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Factors Related to Knowledge and Behavior of Children's Mothers under Five Years Old with Diarrhea being treated at Tay Nguyen Regional General Hospital

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Abstract— *Diarrhea is one of the leading causes of morbidity and mortality in children in Vietnam and worldwide. Meanwhile, knowledge, attitude and good behavior of mothers about diarrhea play a very important role in reducing morbidity and mortality in children.* ***Objectives:*** *This study was conducted to Identify some factors related to knowledge and behavior of children's mothers under 5 years old with diarrhea being treated at the Department of General pediatrics, Tay Nguyen Regional General Hospital.* ***Research subjects and methods:*** *A cross-sectional descriptive study was performed on mothers of children with diarrhea being treated at the Department of General pediatricts, Tay Nguyen Regional General Hospital.* ***Results:*** *The percentage of mothers with correct knowledge and behavior about diarrhea is 34.4% and 35.4%. Factors such as age group, ethnicity, education and occupation are associated with knowledge and behavior of mothers about diarrhea ($p < 0.05$). The group of mothers with correct knowledge has better behavior in taking care of children with diarrhea than the group of mothers with incorrect knowledge ($p < 0.05$).* ***Conclusion:*** *Knowledge and correct behavior of mothers with children under 5 years old with diarrhea at the Department of General pediatricts, Tay Nguyen Regional General Hospital is still low. Therefore, it is necessary to strengthen communication education on health care and prevention for mothers about diarrhea - this is an important step to reduce morbidity and mortality in children under 5 years old.*

Keywords— *Diarrhea, Knowledge, Behavior.*

I. INTRODUCTION

Diarrhea is one of the common diseases that often occurs in children, especially in children under 5 years old and has many causes. According to statistics of the World Health Organization in 2017, along with acute respiratory infections, diarrhea is one of the leading causes of morbidity and mortality in children worldwide, especially in developing countries including Vietnam. Each year an estimated 1.7 billion children under 5 years old still suffer from diarrhea and about 525,000 diarrheal deaths [15]. In addition to high morbidity and mortality, diarrhea is also an important factor leading to malnutrition, mental retardation, physical retardation and facilitating the entry of other infections. Diarrhea has been and continues to be an economic burden for developing countries [4].

Vietnam is one of the developing countries. Diarrhea is a concerned and important problem of public health. On average, each child has about 2.2 episodes of diarrhea in a year. In recent years, the diarrhea situation in Vietnam tends to increase. According to statistics, each year there are from 1 to 1.2 million cases nationwide [3].

Diarrhea is a very common disease, the rates of morbidity and mortality remain high. The care, treatment and prevention of diarrhea is not the sole task of the health sector, but requires close cooperation of departments, mass organizations and especially everyone in it. in there, especially mothers with children under 5 years old because these are often the ones who directly care for their children [1],[11].

Mothers' knowledge and good behavior about diarrhea as well as prevention measures play a very important role in reducing morbidity and mortality in children. Many deaths are caused by mothers' lack of knowledge in prevention and care. So, knowledge and correct behavior about care and prevention with diarrhea is still an issue of concern today [5],[13].

In Dak Lak, although the national diarrhea prevention program (CDD) has been implemented for many years and has obtained many good results [2], but in recent times, diarrhea in children under 5 years old is still common in the community because preventive measures are still not really effective, due to customs, habits, lack of knowledge, living environment and objective factors [14]. This study was conducted with the desire to find out the relationship between knowledge and behavior of mothers about diarrhea, thereby suggesting measures to improve knowledge and behavior about diarrhea for mothers [8], [11]. This also contributes to reducing overcrowding in hospitals, reducing treatment costs and avoiding adverse health consequences for children.

II. OBJECTIVES

(1) Describe the knowledge and behavior of mothers whose children under 5 years old have diarrhea at the Department of General pediatricts, Tay Nguyen Regional General Hospital, (2) Identify some factors related to the knowledge and behavior of children's mothers under 5 years old with diarrhea at the Department of General pediatricts, Tay Nguyen Regional General Hospital.

III. RESEARCH METHODOLOGY

A. Design and setting

A cross-sectional descriptive research design was employed for this study. Data collection was performed at the

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Tay Nguyen Regional General Hospital, Vietnam.

B. Sample

Sample size was calculated following the formula:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

In there:
- n: Sample size
- Z: With significance level α = 5%, then $Z_{(1-\alpha/2)}$= 1.96.
- p: Based on the previous published data, we chosen p = 0.5
- d: confidence interval of true value of sensitivity, using d = 0.05.

So that, a sample of 384 mothers with children under 5 years old have diarrhea being treated at the hospital was recruited using simple random sampling technique.

