Relation of knowledge and level of education to the rationality of self-medication on childhood diarrhea on the Code River banks in Jogoyudan, Jetis, Yogyakarta

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Abstract. Self-medication as an alternative is used to reduce the severity of diarrhea. Optimal treatment can be done by increasing the rationalization of self-medication on diarrhea. This can be achieved with good knowledge about self-medication, which is in turn influenced by level of education. The aim of this study was to determine the relationship of knowledge and education level to rationality of self-medication on childhood diarrhea around the Code River in Jogoyudan, Jetis, Yogyakarta. The study was conducted by cross-sectional analytical observational design. The subjects were mothers who had children aged 2-11 years who had experienced diarrhea and had self-medication. Questionnaires were used to assess the rationality of self-medication on children's diarrhea by the parents. The respondents were askeds to fill out about indications, right drugs, doses, time intervals and periods of drug administration. Data were analyzed using chi-square. It was showed that of 40 respondents, 14 respondents (35%) performed rational self-medication on children's diarrhea and 26 respondents (65%). did not rationalize the treatment. The results of a bivariate test obtained a chi-square value of 9.808 (> 3.841) and a p value of 0.002 (<0.05) on the relationship between education level and rationality of self-medication and a chi-square value of 19.476 (> 3.841) and a p value of 0.000 (<0.05) on relationship between knowledge and rationality of self-medication. The conclusion of this study is that there is a correlation between knowledge and level of education and rationality of self-medication on childhood diarrhea on the Code River banks in Jogoyudan, Jetis, Yogyakarta.

Keywords: knowledge, education, rationalization, self-medication, diarrhea

1. Introduction

The Yogyakarta City Health Agency reported that diarrhea was one of the 10 most prevalent diseases in the city of Yogyakarta in 2015, comprising 10,774 cases. The reported data were based on the number of diarrhea patients who visited a Public Health Center (Puskesmas). The highest number of diarrhea cases was reported from Puskesmas Umbulharjo 1 with 1,354 cases, followed by Puskesmas Jetis with 1,149 cases and Puskesmas Tegalrejo with 1,128 cases [1]. One of the causative factors of diarrhea is polluted environment, such as river water contaminated by industrial or domestic waste [2]. Diarrhea in children can prompt dehydration that could lead to mortality. An effort that can be made to overcome severity and prevent death by dehydration due to diarrhea is by performing self-medication [3].

Self-medication should adhere to the terms of rational medication, so that optimal diarrhea treatment can be achieved and thus lower the risk of child mortality by diarrhea. The rationality of self-medication on diarrhea can be obtained with good knowledge about diarrhea, and the level of one's knowledge corresponds with the level of one's education. The higher the education, the more readily a person absorbs information, and consequently the more knowledge is gained [4]. Therefore, this study was conducted to identify the relationship of knowledge and education level to the rationality of self-medication on child diarrhea on the banks of the Code River in Jogoyudan Kampong, Jetis Sub-district, Yogyakarta.

2. Materials and Methods
2.1. Materials
The data collection instrument for this research was a questionnaire, consisting of a series of questions divided into three sections: The first section enquired the respondents' personal details including name, sex, child's age, education level and income, the second section revolved around knowledge about diarrhea and self-medication against the disease, and the third examined the rationality of the diarrhea medication. Contents of the questionnaire covered:
 a. The respondent's knowledge about diarrhea, including the definition of diarrhea, the dangers of diarrhea, and the treatment of diarrhea.
 b. The respondent's knowledge about oral rehydration therapy (ORT), including how ORT is administered, how long it can be given, and how it is made.
 c. The respondent's knowledge about ORT replacement, breastfeeding during diarrhea, and feeding during diarrhea.
 d. The respondent's knowledge about diarrhea medications, namely New Diatab and Zinc.
 e. The rationality of diarrhea medication, concerning the right drug, which is ORT to prevent dehydration and zinc to prevent diarrhea recurrences, and the right dose of ORT and zinc, including the right way and the right time to administer them.

   As a measurement tool for research, the questionnaire had to be valid and reliable, and thus needed to undergo validity and reliability tests [5]. Respondents involved in the validity and reliability tests should have similar characteristics to those of the respondents at the main research site [6].

