Differentials of Diarrheal Diseases Management in District Rambutan, South Sumatra, Indonesia

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ABSTRACT The aim of this report is to present the association between some sociodemographic and biomedical factors and diarrheal diseases (DD) case management practiced by the community. The study was conducted in District Rambutan, South Sumatra Province, Indonesia, based on the data from a sociodemographic survey in 1990 and sequential surveillance of DD between April 1990 and March 1991. The number of house-hold (HH) monitored was 4349 comprising 3816 children under five years of age. The point prevalence of DD in this age group was 0.007. The most prominent differentials of DD case management by the community were biomedical factors, that were duration, frequency or kind of diarrhea, and accompanying diseases. The practices of DD case attendees had been in line with the guidelines promoted by the Indonesian CDD program. But specific behaviors still deviate, which need more detail promotion guidelines and elaborate education processes based on better knowledge of the community perception, demand andwhich need more detail promotion guidelines and elaborate education processes based on better knowledge of the community perception, demand and practices in facing DD. Using Weiss' model, this study points out that the important determinant for these deviation is the nature of the DD itself. [Paediatr Indones 1995; 1: 23-30]

Introduction

The recent approach towards diarrheal diseases (DD) case management, i.e., oral rehydration therapy (ORT), appro- priate feeding during and after diarr- hea, supported by selective drugs and intravenous fluid therapy have been promoted, practiced and have gained significant impact in Indonesia.[1,2] In this approach the case attendees, most of them mothers of the house-holds (HH), play a central role in implementing the regimen. Through different channels, their knowledge, attitude, and practice have been promoted. Knowing the variation of practices linked to sociodemographic deter-

minants of the case attendees and bio-medical aspects of the cases will be an important feed back for the Diarrheal Diseases Control Program (CDD) of the country.

The aim of this report is to present the association between some sociodemographic and biomedical factors and DD case management practiced by the community in District Rambutan, South Sumatra Province, Indonesia.

The Diarrheal Diseases Research and Training Study Group of the School of Medicine, in collaboration with the Population Research Center, Sriwijaya University, has conducted a sequential longitudinal monitoring of several sociodemographic and health indicators in the district. The data for this report is the outcome of this monitoring.

Methods

Study area

The study was conducted in District Rambutan, a non-tidal swampy area, ranging 15 to 40 km from Palembang, the capital city of South Sumatera. This area is settled by ethnic Melayu. The district has 18 villages comprised of 32 hamlets and a population of 25 000. Two of the hamlets are adjacent to suburban Palembang and the rest stretch along an un-paved road which runs through the central part of the district. The year is divided into rainy and dry season, each lasting about 4 months. The peak of rainy season is in February and the dry season is in August.

Most of the people are farmers. They grow rice, seeding in April or May and harvesting in September or November. They also grow cash crops, mainly rubber or tropical fruits. Some of them are or collect sand from the river or work in the timber industry. The hamlets consist of densely clustered HH. During the seeding and harvesting season, some of the families move to their huts at their rice fields, 1-5 km from their hamlets.

Longitudinal monitoring

Monitoring was started by a base line data collection, conducted on April 1987, followed by a sequential sociodemographic data updating, carried but every three months by trained local people. During this updating some demographic and health events were recorded. One of them is DD incidence. On September 1990, as an updating for the 1987 base line data, a comprehensive socioeconomic survey was conducted again. This report looked for the association between variables as the outcome of the 1990 sociodemographic survey and sequential sociodemographic surveillance between April 1990 and March 1991.

Data collection

Between April 1990 and March 1991, in a sequential sociodemographic surveillance, DD was monitored only for children under 5 years old. The DD was identified by leading questions to the responders (most of them mothers): "did your child suffer from diarrhea in the last 24 hours". The operational definition of diarrhea was based on responder's perception. It was regarded as an DD epi-

sode if the frequency of diarrhea at least 3 times in 24 hours. If there was a DD episode, using close-ended questionnaires, all the interventions which have been practiced for the DD episode and the background for the practices were recorded. The sociodemographic survey was conducted by the 'supervisors' of the Longitudinal Monitoring Project using close-ended questionnaires. They were faculty members of Sriwijaya University, who supervised the sequential data collection by the local people.

