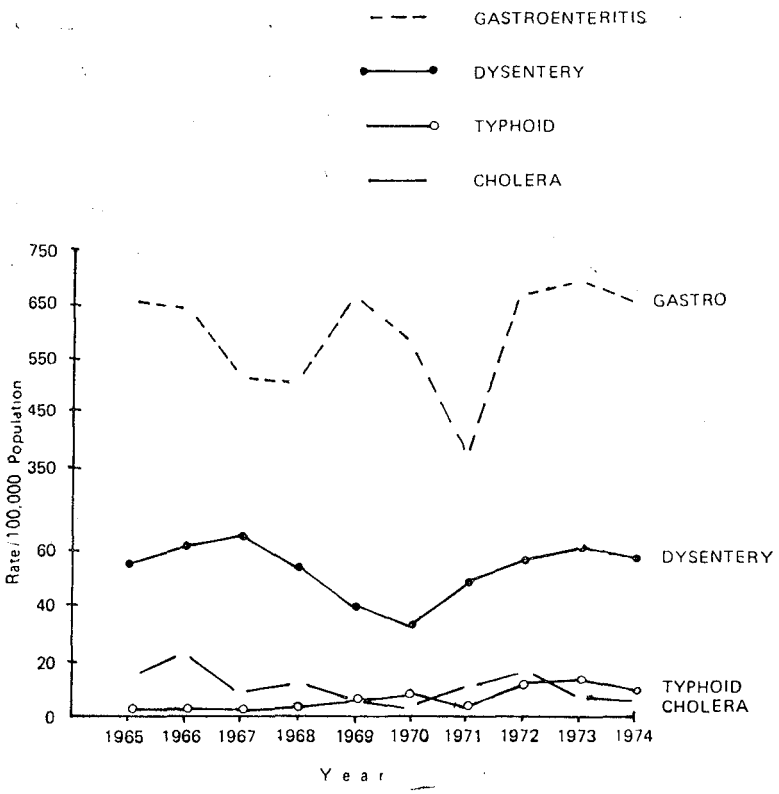

FIG. 8 : *Morbidity Rate/100,000 Population of Different Gastrointestinal Disorders, Philippines, 1965 — 1974.*

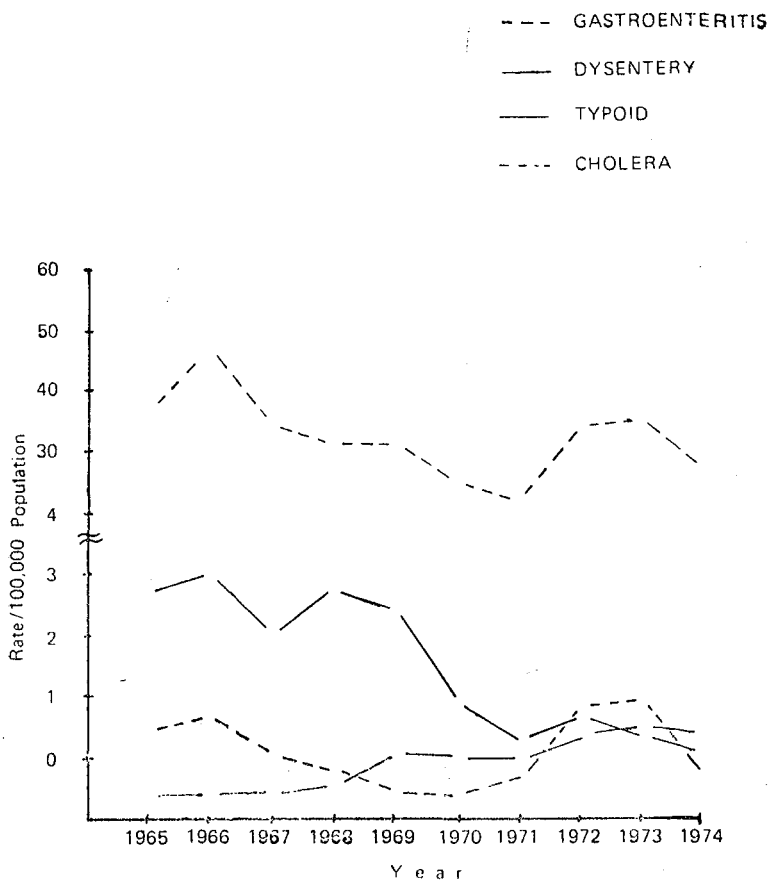

FIG. 9 : *Mortality Rate/100,000 Population of Different Gastrointestinal Disorders, Philippines, 1965 — 1974.*