2.2. Methods
This study was reviewed and approved by the Research Ethics Committee of Universitas Ahmad Dahlan (KEP UAD), numbered EC 011612154. The composition of the question items in the research questionnaire instrument referred to several guidelines and previous studies conducted in 2013 around the landfill Banguntapan Yogyakarta. The research employed an analytical observational design with a cross-sectional approach. Preliminary study was conducted on 30 respondents to test the validity and reliability of the questionnaire. The inclusion criteria were mothers with a child aged 2 to 11 who had suffered from diarrhea and had been self-medicated, residing on the Code River banks in Jogoyudan Kampong, Gowongan Village Administration, Jetis Sub-district, and willing to fill out the questionnaire. The validity test utilized Pearson correlation by SPSS. Every question item was considered valid if the p value (the value at Sig. (2-tailed)) $< \alpha$, or if the counted r was greater than the critical r. The number of 30 respondents has a critical r of 0.361; the instrument was hence deemed valid if the counted r $\geq$ 0.361. Reliability was identified with a Cronbach's alpha analysis to determine the coefficient of reliability and to then verify whether the instrument was highly reliable. An instrument is seen reliable if it has a Cronbach's alpha greater than 0.6 [7]. A valid and reliable questionnaire would accurately gauge the level of knowledge and rationality of self-medication on children.

   Each answer to the knowledge questionnaire was assigned a score; every correct answer was scored 1 and every wrong answer 0. The scores were summed up, then divided by the number of question items and finally multiplied by 100%, resulting in percentage. The respondent's knowledge fell into low category if the percent score was less than the average percentage, and entered high category if the percent score was equal to or greater than the mean percentage. This classification was based on the

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total average value of all the respondents' scores. The self-medication was rational if all the question items in the rationality section of the questionnaire were correctly answered by the respondent.

The acquired data were analyzed by:

1. Descriptive analysis, to identify the characteristics of the research subjects, including the community group (RW) of the respondents' residence, their education level, their knowledge level and the rationality of their self-medication.
2. Bivariate statistics, to establish the relationship of knowledge and education level to the rationality of self-medication on child diarrhea by chi-square analysis.

The hypothesis to identify the correlation of knowledge and education level with the rationality of self-medication on childhood diarrhea utilized H_0. If the calculated chi-square value was greater than the critical value in the chi-square table, or the p value was less than 0.05, the H_0 was rejected and a relationship between knowledge and education level and the rationality of self-medication on children's diarrhea was established. If the counted chi-square was lower than the critical chi-square value, or the p value was over 0.05, the H_0 could not be rejected and thus no correlation between knowledge and education level and the rationality of self-medication on childhood diarrhea could be determined.

3. Results and Discussion

3.1. Questionnaire validity and reliability tests

Validity and reliability tests on the questionnaire was undertaken on 30 respondents outside the research sample (mothers with a child aged 2 to 11 who had had diarrhea and been self-medicated, residing in Jogoyudan Kampong RW 7, 8, and 9 which were not located on the Code riverbanks) with 30 question items, consisting of 20 items on knowledge about diarrhea and 10 items on the rationality of self-medication on childhood diarrhea. The validity test examined the correlation between the score of each item and the total score of all question items using Pearson correlation that was calculated with the SPSS software version 16. A question item was declared valid if its calculated r (r_{count}) was greater than the corresponding r from the critical value table (r_{table}). The r_{table} value of 30 respondents is 0.361 on a significance level of 5%. The validity test was performed on the sections on knowledge about diarrhea and on the rationality of self-medication on child diarrhea. Results of the validity test on the section on knowledge about diarrhea can be observed in Table 1.

Table 1. Validity test results of knowledge about diarrhea

No.	r_{count}	r_{table}	Note
P1	0.633	0.361	Valid
P2	0.076	0.361	Invalid
P3	0.697	0.361	Valid
P4	0.396	0.361	Valid
P5	0.162	0.361	Invalid
P6	0.396	0.361	Valid
P7	0.248	0.361	Invalid
P8	0.680	0.361	Valid
P9	0.404	0.361	Valid
P10	0.436	0.361	Valid
P11	0.342	0.361	Invalid
P12	0.507	0.361	Valid
P13	0.576	0.361	Valid
P14	0.526	0.361	Valid
P15	0.570	0.361	Valid
P16	0.322	0.361	Invalid
P17	0.443	0.361	Valid
P18	0.473	0.361	Valid
P19	0.542	0.361	Valid
P20	0.681	0.361	Valid

The validity test revealed that of the 10 question items in the section on knowledge about diarrhea, there were 3 items with an r_{count} of less than 0.361; consequently, those questions were dismissed and excluded from the research.