Inclusion criteria were: (1) 18 years of age or older; (2) agree to participate in the study; (3) hospitalized for treatment within 48 hours and indicated for elective surgery.

Exclusion criteria were: (1) Mothers didn't directly raise and take care of their children; (2) inability to answer interviews such as mental disorders, dementia, mute, deaf, ...
- Data were collected through a structured questionnaire, consisting of three parts: (1) General information; Assessment of mothers' knowledge about diarrhea; (3) assessment of mother's behavior about diarrhea... The researchers conducted direct interviews with the participants. The collected information were carefully remarked on the survey form which avoid confusion or missing.

C. Data analysis

Data were processed using STATA 10.0 software. The alpha level for significance was set at .05. Categorical variables were presented by frequency and percentages, and continuous variables by mean and standard deviation. The Chi-square were used to analyze the relationship between demographic factors with the knowledge and behavior of mothers about diarrhea.

D. Ethical considerations

Prior to data collection, the study protocol was approved by the Research Review Board, and permission to collect data was obtained from the Director of Tay Nguyen Regional General Hospital. Patients were clearly informed about the study's aims, benefits, data collection procedure, and of their rights. All data was stored in a secure place and utilized only for this study.

IV. Results and Discussion

A. General characteristics of mother and children

According to the results of Table I show that most of the mothers participating in the study are between the ages of 26-35 years old (55.5%). This is a relatively mature age, which is a favorable condition for the acquisition of knowledge about care and prevention with diarrhea for children. This rate is lower than the study of authors Mac Hung Tang and Tran Do Hung when surveying the knowledge of acute diarrhea prevention of mothers with children under 5 years old in Thuan Hoa commune, An Minh district, Kien Giang province was 70.4% [11].

TABLE I. Distribution of mothers by age, ethnicity, education level, occupation, economic condition and place of residence (n = 384).

Mother's Information		Frequency	Rate (%)
Age group	≤ 25 years old	141	36,7
	From 26 to 35 years old	213	55,5
	> 35 years old	30	7,8
Ethnicity	Ethnic minority	99	25,8
	Kinh people	285	74,2
Education level	Primary level	25	6,5
	Secondary level	111	28,9
	High school and above	248	64,6
Occupation	Workers-officers	61	15,9
	Farmer	228	59,4
	Other	95	24,7
Place of residence	City	269	70
	Countryside	115	30

Kinh ethnic group accounted for 74.2%, the rest were ethnic minorities accounted for 25.8%. This result is consistent with the overview of the local ethnic distribution.

In general, the education level of mothers is still low, with 6.5% of mothers having primary education or illiteracy, 28.9% of mothers having secondary education. This rate is equivalent to the research result of author Doan Thi Nhu Phuong in 2015 was 28.2% [10] and higher than the result of author Phan Hoang Thuy Linh in 2017 was 19.4%[7]. In contrast, the group of mothers with education level from high school or higher accounted for 64.6% higher than the study of Le Hoang Phuc and Ly Van Xuan was 11.4% [9] and lower than the study of Author Doan Thi Nhu Phuong was 71.9% [10], Phan Hoang Thuy Linh was 80.6% [7]. The above results are completely reasonable because the time and place of the study are different. The mother's education level can affect the mother's perception of diarrhea, this rate difference on will be a difference in the mother's ability to absorb about knowledge, attitude and behavior in the care and prevention of diarrheal diseases.

The mothers come from different districts in Dak Lak province. This is an area that specializes in coffee cultivation, so the majority of mothers are farmers, accounting for 59.4%, other occupations was 24.7% and only 15.9% of mothers are Workers-officers. This also reflects the reality of Dak Lak province as a province with households mainly engaged in agriculture. This rate lower than the research results of Mac Hung Tang and Tran Do Hung in 2010 was 88.7%[11] and much higher than the study by Doan Thi Nhu Phuong at Quang Nam Children's Hospital, the percentage of mothers who work in agriculture is only 23.6%[10] and acording to author Truong Thi Phuong et al at the National Children's Hospital, this rate is only 14.5% [10] .

B. Knowledge and behavior of mothers (n = 384).

TABLE II. Knowledge and behavior of mothers (n = 384).

Content		Frequency	Rate (%)
Knowledge	Correct	132	34,38
	Incorrect	252	65,63
Behavior	Correct	136	35,42
	Incorrect	248	64,58

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- The results of a study on 384 mothers showed that only 34.38% of mothers had correct knowledge, the rest 65.63% of mothers had incorrect knowledge about diarrhea.

- There are only 35.42% of mothers have correct behavior, the rate of mothers with incorrect behavior account for a relatively high of 64.58%.

C. Factors related to knowledge and behavior of mothers about diarrhea

TABLE III. Factors related to knowledge of mothers about diarrhea (n= 384).