Data processing and analysis

Data were processed by PC computer using a program which have 'range' and 'consistency' check. The data were processed and analyzed by using EpiInfo[3] application program. Case (DD episode), child (a child who ever suffered from DD) or HH were used as units of analysis. The association between bio-medical and sociodemographic factors, and DD case management got by the cases or practiced by the children's attendees were measured by Chi-Square or t-test. For the Chi Square test, the significance of association was evaluated by Yates correction or Fisher exact test and quantified by Odds Ratio.

As dependent variables the prepackaged oral rehydration solution (ORS) usage, self treatment or treatment by traditional healers or health workers were used.

Results

The number of HH monitored in the district at the end of 1990 was 4,349 comprising of 23,310 family members. 2,599

of these HH had children under five years of age comprising of 3816 children. Number of HH surveyed in the socioeconomic survey was 4333.

Ninety-three DD episodes were recorded. The age distribution of the cases and point prevalence rate of DD is shown in Table 1. Four children were recorded to suffer DD 2 times; only one pair of children who suffered from DD stayed in the same HH.

So, there were 88 HH whose underfive years of age children suffered from DD during the observation period. 48.9% of the cases were male between 0-48 months of age, suffered from diarrhea for 1 to 99 hours before the interview (mean 15.5 hours, SD 13.6 hours), with average frequency of stool passing in the previous 24 hours 5.1, ranging from 1 to 16.

Twenty point eight percent (26.8%) of the mothers were illiterate, 20.4% never had formal education, 73.1% ever attended elementary school, 6.5% reached high school. None of the mothers work full timely, 34.5% supported the family in farming or retailing. 6.4% of the fathers of cases were illiterate, 4.3% never had formal education, 78.5% ever attended elementary school, 15.1% high school. Seventy-two percent of the fathers work as farmers, laborers or small retailers, none jobless, 2.2% still got formal education, the rest worked as full time employees.

Nineteen (20.4%) of the cases had been given prepackaged oral rehydration solution (ORS): 14 consumed one sachet of 200 ml, 4 consumed 2 sachets, one 3 sachets. Out of 19 cases, 2 got ORS from neighbors, 9 from village health workers, 8 from health workers. 5.4% of the cases

Table 1. Point prevalence of DD in the study area (episode per child)

Age group	Observed episode	Population	Point prevalence
0 - 5 months	21	323	0.016
6 - 11 months	14	283	0.012
1 year	19	695	0.007
2 years	23	689	0.008
3 years	10	601	0.004
4 years	6	769	0.002
0 - 4 years	93	3360	0.007

Table 2. Associations of some biomedical characteristic of the DD cases (n=93) and socio-demographic characteristics of the households (n=87) with diarrheal diseases care practiced by house-holds