The reliability test for this survey was done by calculating the value of Cronbach's alpha. The questionnaire was considered reliable if the Cronbach's alpha of each variable was greater than 0.6. Results of the reliability test can be seen in Table 2 and Table 3.

Table 2. Reliability test result on knowledge about diarrhea

Variable	Cronbach's alpha	Note
Knowledge about diarrhea	0.827	Reliable

Table 3. Reliability test result on the rationality of self-medication on child diarrhea

Variable	Cronbach's alpha	Note
Rationality of self-medication on child diarrhea	0.635	Reliable

According to Table 2 and Table 3, the Cronbach's alpha values of the variables for knowledge about diarrhea and rationality of self-medication on childhood diarrhea were respectively 0.827 and 0.635, each of which was greater than 0.6. Therefore, all the items of the questionnaire were reliable and could be used for further studies.

3.2. Demographics characteristics

The number of respondents participating in this survey was 40 mothers who had children aged between 2 and 11 who had had diarrhea and been self-treated, living on the Code riverbanks in Jogoyudan Kampong, Jetis Sub-district, Yogyakarta. The disseminated questionnaires provided respondent data consisting of name, address/RW, and education level. The distribution of the addresses/RWs and education levels of the respondents is presented in Table 4 and Table 5.

Table 4. Distribution of the respondents' residential RW on the Code River banks in Jogoyudan Kampong, Yogyakarta

RW	Frequency	Percentage (%)
10	6	15
11	10	25
12	20	50
13	4	10
Total	40	100

Table 5. Distribution of the education level of respondents on the Code River banks in Jogoyudan Kampong, Yogyakarta

Education	Frequency	Percentage (%)
Low	22	55
High	18	45
Total	40	100

Education is one of factors that can affect the thoughts and actions of the respondents. Differences in their education level can cause differences in their assumed knowledge level as well, consequently influencing every action they take in managing self-medication on their children's diarrhea. This study defined education level as the last level of formal education undertaken by the respondents. Results

showed that there were 22 respondents (55%) with low education levels or more than the 18 respondents (45%) with high education levels.

3.3. Questionnaire Results
3.3.1. The respondents' knowledge about diarrhea

Table 6. Distribution of the respondents' correct and incorrect answers per question item in the questionnaire on knowledge about diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Question	Respondent Answer			
	Correct		Incorrect	
	Frequency	%	Frequency	%
P1	34	85	6	15
P2	22	55	18	45
P3	35	87.5	5	12.5
P4	40	100	0	0
P5	33	82.5	7	17.5
P6	12	30	28	70
P7	34	85	6	15
P8	15	37.5	25	62.5
P9	20	50	20	50
P10	27	67.5	13	32.5
P11	34	85	6	15
P12	17	42.5	23	57.5
P13	34	85	6	15
P14	13	32.5	27	67.5
P15	16	40	24	60

Question P1 was about the definition of diarrhea. The number of respondents who answered correctly was 34 (85%), while those who gave an incorrect answer were 6 respondents (15%). This indicates that there were more respondents who understood what diarrhea is than those who did not. Respondents who could not give an accurate answer to this question were probably less open to information concerning diarrhea, or were less certain about determining the frequency of children's liquid bowel movements which symptomizes diarrhea.

Question P2 asked about the possible consequences of diarrhea if not properly treated. There were slightly more respondents, 22 of them (55%), who chose the correct response than the 18 respondents (45%) who answered otherwise. These obtained data revealed that most of the respondents had already realized that diarrhea can be fatal if not handled well. The remainder were not aware that diarrhea can cause death because they thought that diarrhea was a mild disorder with no lethal potential.

Question P3 enquired about the first action that must be taken when a child contracts diarrhea. The table above shows that 35 respondents (87.5%) provided the exact answer, whereas those who responded incorrectly only comprised 5 respondents (12.5%). This means that the majority of respondents had acquired proper knowledge about the initial treatment that needs to be given when a child is infected with diarrhea, which is providing more drinking fluids to prevent dehydration that if not handled appropriately may lead to fatality.

Question P4 examined the administration of ORT to children with diarrhea. It transpired that all respondents (100%) answered correctly, implicating that all of them had already grasped that ORT is given to children when suffering from diarrhea.