Information about the mother		Total	Knowledge		P
			Incorrect	Correct	
Age group	≤ 25 years old	141	91(64,54%)	50(35,46%)	0,01
	From 26 to 35 years old	213	134(62,91%)	79(37,09%)	
	> 35 years old	30	27(90%)	3(10%)	
Ethnicity	Ethnic minority	99	74(74,75%)	25(25,25%)	0,03
	Kinh people	285	178(62,46%)	107(37,54%)	
Education level	Primary level	25	20(80%)	5(20%)	0,004
	Secondary level	111	84(75,68%)	27(24,32%)	
	High school and above	248	148(59,68%)	100(40,32%)	
Occupation	Workers-officers	61	32(52,46%)	29(47,54%)	0,03
	Farmer	228	160(70,18%)	68(29,82%)	
	Other	95	60(63,16%)	35(36,84%)	
Place of residence	Countryside	115	84(73,04%)	31(26,96%)	0,043
	City	269	168(62,45%)	101(37,55%)	

The results from this study show that the mother's age group, ethnicity, education level, occupation and place of residence are all related to the mother's general knowledge about diarrhea. This results are similar to Nguyen Quang Vinh's study [14] but compared with Doan Thi Nhu Phuong's study in 2015, only the age factor and the education level are related to mothers' knowledge [10].

Analyzing each factor, we find that the age group from 26 to 35 has a higher percentage of correct knowledge was 37.09% than the other groups. This result is completely appropriate because this is the age group of childbearing age, so mothers have to learn many different knowledge to care, nurture, and prevent diseases for their children. The difference was statistically significant ($p < 0.05$).

Ethnic factors was also affect to mothers' knowledge about diarrhea, the Kinh group has a higher rate of correct knowledge was 37.54% than the ethnic minority's mothers at 25.25%. This difference was statistically significant ($p < 0.05$).

Education level is an important knowledge to help mothers understand about diarrhea. Thereby having the right attitude to care and prevent diarrhea. The correct knowledge of mothers increases with education level, mothers with primary education have correct knowledge was 20% while mothers with High school and above have correct knowledge was 40,32% ($p < 0.05$). It means that mothers with higher education level have better knowledge in the care and prevention of diarrhea, this result is consistent with author Doan Thi Nhu Phuong's study [10]. So, when conducting health education communication, we should be more attention to the group of mothers with low education.

According to the results from Table III, the mother's occupation is related to the mother's knowledge about diarrhea. Mothers who are Workers-officers have the highest correct knowledge accounting for 47.54%, and the lowest group of mothers are Farmer with 29.82%. The difference was statistically significant ($p < 0.05$). This result is consistent with author Nguyen Quang Vinh's study [14]. This is probably also natural because the group of mothers working as Workers-officers often have higher education levels, so their general knowledge is also higher. Therefore, when conducting health education and communication, it is necessary to focus on improving knowledge for farmers' mothers so that they can better care and prevent diseases.

Another factor related to the mother's knowledge is the place of residence. Mothers living in Countryside have a correct knowledge was 26.96% lower than mothers living in city (37.55%). The difference was statistically significant ($p < 0.05$). This result is equivalent to the study of Do Quang Thanh, Nguyen Tuan Khiem and Ta Van Tram [12].

TABLE IV. Factors related to behavior of mothers about diarrhea (n = 384).

Information about the mother		Total	Behavior		P
			Incorrect	Correct	
Age group	≤ 25 years old	141	85(60,28%)	56(39,72%)	0,018
	From 26 to 35 years old	213	149(69,95%)	64(30,05%)	
	> 35 years old	30	14(46,67%)	16(53,33)	
Ethnicity	Ethnic minority	99	75(75,76%)	24(24,24%)	0,007
	Kinh people	285	173(60,7%)	112(39,3%)	
Education level	Primary level	25	23(92%)	2(8%)	0,012
	Secondary level	111	70(63,06%)	41(36,94%)	
	High school and above	248	155(62,5%)	93(37,5%)	
Occupation	Workers-officers	61	50(81,97%)	11(18,03%)	0,008
	Farmer	228	140(61,4%)	88(38,6%)	
	Other	95	58(61,05%)	37(38,95%)	
Place of residence	Countryside	115	76(66,08%)	39(33,92%)	0,687
	City	269	172(63,94%)	97(36,06%)	

- The group of mothers > 35 years old have correct behavior about diarrhea higher than other groups ($p < 0.05$).

- The group of Kinh mothers with correct behavior about diarrhea was higher than the ethnic minority mothers ($p < 0.05$).

- Mothers with higher education have higher correct behavior about diarrhea than other groups ($p < 0.05$).