	Gotten ORS		Self cared		Trad.healer		Health worker	
	p	OR	p	OR	p	OR	p	OR
Patients characteristics								
Gender male/female	0.92	0.93	0.71	0.77	0.47	1.98	0.55	0.67
Age 0-11/12-23 months	0.38	0.45	0.61	0.60	0.59	0.89	0.38	0.45
Age 12-23/24-35 months	0.40	2.11	2.57	0.27	0.41	1.97	0.80	1.05
Bloody diarrhea yes/no	0.39	1.92	0.25	4.44	0.73	0.96	0.004	10.42
Mucoid diarrhea yes/no	0.08	3.55	0.05	3.21	0.14	3.05	0.43	1.69
Watery diarrhea yes/no	0.04	0.30	0.002	0.19	0.04	0.28	0.002	0.20
Accompanying disease	0.04	5.17	0.04	2.86	0.18	1.64	0.0002	40.40
DD in last 3 months	0.78	1.38	0.07	2.48	0.57	1.38	0.02	3.43
Duration of diarrhea >/< 48 hrs	0.005	5	0.53	0.57	0.43	0.42	0.29	0.35
Duration of diarrhea >/< 24 hrs	0.01	4.55	0.32	1.73	0.32	0.45	0.12	0.42
Frequency of diarrhea /=< 3/dys	0.22	3.33	0.97	0.87	0.03	0.09	0.62	0.60
Socio-demographic characteristics								
Mother literate yes/no		1.50	0.94	0.97	0.76	0.96	0.97	0.78
Father literate yes/no	0.36	0.37	0.26	0.37	0.49	0.55	0.87	0.66
Mother in school >6/<7 ys	0.63	1.06	0.79	1.16	0.57	1.38	0.53	0.91
Father in school >6/<7 ys	0.12	0.18	0.41	0.52	0.57	1.15	0.41	0.41
Mothers age >25/<26 ys	0.91	1.29	0.88	1.18	0.24	2.06	0.13	2.50
Father's age >30/<31 ys	0.94	1.57	0.02	0.08	0.08	0.21	0.60	2.75
Mother work yes/no	0.57	1.83	0.04	0.33	0.57	1.12	0.43	0.61
Father farmer (laborer) no/yes	0.78	1.59	0.56	0.54	0.23	0.27	0.89	1.19
Practicing family planning	0.56	0.65	0.51	1.46	0.90	1.12	0.81	1.26
Other underfive at home yes/no	0.36	2.14	0.64	0.72	0.31	0.58	0.81	0.78
House dry/swampy area	0.78	1.01	0.99	0.90	0.31	0.58	0.45	0.60
House concrete yes/no	0.43	2.20	0.41	0.51	0.30	1.94	0.88	1.13
Income > average	0.83	1.46	0.62	0.66	0.23	0.30	0.86	1.08
Have a radio	0.85	1.07	0.83	1.01	0.60	0.93	0.34	0.61
Have a television	0.89	0.75	0.005	0.21	0.27	0.45	0.49	0.57
Have a cabinet	0.73	0.68	0.19	0.48	0.14	0.37	0.40	0.56
Have a sewing machine	0.78	0.46	0.30	0.56	0.23	0.36	0.94	0.68

were breast-fed, 1.1% bottle-fed more often than usual, 10.8% extra water (with or without sugar), 6.5% rice water, 8.6% sugar salt solution (SSS). In gene- ral 23 (24.7%) of the children got home fluid (HF) more than usual, 33 (35.5%) ORT (got ORS or extra HF).

Among 19 ORS and 8 SSS users, 19 of the child attendees knew about ORT from village health workers, 3 from radio, none from television, 3 from neighbors, 3 from health workers. Among the cases who did not get ORS, 5 (5.4%) child attendees never knew about ORS. Out of 69 of the rest, 33 did not use ORS because they regarded diarrhea as mild or that had just started, 5 did not believe in ORT.

Seventy three percent of the children were still breast-fed, in 2 (2.9%) the breast feedings were diminished, in 3 (4.4%) were not breast-fed during the DD episode. 20.4% of the children were bottle-fed, in 5 (26.3%) with diminished or diluted without bottle-feedings in 4 (21.1%).

Fifty nine (63.4%) of the cases had been self-treated by the HH members. Out of these, 40 (67.8%) got self-made herbs, 4 (6.8%) purchased-herbs, 12 (20.3%) self-purchased medicine. Twelve (12.9%) cases were treated by traditional healers: 2 (16.7%) with oral herbs, 9 (75%) locally used herbs, 2 (16.7%) mo- dern medicine, 2 (16.7%) ORS. Nine (9.7%) cases were helped by village health workers: 2 were given medicine, 1 was injected, 8 ORS.

Seventeen (18.3%) cases were treated by practicing nurses or nurses at the health center: 14 got oral medicine, 7 injections, 5 ORS. 3 cases were treated by doctors, all got oral medicine and ORS, none injected. The proportion of cases helped by health workers was 26.9% .

Table 2 shows the associations be- tween some characteristics of the under- five years of age children who suffered from diarrhea during the interviews and some sociodemographic characteristics of their house-holds with DD care prac- ticed, as the outcome of data analysis using two by two tables.

Table 3 shows the mean duration of diarrhea that had occurred before the in- terview and the mean frequency of diarrhea in the last 24 hours before the interview according to the DD care prac- ticed. All children who had suffered from diarrhea for 48 hours or more got ORS.

Discussion

The point prevalence rate of DD recorded in the study of under 5 years of age was 0.007. A study[4] in another area of South Sumatera (1989) the rate was 0.012 and in Lombok (1989) 0.0125.[5]

The ORS usage rate in the previous study[4] was 25% , ORT usage rate 33.9% the proportion of DD cases who asked for help from health workers 59.0%. In this study the proportions were 20.4%, 35.5% and 26.9% respectively. It must be stressed that these figures are for DD identified by 24 hours recall, where the diarrhea had not stopped yet. The figures for the whole DD episode must be higher. This statement is supported by the finding of this study, that all the DD cases whose diarrhea had persist more than 48 hours got ORS.