Question P5 covered the respondents' knowledge about the duration of administering ORT to children with diarrhea. As many as 33 respondents (82.5%) selected the right answer, suggesting that most of the respondents knew that ORT should be given to diarrhea-suffering children until they are

relieved from the ailment. Conversely, 7 respondents (17.5%) picked the wrong answer, supposing that ORT is given only once at the first instance of diarrhea.

Question P6 concerned about giving ORT when the child vomits, in which case the administration should continue little by little but frequently. No more than 12 respondents (30%) had a correct response, much fewer than the 28 respondents (70%) with the erroneous one. This implies that many respondents had yet to grasp the method of administering ORT to children vomiting during diarrhea, with the presumption that forceful ORT treatment would exacerbate the vomiting.

Question P7 related to the making of ORT. In this matter, 34 respondents (85%) had already comprehended that ORT is made by dissolving the ingredients in boiled water, whilst 6 respondents (15%) had not.

Question P8 pertained to the alternative use of rice water as ORT substitute for diarrheic children. Most respondents, or 25 of them (62.5%), did not recognize that rice water can be given to ease symptoms and avert dehydration on children with diarrhea. This probably resulted from the respondents' different perception about rice water, as some of them did not understand precisely what was meant by rice water. Only 15 respondents (37.5%) were aware of this alternative medication.

Question P9 looked into the respondents' knowledge about breastfeeding diarrheic children, which should be maintained as intake to avoid the children from dehydration. This question was answered correctly and incorrectly by equally 20 respondents (50% each). Respondents who chose the wrong response assumed that breastfeeding could worsen the child's diarrhea.

Question P10 queried about knowledge relating to feeding children with diarrhea. A number of 27 respondents (67.5%) knew that children suffering from diarrhea should be fed more often than usual but with smaller portions, because in such condition their digestive system may not be able to sustain standard or larger portions.

Question P11 covered the knowledge of handling childhood diarrhea if blood is present in the stool. A child contracting bloody diarrhea should immediately be taken to the nearest health service center to receive further treatment for fear of diarrhea with complications. The majority of 34 respondents (85%) yielded the right answer, while the other 6 respondents (15%) did not because they thought that bloody diarrhea in children would subside by itself.

Question P12 asked about an antidiarrheal medicine named New Diatab. More specifically, the question assessed the knowledge level of respondents on the distinction between New Diatab and ORT. New Diatab possesses different properties from ORT, in that New Diatab contains kaolin and pectin which are useful in stopping diarrhea, whereas ORT contains substances that help recover body fluids lost during diarrhea to prevent dehydration. The number of respondents who understood the different properties of New Diatab and ORT was 17 (42.5%), fewer than the 23 respondents (57.5%) who did not know. This probably ensued from a lack of information gained by respondents regarding the effects of antidiarrheal drugs circulating in public.

Question P13 examined the knowledge that ORT can be bought at any pharmacy without a doctor's prescription. As many as 34 respondents (85%) were aware of this fact, more numerous than the 6 respondents (15%) who were not. The latter group was possibly less exposed to information about ORT and accustomed to receiving ORT only from Puskesmas when having their diarrheic children examined.

Question P14 and P15 were about the respondents' knowledge about zinc. Zinc is an antidiarrheal medication that averts recurrences of diarrhea in children, and is not an antibiotic, thus enabling purchase at pharmacies or drugstores without prescription. Question P14 measured respondents' understanding that zinc is not an antibiotic, which was realized by merely 13 respondents (32.5%). Question P15, meanwhile, gauged the respondents' knowledge about how to obtain zinc. Just 16 respondents (40%) were informed that zinc could be procured without prescription, fewer than the opposite group of 24 respondents (60%). These results uncovered that respondents' knowledge about zinc was still low, which could have stemmed from inadequate socialization to the public and the respondents' habit of acquiring zinc only from Puskesmas without buying it themselves.

From these acquired data, the distribution of respondents' level of knowledge about diarrhea was identified as described in Table 7.