- Mothers are Workers-officers have lower correct behavior about diarrhea than other groups of mothers, the difference is statistically significant ($p < 0.05$).

In short, the results from table IV show that, the older of mother's age, the higher correct behavior for diarrhea and the difference is statistically significant, $p < 0.05$. According to the authors Nguyen Thi Hien, Le Hoang Em and Dang Thi

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Bao Vi in 2015, there was no relationship between age and mother's behavior about diarrhea [6] but the results of Le Hoang Phuc and Ly Van Xuan, there is a statistically significant relationship between age's mothers and practice management of diarrhea [9]. This result reflects the reality of the mother's experience through age combined with her own knowledge, so the mother can make better decisions in the care and prevention of diseases for the child.

Ethnic factors are associated with mothers' behavior towards diarrhea. The group of mothers who are ethnic minorities has higher behaviors about diarrhea (75.76%) than the Kinh mothers (60.7%). The difference was statistically significant ($p < 0.05$). This result is consistent with the research results of Nguyen Quang Vinh [14]. Kinh people and ethnic minorities have a close relationship and help each other, but there are differences in customs, beliefs, marriage and family, activities in daily life... Therefore, in health education and communication, it's necessary to improve knowledge about disease care including diarrhea for ethnic minority mothers.

The higher the education level of mothers was higher the correct behavior about diarrhea ($p < 0,05$). This result is consistent with the study of the authors Nguyen Thi Hien, Le Hoang Em and Dang Thi Bao Vi [6]. This may explain that mothers with a high level of education are easier to receive information and instructions about diseases, so they will have the right behavior to care and prevent diseases for their children.

In this study, it was found that mothers who were civil servants had the lowest correct behavior for diarrhea accounting for 18.03%, while mothers are farmers and other occupations had the higher correct behavior was 38.6%% and 38.95%. The difference is statistically significant ($p < 0.05$), but according to the authors Nguyen Thi Hien, Le Hoang Em and Dang Thi Bao Vi, the mother's occupation doesn't have relationship with the mother's behavior about diarrhea [6]. This may be due to the fact that the mothers who are Workers-officers have less time to care for their children than the farmer's mothers, although the mothers are Workers-officers have very good knowledge about diarrhea but mothers don't have much time to take care of children, so when their children are sick, the mother will have difficulty taking care of them.

D. The relationship between knowledge and behavior of mothers about diarrhea

TABLE V. The relationship between knowledge and behavior of mothers about diarrhea

Content	Incorrect behavior		Correct behavior		OR (CI 95%)	P
	Frequency	Rate	Frequency	Rate		
Incorrect knowledge	172	68,25	80	31,75	1,58 (1,00 - 2,51)	0,037
Right knowledge	76	57,58	56	42,42		
Total	**248**	**64,58**	**136**	**35,42**		

Mothers with incorrect knowledge about diarrhea have incorrect behavior higher 1.58 times than mothers with correct knowledge but have incorrect behavior about diarrhea ($p < 0.05$). This result is consistent with the research results of Nguyen Thi Hien, Le Hoang Em and Dang Thi Bao Vi [6]. This shows that when mothers have incorrect knowledge, they will have incorrect behavior about diarrhea and vice versa. So, it's very important to provide knowledge about diarrhea to mothers because when they have the right knowledge, mothers will easily change their behavior, easily access information to take good care of their children when they have diarrhea.

V. CONCLUSIONS

A. Mother's knowledge and behavior about diarrhea

- There are 34.38% mothers with correct knowledge and 35.42% mothers with correct behavior about diarrhea.

B. Factors related to knowledge and behavior of mothers about diarrhea

- Age group and education level are related to mother's knowledge and behavior about diarrhea ($p < 0.05$).
- The Kinh group of mothers has correct knowledge and behavior about diarrhea higher than the ethnic minority mothers group ($p < 0.05$).
- Mothers who are Workers-officers have correct knowledge and behavior higher than other occupations and mothers live in city have correct knowledge higher than mothers live in countryside about diarrhea ($p < 0.05$).
- The group of mothers with correct knowledge has better behavior in taking care of children with diarrhea than the group of mothers with incorrect knowledge ($p < 0.05$).

VI. RECOMMENDATIONS

- Strengthening communication and education on community health care to provide knowledge about care and prevention of diarrhea for caregivers, especially paying attention to young mothers, mothers with low level of education, ethnic minority mothers and mothers are farmers... to help mothers understand and good performance in care and prevention about diarrhea.
- Enhance the role of medical staff, periodic health education propaganda, clearly explain how to treat, care for and prevent diseases for children. Guiding mothers to know when to treat at home and when to take their children to medical facilities to limit hospital overcrowding.
- Primary health need to be trained on diarrhea management programs so that they can become a source of information for mothers to help them access the most complete information source.

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