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The Importance and Control of Diarrhoea in a Rural Community

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Diarrhoea is a common disease and cause of death, especially among young children in developing countries. Poverty, malnutrition, ignorance about elementary and basic hygiene, and poor sanitary conditions are the major predisposing causes of infant diarrhoea. In many developing countries, diarrhoea always takes place among the five most frequent important diseases and causes of deaths for children.

In Turkey, infant mortality rate (IMR) is still above 100 per thousand, and it was indicated in one retrospective cohort study that if deaths due to diarrhoea and pneumonia were prevented, IMR would decrease to 40 per thousand.[1]

In developing countries, reliable statistics which reflect the magnitude of the problem of diarrhoea in rural areas are generally collected from special community surveys and studies in which mostly the cross-sectional method is used.

In this paper, 10 years' morbidity and 9 years' fatality rates for diarrhoea in a rural community (i.e. Etimesgut Rural Health Area) will be briefly presented and the experience and implementation of oral rehydration therapy in the same rural community will be discussed.

Etimesgut Rural Health Area was established in 1965 and the collection of demographic information from the whole area was started in 1967.[2] The mid-year population of the Area was 55, 252 in 1969 and 82, 648 in 1978. In 1975 there were 3,000 households and the average number of persons per house-hold was 5.4. The health services in the Area are nationalized and there are 8 health centers and 23 subcenters

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which altogether serve 83 villages. There is a recording system which covers information about each house-hold and individual living in the Area. Each health center consists of several subcenters where midwives are located and they serve a population of 2,000-3,000 by paying home-visits especially for MCH care and family planning. Each health center serves a population of around 7,000-10,000 and has a health team consisting of one medical officer, one public health nurse, one medical secretary, 1-2 midwives, and one driver. Diarrhoea is the second and third most common disease among the 0 and 1-4 years of age, respectively. Tables I and II indicate the morbidity and fatality rates of diarrhoea according to different age groups by years, in Etimesgut.

TABLE I

MORBIDITY RATES OF DIARRHOEA ACCORDING TO YEARS (‰)
ETİMESGUT, ANKARA

	Age groups (years)			
Years	0	1-4	5-14	0-14
1969	391.6	114.3	14.6	132.2
1970	503.0	187.0	18.7	97.0
1971	187.3	40.8	6.1	27.7
1972	459.0	198.0	15.0	91.3
1973	492.2	134.2	10.2	75.4
1974	406.8	143.4	14.4	73.1
1975	352.6	103.0	9.1	56.2
1976	375.5	124.0	10.9	64.6
1977	436.0	118.2	9.5	66.8
1978	371.6	108.8	6.8	57.1

TABLE II

FATALITY RATES OF DIARRHOEA (%)
ETİMESGUT, ANKARA

	Age groups (years)								
	0			1-4			5-14		
Years	C*	D**	FR***	C*	D**	FR***	C*	D**	FR***
1969	645	33	5.1	799	1	0.1	232	—	—
1970	897	23	2.5	1186	4	0.3	310	—	—
1971	329	14	4.2	274	1	0.3	105	—	—
1972	760	29	3.8	1389	6	0.4	267	—	—
1973	879	19	2.1	982	—	—	183	—	—
1974	735	20	2.7	993	3	0.3	270	—	—
1975	633	15	2.3	733	2	0.2	168	3	1.7
1976	689	13	1.8	922	3	0.3	206	—	—
1977	888	14	1.5	849	2	0.2	186	—	—

* C : Number of cases ** D : Deaths *** FR : Fatality rates

The figures in these tables are drawn from the individual health records and are related to only the patients who have applied to the health centers. Therefore, although these figures are helpful for the estimation of the morbiditiy rates, still they do not reflect the cases who have not applied. A special study was designed in 1975 in order to test the acceptability of oral rehydration fluid in 23 villages.[3] All children at 0-4 years of age were included in the study and visited monthly by midwives for a duration of 16 months. Almost all the episodes of diarrhoea within these 16 months were recorded. In this way, it was possible to estimate the true occurance rate of diarrhoea in the community. Table III and IV indicate the figures drawn from this prospective study. As observed from these tables, 237 children were followed up for 16 months and it was observed that 62.3 percent of them had diarrhoea during this period There was an inverse relation between age and the number of episodes. Also, the incidence of diarrhoea was higher among children with malnutrition (Table V).

