

Drug Misuse in the Treatment of Diarrhea Among Children Under Five Years; a Sample from Baghdad

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Abstract:

Background: Diarrhea is a leading cause of childhood morbidity and mortality particularly in developing countries where an estimated five million deaths occur each year in children under five years of age. The unjustified use of medicines to treat simple episodes of diarrhea continues to divert attention, efforts and available resources away from appropriate treatment.

Objective: The objective of this study is to figure out the extent of drug misuse in children under five years during an episode of diarrhea.

Methods: A cross sectional study conducted in three major health facilities in Baghdad city (Child's Central Teaching hospital, Children Welfare hospital and Al-Mansour training primary health care center). The data collection was done during the period from February through May 2012). A sample of 400 children (diagnosed by the pediatrician as having acute diarrheal diseases) was collected, with age ranging between (1-60 months) through a consecutive sampling technique. The mothers of children attending the outpatient departments of the health facilities were interviewed through a structured questionnaire that was developed based on relevant literatures.

Results: Trimethoprim-sulfamethoxazole (TMP-SMX) was the most antimicrobial used in 39.75% followed by Metronidazole suspension 35.5% and gentamycin injection in 17.5% of the total. Duration of use of antimicrobials was 5 days or less in 73.5%, and more than 5 days in 26.5%. Anti-diarrheal drugs were used in 12.8% and antiemetics in 33.2% of the cases. The results also showed that oral rehydration solution (ORS) and Zinc tablets were not commonly used by the vast majority of mothers; where 15% of them use ORS and only 1.25% use zinc tablet. The prescription of medication was made by pharmacist in 34.5% of cases, nurses (23.75 %), relatives and friends (16%), private clinic doctors (15.5%) and PHCC (10.2%).

Conclusion: Misuse of drugs in children with diarrhea is obvious. Illiterates and low educated mothers were more likely to use antimicrobials than highly educated mothers. Pharmacists were the major source of prescribing these drugs followed by nurses, relatives and friends.

Key words: Drug misuse, children, diarrhea, Baghdad.

Introduction:

Diarrhea is the main cause of childhood morbidity and mortality in developing countries where an estimated five million deaths occur each year in children under five years of age.¹ Most of the episodes of diarrhea occur in children in their first two years of life.²

Inappropriate drug use often causes treatment failure, spread of disease, increased antibiotic resistance, high health care costs and other side effects. Most cases of acute diarrhea are caused by a virus and do not respond to antibiotics. Extensive evidence exists to suggest that the use of antimicrobials and anti-motility drugs for the treatment of diarrhea is widespread and often significantly exceeds that of ORT. The unjustified use of medicines to treat simple episodes of diarrhea continues to divert attention, efforts and available resources away from appropriate treatment.³

The objective of this study is to figure out extent and determinants of drug misuse in children less than five years during episodes of diarrhea.

Methods:

This is a cross sectional study conducted in three major health facilities in Baghdad city (Child's Central Teaching hospital, Children Welfare hospital and Al-Mansour Training primary health care center).

The data collection was done during the period from February through May 2012). A sample of 400 children (diagnosed by the pediatrician as having acute diarrheal diseases) was collected, with age

range of (1-60 months) through a consecutive sampling technique. The mothers of children (with acute diarrhea) attending the outpatient departments of the mentioned health facilities were interviewed through a structured questionnaire that was developed based on relevant literatures.

The questionnaire inquired about the socio-demographic data of the mothers such as (age, level of education, residence, number and age of children) and factors related to diarrhea: number of episodes and duration, types of drugs given, prescribed by whom, whether (ORS) or zinc tablets were used, and whether the mothers have been educated in the health facilities about management of diarrhea.

Results:

Descriptive statistics of socio-demographic characteristics of the studied children (and their mothers) are summarized in **table 1**.

History of diarrheal disease revealed that 73.2% of the children developed more than two episodes in six months, 53.5% of them lasting for five days while 46.5% for more than 5 days. Frequency of bowel motion showed that 73.5% of the children had five motion or more per day (not tabulated).

Mothers got information about the diarrheal disease and the use of medication from different sources. Relatives and friends were the common sources of information in 27% of followed by private doctor 20% and pharmacist 20%; while the PHC doctors were the least (6.5%), as shown in **table 2**.