In evaluating the determinants of DD case management practiced by the

Table 3. The mean duration of diarrhea before the interview and the mean frequency of diarrhea in the last 24 hours according to diarrheal diseases care practiced by house-holds (n=93)

	Given ORS			Self cared			Trad. healer			Health-worker		
	yes	no	p	yes	no	p	yes	no	p	yes	no	p
Mean duration of diarrhea (hours)	26.5	13.3	0,003	15.9	16,0	0,97	20,7	15,3	0,21	21,6	13,5	0,01
Mean frequency of diarrhea	6.3	4.7	0,003	5.1	5,0	0,56	6,8	4,8	0,01	5,9	4,7	0,057

community, Weiss[6] grouped the determinants into 5 factors: the nature of DD themselves, help seeking habit of the community, pattern of distress perceived by the community, social context, and explanatory model of health and diseases perceived by the community. All these factors interact with each others. In this study we only have the data on some factors of social context of the community and the DD cases themselves. These determinants are grouped as sociodemographic factors and biomedical factors. The providers for DD, can be regarded as the manifestation of the help seeking habit or as the outcome of determinant factors. Since we did not elaborate the background of help seeking pattern, in the analysis we only use the information on providers as dependent variables.

The statistically significant differentials for the variations in the care received by cases in this study were mostly of biomedical factors: duration, frequency or kind of diarrhea and accompanying diseases (Table 2).

These facts are encouraging, since most of the practices were in line with the

strategy for the community behavior changes. The Ministry of Health of the Republic of Indonesia have defined the strategy for DD case management promotion[2] which reflect what have been campaigned to the community. The behaviors which are promoted to the case attendees within the community are: when diarrhea starts continue breast feeding and regular feeding, give HF. Follow up by giving ORS. If the diarrhea persist or there is severe vomiting or dysentery, refer to the health center or hospital. However some facts must get special attention.

First, bloody and mucoid diarrhea cases, besides more often brought to providers which is in line with the promotion strategy, were also more often and quicker to be given ORS. In consequence, watery diarrhea were less likely to be given ORS. There is the possibility that these facts relates to the community perception in the study area that bloody and mucoid diarrhea are more dangerous.[7] May be mothers regard ORS as a general treatment for DD. If so we must question the punctually of our message and effectiveness of educational process.

Second, there was no substantial impact of previous DD episode to current practices. Which means that there was no effective education during DD episodes. Or case attendees are not fully satisfied by what they got during DD case management by health workers. This latter possibility had been arisen from Papua New Guinea by Frankel in 1984.[8] The providers can not fulfill the concern of the case attendees fully. If so, we must study further the perception of the community and modify them or modify the program according to their perception.

The statistically significant sociodemographic factors are only working mothers, older fathers and households who have television set were less often self treated their children. This fact may reflect the pattern of appreciation of the community towards external help.

Third, in a previous qualitative study we reported that help seeking to traditional healers were mostly for persistent diarrhea or ambiguous cases.[7] In this study treatment by traditional healers were more as an alternative, which was also found by Frankel in Papua New Guinea.[8] This supposition was supported by the fact that the average duration of diarrhea in traditional healer treated cases was less than 24 hours, and the higher odds ratio for cases who lived in less favorable conditions, such as cases who lived in a swampy area had the odds ratio $1/0.58 = 1.72$ times more often to be treated by traditional healers compared to cases who lived in a dry area.

The fact that there was no significant association between literacy, years of for-

mal education and other social status indicators with the DD case management practices, may be can be explained by the assumptions that the culture and pattern of social interaction of the study population are more homogenous.

In general, we can say that the practices of DD case attendees had been in line with the guidelines promoted by the Indonesian CDD program. But specific behaviors still deviate, which need more detail promotion guidelines and elaborate education process based on better knowledge of the community perception, demand and practices in facing DD. Using Weiss' model, this study points out that the important determinant for these deviations is the nature of DD itself.

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