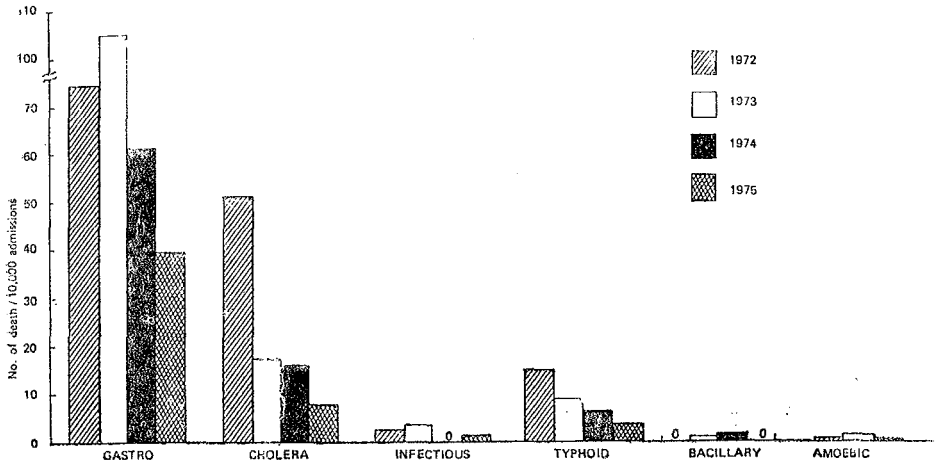

FIG. 10 : *Mortality Rates of the Different Diarrheal Conditions. San Lazaro Hospital, Manila, Philippines, 1972 — 1975.*

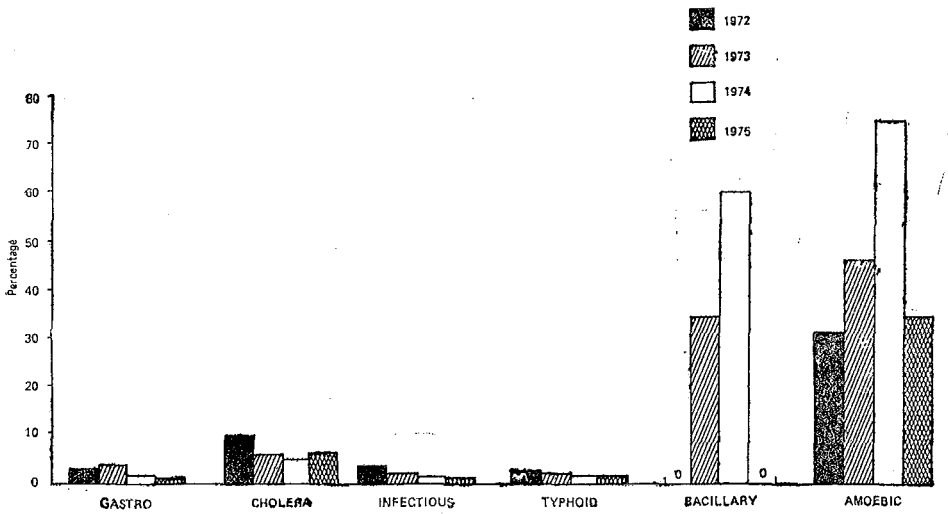

FIG. 11 : *Case Fatality Rates of the Different Diarrheal Conditions. San Lazaro Hospital, Manila, Philippines, 1972 — 1975*

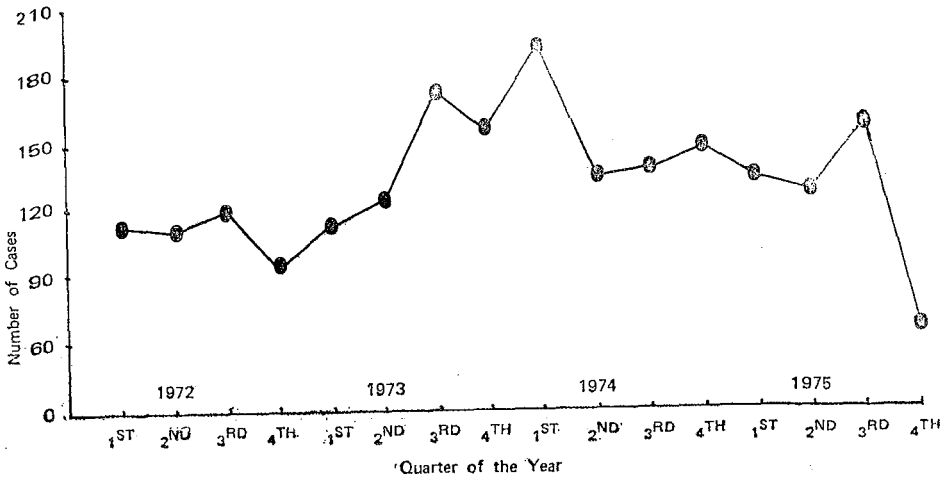

FIG. 12 : *Number of Cases of Infectious Diarrhea, San Lazaro Hospital, Manila, Philippines, 1972 — 1975*