Table 7. Distribution of respondents' level of knowledge about diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Knowledge level	Frequency	Percentage (%)
Low	19	47.5
High	21	52.5
Total	40	100

The knowledge level will influence the measures taken in treating childhood diarrhea. The higher the knowledge level, the better the diarrhea treatment measures, which would bolster the realization of rational medication towards optimal treatment of diarrhea in children. The knowledge levels were divided into two categories, namely a low level when the respondent's average score was below the total average of all answers, and a high level when the respondent's average score surpassed the total average. Based on the questionnaires filled out by the respondents, results revealed that there were 19 respondents (47.5%) with a low knowledge level, fewer than those with a high knowledge level of 21 respondents (52.5%). The fact that the proportion of respondents with a low knowledge level was nearly half the total sample could have been instigated by uneven dissemination of information by relevant agencies around the Code riverbanks in Jogoyudan Kampong, so that many people there remained with low knowledge levels.

Nevertheless, these findings corroborate a prior study on 22 respondents in the vicinity of the landfill (TPA) of the Banguntapan Sub-district in Bantul, where 6 respondents (27.27%) had low knowledge and 16 respondents (72.73%) had high knowledge, i.e. the number of respondents with high knowledge exceeded that of the ones with low knowledge [8].

3. 3. 2. Rationality of respondents' self-medication on diarrheic children
Self-medication on childhood diarrhea can be optimal if the medication is rational. The rationality of self-medication includes the right indication, the right drug, the right dose, the right time interval for administration, and the right duration of medication. If any one of the five points is not met, the implemented medication is deemed irrational. Rationality could be assessed from the respondents' answers to the distributed questionnaires. Respondents fell into rational category if they correctly answered all the questions in the section on the rationality of self-medication on children's diarrhea**.**

Distribution of the respondents' correct and incorrect answers per question item questionnaire as can be seen in table 8.

Table 8. Distribution of the respondents' correct and incorrect answers per question item on the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Question	Respondent Answer			
	Correct		Incorrect	
	Frequency	%	Frequency	%
R1	33	82.5	7	17.5
R2	38	95	2	5
R3	32	80	8	20
R4	29	72.5	11	27.5
R5	24	60	16	40
R6	19	47.5	21	52.5
R7	26	65	14	35

Question R1 enquired about the right indication. The question cited a symptom indicating the occurrence of diarrhea on a child, which is liquid bowel movements taking place 4 times or more. If such indication emerges, diarrhea medication needs to be administered. As many as 33 respondents (82.5%) were able to respond correctly, whilst 7 respondents (17.5%) could not, denoting that the number of respondents who could identify the right indication predominated that of respondents who were not capable of doing so.

Question R2 related to the right drug. During diarrhea, children are given antidiarrheal medicine as management. The primary medication administered is ORT, which is effective in averting dehydration due to diarrhea, which may weaken the child and lead to death. Results disclosed that 38 respondents (95%) gave the right answer, selecting ORT to prevent dehydration caused by the child's diarrhea.

Question R3 queried about the time interval between ORT administrations. According to the "Buku Saku Lintas Diare" (Five Steps to Cure Diarrhea Pocketbook) published by the Ministry of Health of the Republic of Indonesia, ORT is given immediately after every event of defecation during diarrhea to avert dehydration. There were 32 respondents (80%) who answered the question correctly, by far more numerous than those who responded otherwise, implying that a large majority of the respondents had already applied the right time to administer ORT when their children suffered from diarrhea.

Questions R4 and R5 looked into the right dose of diarrhea medication for children. The proper dose of ORT to administer at the onset of diarrhea to prevent dehydration is 100-200ml after every instance of defecation. Aside from ORT, zinc is also required to prevent relapses of the child's diarrhea. Zinc should be given as much as one tablet or 20mg a day. Question R4 concerned the right dose of ORT. It transpired that 29 respondents (72.5%) had grasped the appropriate dose of ORT to give to children with diarrhea to avoid them from dehydration. This number was greater than that of respondents who did not use the right dose, consisting of 11 respondents (27.5%). Question R5 pertained to the right dose of zinc administration, to which 24 respondents provided the exact answer, implicating that they are capable of administering zinc with the right dose.

Question R6 asked about the right way to administer zinc. The right way closely relates to the right dose, and is an important aspect in which people frequently commit errors. The publicly available preparations of zinc tablets are zinc *dispertabs*, which are tablets that are not directly taken orally but must be dissolved with a tablespoon of boiled water at first. This is done to accelerate the drug's therapeutic effect and help children to ingest it. However, only 19 respondents (47.5%) knew the right way, fewer than the 21 respondents (52.5%) who did not. This could have stemmed from insufficient counselling, information and education provided by pharmacy staff when handing over the drugs, to the extent that respondents thought that zinc is used in a similar way to ordinary tablets.