TABLE III

NUMBER OF CASES WİTH AND WITHOUT DIARRHOEA IN 23 VILLAGES (ETIMESGUT, 1 JULY 1975-31 OCTOBER 1976)

Cases	Number	Percent
With diarrhoea	771	62.3
Without diarrhoea	466	37.7
Total	1237	100.0
Episode of diarrhoea	1899	153.5

TABLE IV

NUMBER OF DIARRHOEAL EPISODES IN 23 VILLAGES BY AGE GROUPS (ETİMESGUT, 1 JULY 1975-31 OCTOBER 1976)

Age groups		No. of episodes 0	1-2	3+	Total
0-12	n	28	112	154	294
	%	9.5	38.1	52.4	100.0
13-24	n	63	130	81	274
	%	23.0	47.6	29.6	100.0
25-36	n	119	117	19	255
	%	46.7	45.9	74.0	100.0
37-48	n	152	83	16	251
	%	60.6	33.1	6.4	100.0
49	n	104	42	17	163
	%	63.8	25.8	10.4	100.0
Total	n	466	484	287	1237
	%	37.7	39.1	23.2	100.0

$x2 = 34.7$ $df = 8$ $P < 0.001$

TABLE V

NUMBER OF DIARRHOEOAL EPISODES AMONG NORMAL AND MALNOURISHED CHILDREN IN 23 VILLAGES (ETIMESGUT, JULY 1st, 1975-OCT. 31st 1976)

		No of episodes			
		0	1-2	3+	Total
Malnourished	n	30	76	25	131
	%	22.9	58.0	19.1	100.0
Normal	n	404	500	158	1062
	%	38.0	47.1	14.9	100.0
Total	n	434	576	183	1193*
	%	36.4	48.3	15.3	100.0

* 44 cases are excluded because of lacking information of weight

$x2 = 11.513$ $df = 2$ $P < 0.05$

Seasonal distribution of diarrhoeal episodes is illustrated in Figure 1, and, as expected, the highest incidence rate occurs during the Summer months. The result of he stool culture taken from some of the children showed that only 8.3 percent were pathogenic.