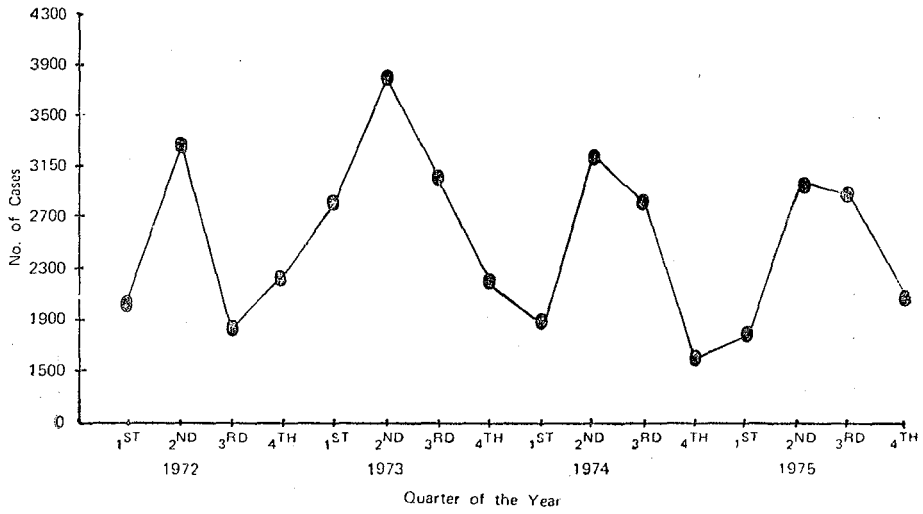

FIG. 13 : *Number of Cases of Gastroenteritis, San Lazaro Hospital, Manila, Philippines, 1972 — 1975.*

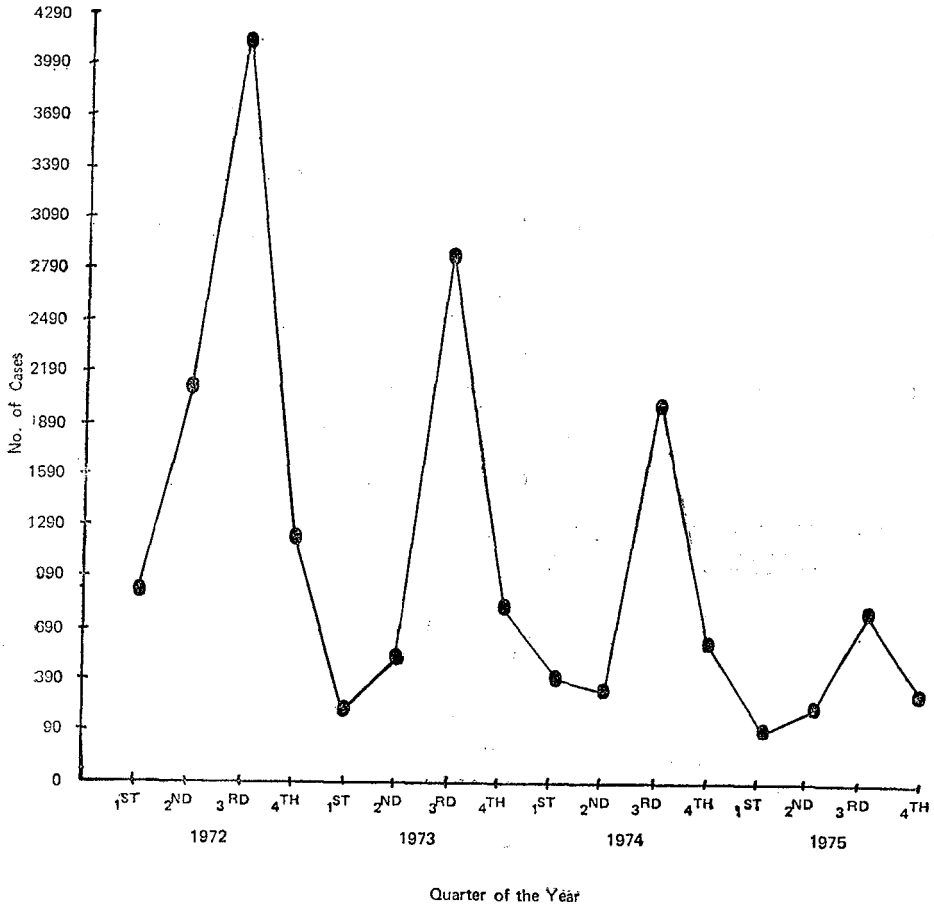

FIG. 14 : *Number of Cases of Cholera — El Tor, San Lazaro Hospital, Manila, Philippines, 1972 — 1975.*

