

Factors Affecting Incidence of Diarrhoeal Disease in Children under 5 years in Thi-Qar city

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ABSTRACT

Hospitals based study conducted on 3340 children under 5 years of age , in the Maternity and children hospital, and Nassiriyah General Hospital / Thi Qar provenience during 2 years periods , to determine the effect of the mother's knowledge , attitude and practices (KAP) , sanitary and environmental conditions, and cultural factors on the incidence of a cute diarrhea in children under 5 years of age. According to the logistic regression model, diarrhoeal occurrence was significantly associated with the child's age, the area where he or she lived , type of latrine in the house , feeding patterns, the mother's age , educational level and knowledge and attitude towards diarrhoeal diseases . The highest risk group was children 6-12 months old, who lived in rural areas and whose mothers had inaccurate knowledge and attitude towards diarrhoeal diseases.

Key word: diarrhea, children under 5 years, Thi Qar.

الخلاصة

أجريت هذه الدراسة خلال عامي 2003 و2004 في مستشفى الولادة والأطفال ومستشفى الناصرية العام في محافظة ذي قار على 3340 طفلاً يعانون من مرض الإسهال لتحديد تأثيرات معرفة وموقف وممارسات الأم ، الشروط الصحية والبيئية ، والعوامل الثقافية على وقوع الإسهال الحاد عند الأطفال اقل من خمس سنوات من العمر . حسب طراز التراجع المنطقي يترافق حدوث الإسهال بشكل معتد مع عمر الطفل ، المنطقة التي عاش فيها ، نمط المرحاض في المنزل ، طراز الإطعام ، عمر الأم ومستواها التعليمي ومعرفة وموقف الأم تجاه أمراض الإسهال . كانت أكثر المجموعات خطورة الأطفال 6-12 شهرا من العمر الذين يعيشون في المناطق الريفية والذين لدى أمهاتهم معرفة ومواقف غير صحيحة تجاه أمراض الإسهال .

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INTRODUCTION

Diarrhoeal diseases represent one of the major public health challenges to developing countries, where they are the leading causes of death in children under 5 years⁽¹⁾. The challenge lies in the fact that diarrhoeal disease is largely preventable. However, the factors affecting the incidence of diarrhoea are complex. ⁽¹⁾ Several studies have shown the association between some of these factors and the prevalence of diarrhoeal diseases ⁽²⁻⁶⁾ However, few studies have been concerned with the effect of the mother's characteristics on the prevalence of diarrhoeal diseases. ⁽²⁾

This study investigates the effects of mother's knowledge, attitude and practices, sanitary and environmental conditions, and cultural factors on the incidence of diarrhoea in children under 5 years of age in Thi qar city.

METHOD

Hospital based study conducted in the Maternity and Children Hospital and Nassiriyah General Hospital – Thi-qar city during the period Jan. 2003-Dec.2004, to investigate the effect of mother's knowledge, attitude and practices, and environmental conditions on incidence of diarrhea in children under 5 years of age. Diarrhea has been defined as three or more soft liquid stools within 12 hours or a single soft or liquid stool with blood, pus or mucus. The data were collected using a specially designed questionnaire. The variables studied included mother's age, level of education, and her knowledge of the

signs of acute diarrhoea, and the modes of its transmission and prevention. The water source, patterns of water usage and type of sanitary service were also studied.

The analysis of the data was completed in two stages: in the first stage, bivariate analysis was performed using the entire sample of 3340 children 0-5 years old to explore the behavior of single variables in relation to the incidence of diarrhoea. The χ^2 test was applied to test for significant differences in between different indicators. In the second stage a multivariate analysis was used to control the correlation among the independent variables themselves. Stepwise logistic regression was used to determine which of the selected variables significantly predicated the occurrence of diarrhoeal diseases in the study population. ⁽⁷⁾ Estimates of regression coefficients and their standard errors were made by maximum likelihood estimation.

RESULTS

Of 3340 children with diarrhea, male: female ratio was 1, 07: 1. Almost half of the children had diarrhea for 2 days or less. When a χ^2 test was applied to diarrhoeal incidence (Table 1). Associations were found between the incidence and age of child, age of the mother, educational level of the mother, place of residence (rural or urban), maternal knowledge, attitudes and practices, feeding pattern and latrine type. The results of the regression are summarized in Table 2 which includes the coefficients and

standard errors of the independent variables.