Question R7 was about the right duration for giving ORT medication to diarrheic children. The 2011 edition of the Five Steps to Cure Diarrhea Pocketbook states that ORT should be administered until the patient is cured. Once the diarrhea is alleviated, the ORT treatment ceases. There were 26 respondents (65%) who selected the right answer for this question, more than the 14 respondents (35%) who took the wrong answer. It could thus be concluded that most of the respondents had already understood and been able to determine the time length for the medication of children suffering from diarrhea.

The gathered data yielded a distribution of respondents' rationality in the self-medication of diarrheic children as can be seen in Table 9.

Table 9. Distribution of the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Rationality	Frequency	Percentage (%)
Rational	14	35
Irrational	26	65
Total	40	100

The above table displays that those who could not answer all the questions correctly were 26 respondents (65%), more than the 14 respondents (35%) who were able to do so. These data point out that there were still many respondents who had not yet comprehended how to perform self-medication on diarrheic children in a rational way. Consequently, children's diarrhea may not be treated properly with optimal medication.

This finding contradicts results from previous research conducted around the TPA in Banguntapan Sub-district, Bantul, where 17 out of 22 respondents (77.27%) who practiced rational medication outnumbered those who performed irrational medication, consisting of 5 respondents (22.73%) [8]. This might have also resulted from the disproportionate distribution of information by related agencies in the area of the Code riverbanks in Jogoyudan Kampong. Another possible influential factor is the low education level of respondents, which made them less active and responsive towards seeking and gathering information concerning diarrhea.

3. 3. 3. Descriptive distribution of knowledge and education levels of respondents against the rationality of self-medication on diarrhea

The distribution of respondents' education level against the rationality of self-medication on child diarrhea is described in Table 10.

Table 10. Distribution of respondents' education level against the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Education	Rationality			
	Rational	%	Irrational	%
Low	3	21.4	19	73.1
High	11	78.6	7	26.9
Total	14	100	26	100

It is noticeable from Table 10 that respondents with low education level tended to act irrationally in practicing self-medication on childhood diarrhea, involving 19 respondents (73.1%), while merely 3 respondents (21.4%) could give rational self-medication to diarrheic children. Conversely, respondents with high education level were relatively able to perform self-medication on child diarrhea rationally, comprising 11 respondents (78.6%), a greater number than the 7 respondents (26.9%) who were not rational in applying self-medication on children's diarrhea. The collected data indicated that the higher the education level, the broader the assumed knowledge to the point of the capability to conduct rational self-medication on diarrheic children, attaining optimal medication. Meanwhile, the description of respondent knowledge against the rationality of self-medication on child diarrhea is provided in Table 11.

Table 11. Distribution of respondents' knowledge level against the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Knowledge	Rationality			
	Rational	%	Irrational	%
Low	0	0	19	73.1
High	14	100	7	26.9
Total	14	100	26	100

Table 11 shows that the knowledge level of respondents influences the rationality of their self-medication on child diarrhea. Good knowledge would support medication rationality, while deficient knowledge may make medication rationality not achieved. All 19 respondents with a low knowledge level gave irrational self-medication on childhood diarrhea, whereas among respondents with high

knowledge level, 14 were able to implement self-medication on diarrheic children rationally, and only 7 of them could not do so. Respondents with high knowledge level but performing irrational self-medication on children with diarrhea might have had knowledge limited to the disease and the names of antidiarrheal medicines, but had not enough knowledge about the right way to utilize those drugs.

The distribution of respondents' education level against their knowledge about childhood diarrhea is depicted in Table 12.

Table 12. Distribution of respondents' education level against knowledge about diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Education	Knowledge			
	Low	%	High	%
Low	17	89.5	5	23.8
High	2	10.5	16	76.2
Total	19	100	21	100

One's education level is a factor that can affect the level of information gathered and knowledge learnt. The higher the education level, the more information is gained, leading to the acquisition of wider and better knowledge. This survey found that respondents with low education were inclined to have low knowledge as well. In contrast, respondents with a high education level tended to possess high knowledge accordingly. It can be observed from the above table that 17 of respondents with low education also had low knowledge, more than their 5 counterparts with high knowledge. On the other hand, 16 of the respondents with high education also had high knowledge, a much greater number than that of the ones having low knowledge, which was simply 2 respondents.