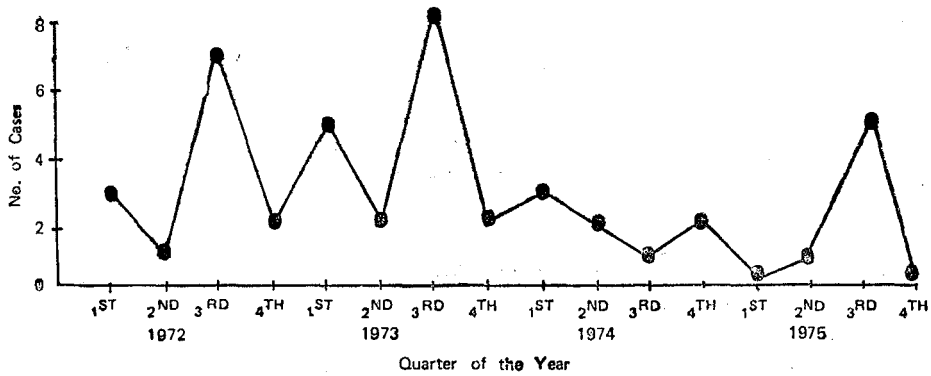

FIG. 15 : *Number of Cases of Amoebic Dysentry, San Lazaro Hospital, Manila, Philippines, 1972 — 1975).*

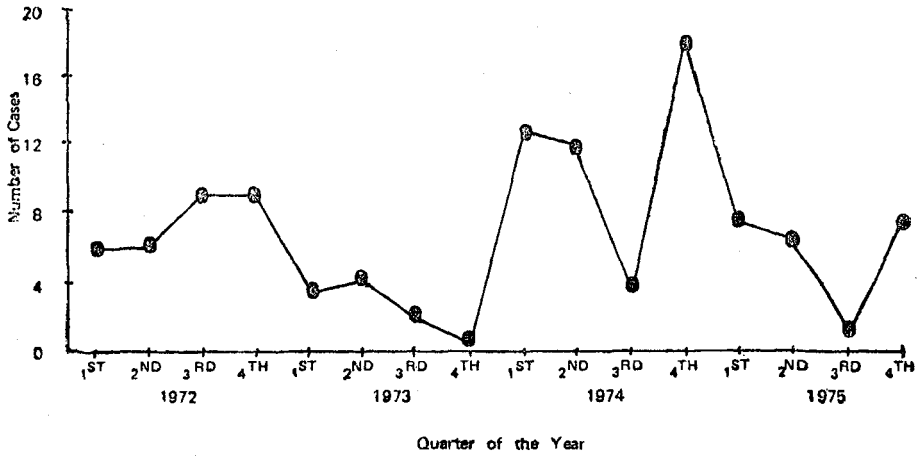

FIG. 16 : *Number of Cases of Bacillary Dysentery, San Lazaro Hospital, Manila, Philippines, 1972 — 1975.*

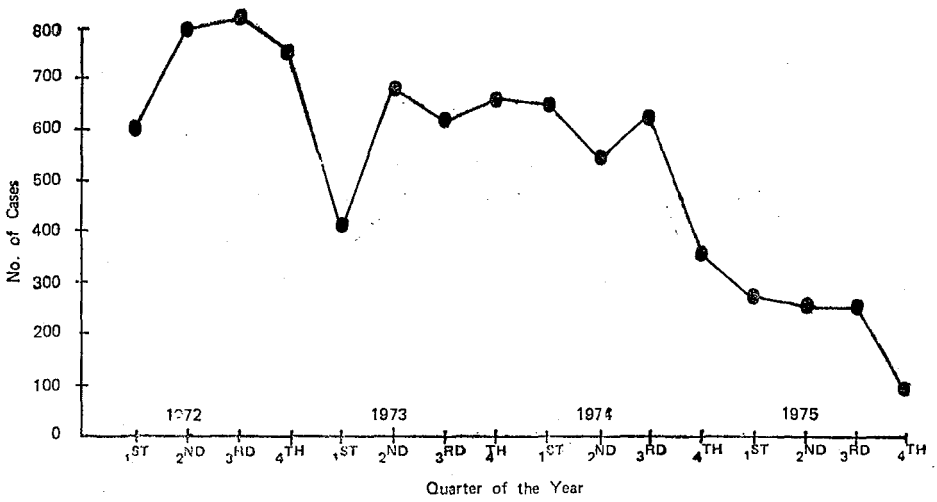

FIG. 17 : *Number of Cases of Typhoid Fever, San Lazaro Hospital, Manila, Philippines, 1972 — 1975.*