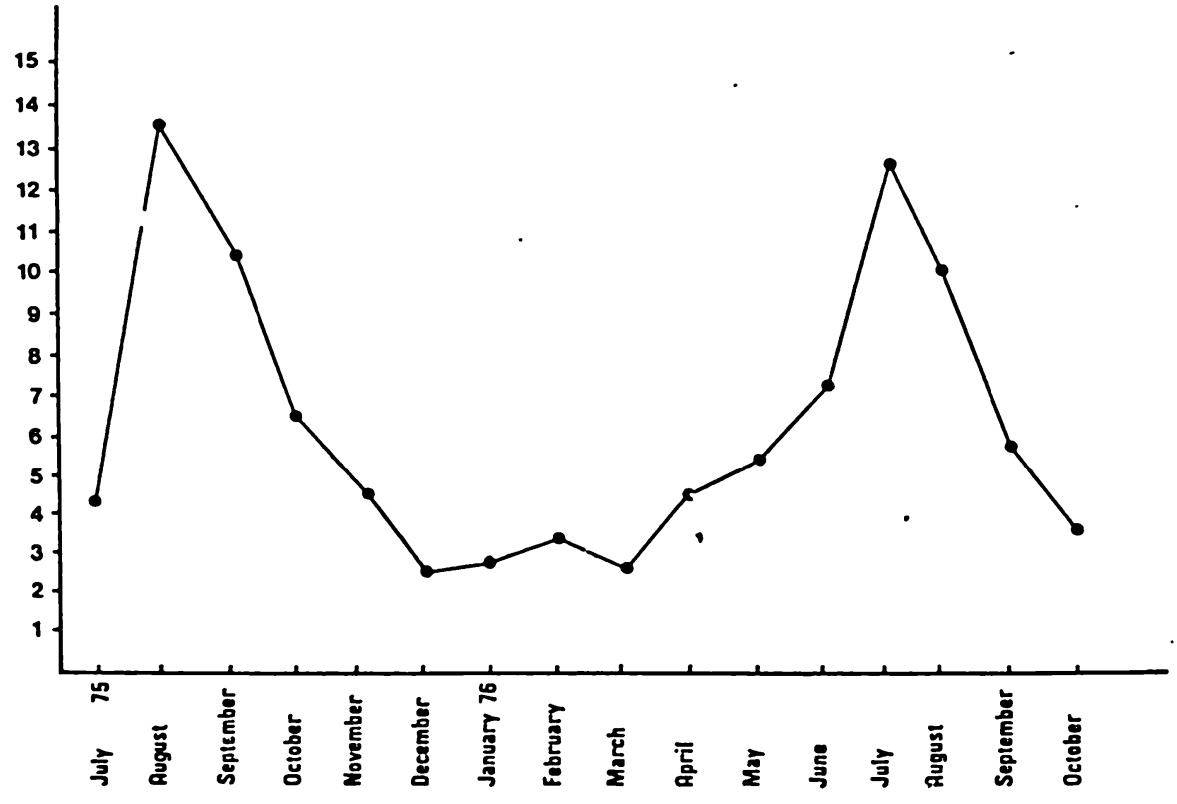

Figure 1

Incidence of diarrhoea in treatment and Control groups July 1975-31 October 1976

All the figures show, the importance of diarrhoea in the Etimesgut Rural Health Area, not only as a disease or cause of death, but also as a cause or outcome of malnutrition among children. However, for physicians it is simpler to show the magnitude of the problem than to establish the measures which ought to be taken in order to prevent the disease, because improving environmental sanitary conditions, which is essential for the prevention of diarrhoea, is the concern of the governmental bodies. Still, there are several measures for primary prevention which can be taken by physicians and paramedical personnel such as: health education to mothers consisting of the encouragement of breast-feeding, cleanliness, using boiled water or teaching the chlorination of water at home, and recommendations for the early management of diarrhoea.

Diarrhoea is usually accompanied by dehydration and the cause of death in most cases is due to the loss of fluid and essential electrolytes. This is why early detection and application of the oral rehydration fluid may be life-saving in most cases of diarrhoea. Oral rehydration therapy can be applied at home; the cost is low and it permits active treatment where facilities for intravenous infusion is not available. At present, oral rehydration therapy seems to be the most practical and effective treatment of diarrhoea in remote areas. In this line, in the above mentioned prospective study, the villages were divided into two groups as treatment and control, and oral rehydration fluid was tested for acceptability, feasibility, and effectiveness in the treatment of diarrhoea. All the midwives in he treatment group were trained on how to use the oral rehydration fluid; they distributed the packages to mothers and trained them as indicated in the Booklet of WHO.[4] Most of the cases were treated at home and referrals to health centers and hospitals were significantly lower in the treatment group as compared with the control group (Table VI). It was also interesting to observe that in the treatment group

TABLE VI

REFERRAL TO MD BY ANMs IN TREATMENT AND CONTROL GROUPS (ETIMESGUT, JULY 1st, 1975-OCTOBER 31st, 1976)

	Treatment group		Control group		Total	
	n	%	n	%	n	%
Followed by ANMs	350	94.8	185	63.8	535	81.2
Referred to MD by ANMs	14	3.8	98	33.8	112	17.0
Referred to Hospital	5	1.4	7	2.4	12	1.8
Total	369	100.0	290	100.0	659	100.0

$x2 = 100.5$ $df = 1$ $P < 0.001$

TABLE VII

WEIGHT GAIN IN CHILDREN WITH DIARRHOEA DURING THE STUDY (ETIMESGUT, JULY 1st, 1975-OCTOBER 31st, 1976)

Age (months)		Before treatment		After treatment		Monthly average weight gain	
		Treatment group (kg)	Control group (kg)	Treatment group (kg)	Control group (kg)	Treatment group (gm)	Control group (gm)
0-12	x	7.4	7.4	10.8*	10.4	282.6*	245.9
	s	1.8	2.0	1.5	1.3	126.7	114.5
	n	113	98	113	98	113	98
13-36	x	11.3	11.4	13.8	13.4	212.6*	169.0
	s	2.0	1.7	2.0	1.7	105.7	100.2
	n	221	154	221	154	221	154
37-60	x	15.1	14.8	17.3*	16.7	208.7*	158.6
	s	1.7	1.4	1.9	1.5	105.4	104.1
	n	96	72	96	72	96	72
Total	x	11.1	11.0	13.8*	13.3	230.1*	189.9
	s	3.4	3.22	2.9	2.7	115.6*	111.6
	n	430	324	430	324	430	324

* Significantly different from the control group at 0.05 level

average monthly weight gain was higher than in the control group (Table VII). The usage of antibiotics also showed a significant difference between the two groups; the control group children used more antibiotics for the treatment of diarrhoea (Table VIII).

TABLE VIII

USAGE OF DRUGS AGAINST DIARRHOEA IN TREATMENT AND CONTROL GROUPS (ETIMESGUT, 1 JULY 1975-31 OCTOBER 1976)

Antibiotic and Antidiarrheic	Treatment group		Control group		Total	
	n	%	n	%	n	%
Used	33	8.9	222	76.5	255	38.7
Not used	336	91.1	68	23.5	404	61.3
Total	369	100.0	290	100.0	659	100.0

$x2 = 312.4$ df = 1 P < 0,001

This experience showed once more that oral rehydration therapy is an acceptable and effective treatment in the control of diarrhoea in rural areas. During the study, the consumption and utilization of the oral rehydration fluid increased with the taste of the fluid. Some of the locally made products were not found to be as tasteful as the UNICEF packages, and this had a rather important effect on the acceptance of the fluid by the children.[5]

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