DISCUSSION

During the study period , the greatest number of diarrhoeal cases occurred in summer . the monthly distribution of all the cases during study period is shown in Fig. 1. From the total number of cases, it can be seen that June gives the highest mean percentage (15.2%) and February the lowest (3.2%) . The monthly distribution differs significantly from a uniform distribution ($p<0.01$) . When these monthly percentages of cases and some meteorological parameters (relative humidity, temperature and rainfall) observed during the period of the study were compared there was no correlation ($r=0.06$) .

The age of the child was the most significant predictor of the incidence of diarrhoea ($p<0.01$) . Compared with other age groups, children aged 6-12 months had the highest incidence of diarrhoea during the first year. Stratified by age , the 6-23 months group was at highest risk of diarrhoeal disease . The immaturity of the immune system in conjunction with the decline in passive immunity and the exposure to diarrhoeal agents at this age will increase the susceptibility of the child to acquiring the disease^(8,9)

Another important factor which predicts the occurrence of diarrhoeal disease is the pattern of feeding. There was a significant association between bottled milk feeding and diarrhoeal incidence ($p<0.05$) .This observation was true for the children

under 2 years, especially among those aged 6-12 months .

There was negative correlation between mother's age , level of education and the presence of diarrhoea in her children ($r=0.8$) .The proportion of mother's age with at least one child with diarrhoea decreased with each 10 years increment in the maternal age. The small differences in the educational background may not directly influence diarrhoeal transmission. However, it influences maternal knowledge and practices in health and hygiene.

The fourth major indicator in the index was the general knowledge, attitude and practices (KAP). There was a strong association between KAP and the presence of diarrhoea in at least one of the mother's children under 5 ($p<0.05$) . This index has three major indicators. The KAP data revealed important results. Out of 1906 mothers interviewed, 524 (26%) had withheld fluid from their children during the episodes of diarrhoea. Thus children who had diarrhoea were at high risk becoming dehydrated as a result of this harmful practice.

The mother's attitude towards diarrhoea was independent of her knowledge regarding the cause or method of disease transmission. The majority of the mothers considered diarrhoea a serious disease, while only 2% knew that it could be transmitted through contaminated water . The inaccurate knowledge and attitude variable were significantly associated with occurrence. Results from logistic

regression indicated that up to 30% of inaccurate knowledge and attitude was associated with lower education. This suggests the need for more efforts towards training the less educated mothers in the country .

Besides the four variable mentioned, latrine type was associated with diarrhoea in children under 5 years old ($P<0.01$). This is a direct indication of sanitation practices rather than knowledge or attitudes which must be translated into practices. Therefore, it is a good indicator of house cleanliness and hygiene, an important factor in the spread of waterborne diarrhea disease.

The last major indicator in the index was the area of living. The results show that women living in rural areas were more likely to have some children under 5 years with diarrhoeal disease than those who were living in the urban ($p<0.01$). The association can be attributed to cultural habits of the rural people

The results of analysis by stepwise logistic regression will be used to identify children at high risk of developing diarrhoea and to conduct the various relative risk measurements and analysis of the population attributable risk due to exposure to different risk factors (Table 2). Variables in the model can be divided into two groups First , there are variables in which intervention is impractical or extremely difficult (e.g. area of residence and child's age) . These variables can be helpful in setting identification criteria for high-risk groups. Other variables yield to

various types of intervention (e.g. type of latrine, mother's KAP, and type of feeding practices). These can be valuable in both identification and development of a prevention programme.

Stratification by area (rural or urban) produce two logistic models which were relatively different. In urban areas at least 52% of all diarrhoeal cases were associated with the age of the child. This criterion can be used in clinics for screening purposes to find children and mothers at high risk. When a child is found to belong to this group, his mother could become a candidate for basic health education which would disseminate information about diarrhoeal diseases. On the other hand, in rural areas at least 58% of all diarrhoeal cases were associated with the child 's age and latrine type. By adding the mother's knowledge it is possible to identify 70% of all cases. These criteria could be used by those in charge of sanitation to find families which are in great need of improved sanitation.

In summary, there was a significant association between the presence of diarrhoea in children under 5 years old and mother's age, her educational level, area of living, feeding patterns , general maternal knowledge , attitudes and practices and latrine type. Other independent variable which did not have a significant association with diarrhoea were numerous. The results of this study suggest that control of diarrhoeal disease should consider education of mothers with young children as a complementary

strategy for lowering the incidence rates of diarrhoea in young children.