3.4. Bivariate analysis
The bivariate analysis for this inquiry was run by SPSS version 16. To find out the relationship of knowledge and education level to the rationality of self-medication on child diarrhea on the banks of Code River in Jogoyudan Kampong, Yogyakarta, a chi-square test with a confidence interval of 95% was carried out.

3.4.1. Correlation between education level and rationality of self-medication on childhood diarrhea on the Code River Banks in Jogoyudan Kampong, Yogyakarta
Results of data analysis to establish the relationship of education level to the rationality of self-medication on child diarrhea are laid out in Table 13.

Table 13. Correlation between education level and the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Education	Rationality		Chi-Square	OR	CI	P
	Rational	Irrational				
Low	3	19	9.808	0.100	0.021-0.470	0.002
High	11	7				

According to data analysis results in Table 13, the counted chi-square value was 9.808, which was higher than the critical chi-square value with df=1 of 3.841. It also transpired that the p value = 0.002 (p<0.005). It could be concluded therefore that there was a relationship between education level and the rationality of self-medication on diarrheic children on the banks of the Code River in Jogoyudan Kampong, Jetis Sub-district, Yogyakarta.

This result conforms earlier investigations [8-10]. One study mentioned that parents' education impacts on their knowledge in taking actions to treat diarrhea. Well-educated parents hold proper knowledge about actions in medicating diarrheic children [9], whilst parents with lesser education lack the same knowledge. Other research also stated that education relates to rationality, in that education is

one of the factors in gathering information which influences rationality. The higher the education, the vaster the information acquired, which would be sufficient to avoid irrational medication [10]. The survey undertaken within the proximity of the TPA in Banguntapan Sub-district, Bantul Regency, also yielded that there was a positive correlation between the education level of respondents and the rationality of their self-medication on childhood diarrhea [8].

3.4.2. Correlation between knowledge level and rationality of self-medication on childhood diarrhea on the Code River Banks in Jogoyudan Kampong, Yogyakarta
Data analysis results to identify the relation between knowledge and the rationality of self-medication on child diarrhea are presented in Table 14.

Table 14. Correlation between knowledge level and the rationality of self-medication on child diarrhea on the Code River banks in Jogoyudan Kampong, Yogyakarta

Knowledge	Rationality		Chi-Square	RR	CI	P
	Rational	Irrational				
Low	0	19	19.476	3.00	1.638-5.493	0.000
High	14	7				

Table 14 displays that the calculated chi-square value was 19.476, greater than the critical chi-square value with df=1 of 3.841. It was also revealed that the p value was 0.000 (p<0.005). It can thus be determined that respondents with a high knowledge level were able to conduct rational self-medication on childhood diarrhea three times as well as respondents with a low knowledge level.

This finding concurs with three preceding studies [9-11]. Parents' good knowledge relates to proper actions of diarrhea medication, while inadequate knowledge would lead to inappropriate acts of diarrhea medication [9]. Another inquiry cited that knowledge correlates with rationality as a factor that affects rationality. Proper knowledge can avert irrationality in medication in terms of inaccurate dose, interval, and duration [10]. The study carried out near the TPA in Banguntapan Sub-district, Bantul Regency, also divulged a positive relationship between the knowledge level of respondents and the rationality in their self-medication on childhood diarrhea [8].

The limitation of this study was that the responses to the question items in the questionnaires were not followed up by in-depth interviews about self-medication on the respondents' diarrheic children, raising the possibility of factors influencing the questionnaire results that were not identified by the researchers.

4. Conclusions
From 40 respondents, it was found that 14 respondents (35%) performed rational self-medication on childhood diarrhea, whereas 26 respondents (65%) did so irrationally. There was a correlation between education level and the rationality of self-medication on child diarrhea on the banks of Code River in Jogoyudan Kampong, Jetis Sub-district, Yogyakarta, as can be noted from a chi-square value of 9.808 (>3.841) and a p value of 0.002 (<0.05). There was a relationship between knowledge and the rationality of self-medication on childhood diarrhea on the banks of Code River in Jogoyudan Kampong, Jetis Sub-district, Yogyakarta, as denoted by a chi-square value of 19.476 (>3.841) and a p value of 0.000 (<0.05).

Acknowledgements

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