The prescription of medications was made by the pharmacists in (34.5%) of cases, nurses (23.75 %), relatives and friends (16%), private clinic doctors (15.5%) and PHC (10.2%) as shown in **table 3**. Trimethoprim- sulfamethoxazole (TMP-SMX) was the commonest antimicrobial used (in 39.75%) followed by Metronidazole suspension 35.5% and gentamycin injections in 17.5% of the total.

Duration of use of antimicrobials was five days or less in 73.5%, and more than five days in 26.5% (**Table 4**). Anti –diarrheal drugs were used in 12.8% and anti-emetics in 33.2% of the cases.

The results also showed that oral rehydration solution (ORS) and Zinc tablets were not commonly used by the vast majority of mothers; where 15% of them used ORS and only 1.25% used zinc tablet (**Table 5**). The level of education of mothers was significantly and inversely related to the use of antimicrobial and anti-diarrheal agents.

There was no significant relationship between mothers' age (and occupation) with the use of anti-diarrheal agents. Urban mothers were significantly using more anti- diarrheal agents than rural mothers (**Table 6**).

Table 1. Demographic characteristics of children and mothers

Age of children (months)		Frequency	Percent
	1-12	196	49
	12-24	158	39.5
	24-36	22	5.5
	36-60	24	6
Age of mothers (years)	<20	37	9.2
	20-29	212	53.0
	≥30	151	37.8
Number of children	1	134	33.5
	2	80	20
	3	160	40
	4	26	6.5
Occupation	housewife	348	87
	employee	52	13
Education	illiterate	169	42.2
	Primary school	149	37.2
	Secondary school	45	11.2
	High education	37	9.2
Residence	Urban	211	52.8
	Rural	189	47.2
Total		400	100

Table 2. Source of information provided to mothers about medications

Source of information	Frequency	Percent
Relatives and friends	108	27
private clinic doctors	80	20
pharmacists	80	20
Books and newspapers	54	13.5
Mass media	52	13
PHCC doctors	26	6.5
Total	400	100

Table 3. Source of Prescription of medications

Source	Frequency	Percent
Pharmacist	138	34.5
Nurse	95	23.75
Relatives and friends	64	16.0
Private clinic doctor	62	15.5
Primary health care center doctor	41	10.25
Total	400	100

Table 4. Use of Anti-microbial medications and duration of use

Antimicrobial medication	No. of children	Percent
Trimethoprim- sulfamethoxazole	159	39.75
Metronidazole suspension	142	35.5
Gentamycin injection	70	17.5
Cephalosporin's	29	7.25
Total	400	100
Duration of use	No. of children	percent
≤ 5 days	294	73.5
> 5 – 10 days	106	26.5
Total	400	100

Table 5. Use of Anti-diarrheal, anti-emetics, ORS, and zinc

Drug used	No. of children	Percent
Anti-diarrheal	51	12.8
Antiemetic	133	33.2
ORS	60	15
Zinc tabs.	5	1.25
Total	400	100

Table 6: Use of Anti-Diarrheal agents and possible related factor

	Anti-diarrheal agents		Chi square	P value
	use	Not use		
Mother's age(years)			0.1	0.95
< 20	5	32		
20-29	26	186		
≥30	20	131		
Total	51	349		
Occupation			0.8	0.49
Housewife	45	303		
Employee	6	46		
Total	51	349		
Educational level			37.4	0.001
illiterate	19	150		
Primary school	16	133		
Secondary school	8	37		
High education	8	29		
Total	51	349		
Residence			7.46	0.007
Urban	36	175		
rural	15	174		
Total	51	349		

Discussion:

Diarrhea is a self-limited condition; its consequences can be largely prevented if the mothers have a good knowledge about it. ⁴

The current study showed that the majority of children aged between 1-24 months).

This age group could be a high risk group because of the different feeding habits among children, gradual increase in activity and then direct exposure to diarrheal disease, as shown by a study done in India in 1991 that revealed a close relationship between such age group and the development of diarrheal disease. ⁵

There was no significant relationship between mothers' age and occupation) with the use of anti-diarrheal agents. This is in agreement with a study done in Australia in 2003 which showed that the association of mother's age and occupation with diarrheal disease is of no value.⁶

The current study showed that the level of education of mothers is inversely related to the use of antimicrobial and anti-diarrheal agents, as illiterates and low educated mothers were more likely to use these agents than highly educated mothers. This is in accordance with a study done in Tikrit city/Iraq regarding maternal knowledge about control of diarrheal disease in 2006.⁷

Urban mothers were significantly using more anti-diarrheal agents than rural mothers, this agrees with the results of a study done in Egypt /1990 which stated that the rural mothers usually live far away from the health facilities, so the maternal use of drugs will decrease. (25).