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Variable	Diarrhea incidence	Total no . of children
Entire sample	1.87	3340
**1. Age of child in months		
a-00-	1.16	484
b-06-	3.33	516
c-12-	3.22	813
d. 24-	1.41	612
e. 36-	0.63	485
f. 48-60	0.36	430
**2. Area of residence		
a. urban	1.42	1738
b. rural	2.35	1602
*3. Mother's age in years		
a. 15-	2.38	1015
b. 25	1.81	1680
c.35-	1.26	601
d-45and over	0.89	44
*4. Mother's education level		
a. Illiterate	2.07	2234
b. primary school (1-6 years)	1.67	693
c. secondary school (6-12 years)	1.18	360
d. university	0.74	53
*5. Knowledge of the signs of diarrhea		
a. increase of stool frequency	1.99	2616
b. increase of faecal fluidity	1.80	1406
c. blood or mucus	0.82	147
d. spasm	0.76	93
e. dry skin	0.52	41
*6. Knowledge of the causes diarrhoea		
a. cold	2.05	2166
b. consumption of contaminated food	1.52	1201
c. incriminated dirty hands	1.35	412
d. consumption of contaminated water	0.97	61
*7. When a child has diarrhoea , what should be done for him at home ?		
a. give him herbs or rice water	2.16	1193
b. suspend fluids	1.95	820
c. give more fluids	1.29	668
d. do not know	1.81	659
*8. Feeding patterns (for children <2 years)		
a. breast feeding only	1.08	513
b. bottle feeding only	3.60	157
c. breast + bottle feeding	2.89	135
d. breast + solid food	3.07	378
e. bottle feeding + solid food	3.53	630
**9. Latrine type		
a. Private inside centrally connected	1.25	2059
b. Private inside not connected	2.47	925
c. Outside	3.45	275
d. No latrine	5.02	18

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Table 1): Diarrhea incidence rates (child per year) for children under 5 years old by statistically significant independent variables

***P<0.05**

****P 0.01**

Table (2) Stepwise logistic regression model

Variable	Coefficient	Standard error
Constant	-1.514	0.118
Age of the child	0.406	0.117
Area of residence	0.337	0.115
Latrine type	0.235	0.105
Feeding practice	0.118	0.098
Mother : KAP	0.110	0.091
Mother : education	0.106	0.089
Mother : age	0.101	0.086
Hosmer goodness of fit P-value = 0.92		
Prediction equation for the odds in favour of diarrhoeal disease :		
ODDS= exp [-1.514 + 0.406 age of all child + 0.337 area		
+0.234 latrine type + 0.118 feeding practice		
+0.110 mother KAP +0.106 mother education		
+0.101 mother age]		
coding for variables		
Age	<2 years =1	
	2-3 years=0	
	>3years =-1	
Area	rural =1	
	urban=0	
Latrine type	bad	
	good =0	
Feeding practice	bottle feeding =1	
	breast feeding =0	
Mother : kap	inaccurate =1	
	accurate=0	
Mother : education	illiterate =1	
	literate =0	
Mother :age	<35years =1	
	.>= 35years =0	

KAP = general knowledge, attitude and practices

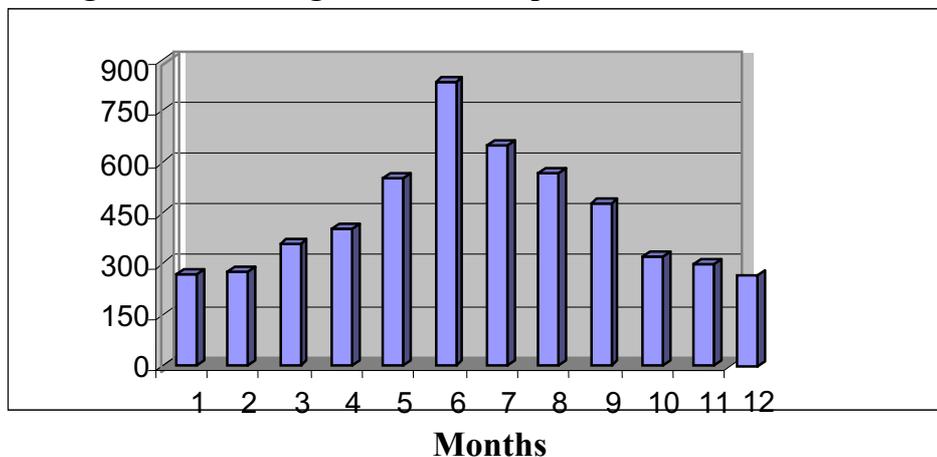


Figure 1 . Distribution of diarrheal disease episodes by months

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