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Physicians' Knowledge Regarding Nutritional Management in Children with Diarrhea: a Study in Kerman, Iran (I.R.)

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Abstract: Acute diarrhea is one of the common causes of malnutrition and mortality in children younger than 5 years of age, especially in developing countries. The high prevalence of malnutrition in Kerman, the largest province of Iran, in addition to the importance of physicians' awareness in the dietary management of children with acute diarrhea encouraged us to identify the knowledge of a group of physicians, regarding the nutritional management of children with diarrhea. This research was conducted on 122 pediatricians and general practitioners in 2005. They obtained a mean (\pm SD) total score of 14 (\pm 3.4) out of 22 (the maximum achievable score). The knowledge score according to sex and years of working experience of the physicians showed significant difference. Not only none of the physicians believed in omitting breast-feeding, but also 64.8% of the respondents recommended increasing breast-feeding. Although diluted formula was advised by 42.5%, but lactose free formula was only prescribed in 6%. Majority (95.1) of respondents prescribed ORS. In conclusion the study highlighted a gap in knowledge of physicians as the core subjects in the nutrition education and dietary management of acute episodes of childhood diarrhea.

Key words: Acute diarrhea, malnutrition, mortality in children, developing countries

Introduction

Diarrhea is the major cause of malnutrition and mortality in children younger than 5 years of age, especially in developing countries (Ibrahim and Isani, 1997; King *et al.*, 2003); so that 80% of mortalities occurs in the first two years of life. Persistent diarrhea is followed by death in 35% of cases. Malnutrition along with diarrhea leads in persistent diarrhea and further negative impact on mortality rate (Behrman and Kliegman, 2004). Diarrhea accounts for approximately 34000 deaths per year in children younger than 5 years of age in Iran (Ghadamlee and Valaie, 2001). Physicians (GPs and pediatricians) play an important role in children nutritional management in acute diarrhea. Considering the problems in nutritional therapy during diarrhea worldwide and improper knowledge of physicians regarding nutrition during diarrhea based on some available studies (Ibrahim and Isani, 1997; Szajewska *et al.*, 2000), the high prevalence of underweight among under 5 children in Kerman, Iran (Ghassemi *et al.*, 2002) and the important role of physician on prevention and control of diarrhea and dietary management in acute diarrhea, this study was aimed to investigate the knowledge level of some physicians (general practitioners and pediatricians) on nutrition during diarrhea.

Materials and Methods

This cross sectional study was performed using a self-administered questionnaire consisting of a set of questions (11 items) exploring the beliefs and knowledge of physicians regarding the dietary

management of diarrhea in children. Its content validity was confirmed according to an extensive literature review and expert panel. The test retest reliability of the items was acceptable by calculating intraclass correlation coefficient (0.85) by pilot testing on 15 subjects. The inventory focused on the ORS prescription modalities and the recommendations of the physicians regarding the consumption of breast/formula feeding and use of various food components (i.e., vegetables, fruit, etc) and dietary supplements. The answers were coded as follows: 0 = incorrect, 2 = partially correct and 2 = correct, so the total achievable score was considered 22. The study was conducted in Kerman City the center of the largest Province of Iran located in South of the country, in 2005. The sample consisted of 84 general practitioners which were randomly selected from the list of about 400 GPs and all 38 pediatricians of the City who worked in private or public settings. After reassurance of the subjects about the anonymity of the questionnaires oral consent was obtained. The physicians were requested to complete the questionnaire on the same day and it was collected in an anonymous and unlinked manner. The t test and ANOVA were used to compare mean scores among the subgroups. $p < 0.05$ was considered as significant. Data were analyzed by SPSS 14 software.

Results

The majority of the physicians completed the questionnaires (response rate of 88.5%). Sixty three (51.6%) of them were female. The mean (\pm SD)

Amini-Ranjbar and Bavafa: Physicians' Knowledge Regarding Nutritional Management

Table 1: Comparing the mean of the male and females' knowledge*

Sex	No.	Mean	SD
Female	63	14.7	3.31
Male	59	13.3	3.37

p<0.05

Table 2: Comparing the mean of physicians' knowledge score based on work experience*

Work experience (year)	No.	Mean	SD
=5	37	14.9	3.13
6-15	59	14.5	3.14
=16	26	11.6	3.39

p<0.001

Table 3: The frequency of physicians (n=122) advising to omit some food components during acute diarrhea in children*