The current study revealed an overwhelming free use of antibiotics, anti-emetic and anti motility drugs, all of which are contraindicated in most cases of diarrhea in children. The malpractice that we have noticed is that these drugs are either prescribed by nurses or by the family members themselves; unfortunately, the pharmacists use to sell these drugs by hand. This misuse is considered as a serious health problem as it may lead to many complications as most of children with acute infectious diarrhea will not benefit from antimicrobial therapy cause in most of the cases the causative agent is viral except a limited percent with bacterial or protozoa infections.

This can result in many problems including: development of resistance, the side effect of drugs and super infection when normal flora is eradicated.

This agrees with the findings of a research done in Iraq that explained the impact of improper use of antimicrobials in diarrhea.⁹

Anti-diarrheal drugs were used in 12.8% of the cases; these drugs may prolong the infection by delaying elimination of the causative organisms leading to a variety of side effects including: nausea, vomiting, constipation and drowsiness.

For this reason, anti-diarrheal drugs are not recommended for acute diarrhea in children and are potentially hazardous. Anti-emetics were used in 33.2% of the cases; they may cause sedation and drowsiness that may interfere with oral rehydration therapy.

Other side effects include: acute dystonic reaction, diarrhea, hypertension and the rare but potentially fatal (neuroleptic malignant syndrome). This agrees with the findings of a study done in Iraq /2006 which mentioned the side effects of antiemetic and anti-diarrheal agents.¹⁰ The current study also showed that the vast majority of mothers did not use the ORS and Zinc tablets which are very essential in

the management of diarrheal disease, where 15% of the mothers used ORS and only 1.25% were using zinc tablet. This agrees with the findings of a study done in Bangladesh, 2004, which discussed the importance of both ORS and Zinc tablet in the management of diarrheal disease in children.¹¹ The current study revealed that only 15% of mothers had been educated about management and care of children with diarrheal disease when attending health facilities.

It can be concluded from this study that Misuse of drugs in children with diarrhea is obvious. Illiterates and low educated mothers were more likely to use antimicrobials than the highly educated. Pharmacists are the major source of prescribing drugs followed by nurses, relatives and friends.

References:

1. Fayed k. Ghishan: chronic diarrhea Nelson Text Book of Paediatrics.18th ed online, 2008, by Elsevier; chap338:1621-26. <http://www.nelsonpediatrics.com/toc.cfm>. (accessed Oct. 2012)
2. WHO /CDD programme: persistent diarrhea, WHO1989, 4: 1-4.
3. WHO. Diarrhea management training program, control of diarrheal disease program. Participant manual, diarrhea management training course, 1992, page CDD/SER/90.3 Rev.1992.
4. Ministry of health: survey about maternal knowledge towards control of diarrheal disease in Iraq, April 1994. 42(2):4-8.
5. Patwari Ak et al.: experiences from teaching hospitals, Ind-J-ped., 1991, November-December., 58(6):775-51. (Medline Abstract).
6. Caleb K.: managing Acute Gastroenteritis among Children in Australia; November 21, 2003 / 52(RR16); 1-167—205
7. Sarab K. knowledge, practice & knowledge of mother's & health workers toward diarrhea in Tikrit city. MSc thesis in Community Medicine, College of Medicine, University of Tikrit. 2006.
8. El-Rafi M. et al.: Effect of residence on diarrheal disease control of infant and childhood in Egypt. Report from the National Control of Diarrhoeal Diseases Project. Lancet 1990; 335:334-8.
9. Najim Aldin Al-Ruznamaji.Acute diarrhea in children and the Gentamycin Dilemma. The Iraqi J. of Medical Science .2001, 1(2):117-118.
10. Luay Al-Nouri, et al: Drugs use for diarrhea for children at home .The Iraqi Post Graduate Medical Journal, 2006:Vol.5, No.2:12-20.
11. Rahman SA. et al: Importance of ORS and Zinc tablets in the hospital: experiences from Dhaka Medical College Hospital. Bangladesh. 2004, 40(8):450-55.