Food	No.	Percent
Vegetables	48	39.4
Fats	47	36.9
Fruit juice	44	26.1
Egg	42	34.4
Grains	37	30.3
Meat	2	1.6

*Since the respondents might choose more than 1 item, the sum of frequencies and percentages are higher than 122 and 100, respectively

Table 4: The frequency of physicians' respondents in advising liquid use during acute diarrhea in children*

Liquid	No.	Percent
Continuing breast-feeding	122	100.0
ORS	116	95.1
Yogurt	110	90.2
Increasing breast-feeding	79	64.8
Fruit juice	56	45.9
Full strength formula	46	37.7
diluted formula	44	36.0
Lactose free formula	8	6.5

*Since the respondents might choose more than 1 item, the sum of frequencies and percentages are higher than 122 and 100, respectively

knowledge score of physicians was 14.0 (± 3.4). The female physicians had more knowledge on dietary management during diarrhea comparing to the males (p<0.05) (Table 1). The pediatricians had working experience of 19.5 years while the general practitioners had 11.5 years. The physicians with work experience less than 16 years had more knowledge (p<0.001) (Table 2). No significant difference was observed between general practitioners and pediatricians on nutritional management during diarrhea (14.1 \pm 3.5 and 13.8 \pm 3.2, respectively, P = 0.57). Using vegetables was not advised by 39.4% of physicians and 37% suggested omission of fat from the diet (Table 3). Not only none of them advised omitting breast feeding during diarrhea, but also majority (64%) advised increasing breast feeding. Most of physician (95.1%) emphasized on ORS consumption during diarrhea (Table 4) and lactose free

formula recommended by 6.5% (Table 4). Only 18.9% advised the usual diet.

Discussion

The mean knowledge score of physicians regarding to dietary management of acute diarrhea in children was 14 which was 64% of the maximum achievable score (i.e., 22). In this regard the knowledge of physicians may not be in an acceptable range. According to the findings, no significant difference was observed between physicians' knowledge and their educational/practice level but there was a significant difference based on their sex (p<0.05) and years of working experience (less than 16 years) (p<0.001) with knowledge. This may be so because the pediatricians were older and on the other hand, they did not use WHO protocols, because these protocols are new and recently introduced and they were not familiar with them according to their own statements; while young and recently graduated practitioners have learned these protocols and some of them are working with these protocols in Health Care Centers. The females were more familiar with these protocols than the males, the reason may be that the females' are usually more curious about feeding during diarrhea as mothers. Despite the Europeans physicians (77%) (Szajewska *et al.*, 2000), not only none of the respondents advised omitting breast-feeding and food during diarrhea, but also 64.8% recommended increasing breast-feeding. Of course, 44% of the respondents preferred watery formula. This is similar to the findings of the study in Europe (Szajewska *et al.*, 2000) in which the full strength formula was prescribed by 43%. Fortunately, in spite of other studies [(Ghadamlee and Valaie, 2001): 65%, Europe (Szajewska *et al.*, 2000): 36%] a low percent of the respondents (6%) prescribed lactose free formula. These discrepancies may be the result of the different time of the study or the knowledge level. Considering the textbooks and the WHO recommendations (Walker *et al.*, 2004) and recent articles (Brown, 1991; Szajewska *et al.*, 2000; Mehta, 1996; Sullivan, 1998), the knowledge about encouragement and continuation solid foods in episodes of diarrhea was deficient, because they recommended omitting of egg, fat, vegetables, grains, iron and multi-vitamin drops by 34.2%, 38.5% 39.4% 30.3%, 81.8% and 95.8%, respectively. Fruit juice which should be avoided owing to worsening the diarrhea based on its high osmolality (Behrman and kliegman, 2004), was recommended by 45.9% of respondents during diarrhea. Of course, foreign physicians make such mistakes too but it seems to be in a smaller scale. For example, 21% of European physicians recommended continuing perfect feeding (Szajewska *et al.*, 2000), the Mexican physicians preferred omitting feeding and beginning it gradually (Corral *et al.*, 2002) and some Kerachi physicians had problems in feeding,

Amini-Ranjbar and Bavafa: Physicians' Knowledge Regarding Nutritional Management

ORS and nutrition evaluation during diarrhea although they have been trained in this regard (Ibrahim and Isani, 1997).

In conclusion these results highlight the deficit in knowledge of physicians as the core subjects in the nutrition education and dietary management of acute episodes of childhood diarrhea. We suggest continuing medical education in this regard for pediatricians and general practitioners to promote their knowledge in approach and treatment of childhood diarrhea especially its dietary management.

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