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THE INFLUENCE OF PARENTAL KNOWLEDGE ON SELF-MEDICATION OF DIARRHEA IN CHILDREN IN BAKI SUB-DISTRICT, SUKOHARJO DISTRICT, INDONESIA

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Abstract

Despite the high prevalence of diarrhea in Indonesia, inappropriate self-medication practices among parents remain common, including irrational antibiotic use and delayed medical consultation. This study aims to analyze the association between parental knowledge and self-medication for diarrhea in children in the Baki sub-district, Sukoharjo district, and to analyze the sociodemographic correlation between knowledge and practice of diarrhea self-medication. This study used a cross-sectional design to assess parental knowledge and self-medication practices at a single point in time using a structured and validated questionnaire, which consisted of sociodemographics, knowledge, and practice. The inclusion criteria were conducting self-medication for diarrhea, reading, writing, communicating, and being willing to be respondents. The exclusion criteria were health workers. Spearman's rank correlation was used to analyze the correlation between age, education level, and income to knowledge and practice. Chi-Square was used to analyze the association of sociodemographics (gender, occupation, marital status) with knowledge and practice. During the study, the questionnaires were distributed to 384 parents who had self-medicated diarrhea in their children. The average knowledge and practice scores were 83.76 ± 12.15 and 78.78 ± 8.86, respectively. Analysis with Spearman-Rank Correlation found that education level is significantly correlated to knowledge and practice (P value < 0.05), with a positive correlation. Occupation was significantly associated with knowledge (p value 0.036).

Kata Kunci: Knowledge, Practice, Diarrhea, Self-medication

INTRODUCTION

Diarrhea is an increase in water content in the stool due to disruption of the normal functioning of the physiological processes of the small and large intestine, which are responsible for the absorption of various ions, other substrates, and water (Nemeth & Pfleghaar, 2022). Diarrhea is an important cause of mortality and morbidity in children. One of the factors thought to contribute to the increasing incidence of diarrhea of varying degrees is the lack of optimal knowledge about diarrhea, thereby increasing the prevalence of diarrhea (Motto, 2013).

Diarrhea remains one of the major public health problems in Sukoharjo Regency. Based on the Sukoharjo Health Profile and regional health surveillance data, diarrhea cases continue to be reported annually across several sub-districts, including Baki. In 2022 and 2023, the Sukoharjo District Health Office continued to report treated diarrhea cases through community health centers and healthcare facilities, indicating that diarrhea remains a significant communicable disease burden in the region. In addition, seasonal increases in diarrhea cases were still reported during the dry season, particularly among children and adolescents. These

findings indicate the continuing need for improving community awareness and appropriate self-medication practices for childhood diarrhea in Sukoharjo Regency. In 2024, the reported incidence of diarrhea in Sukoharjo was 5,167 (Dinas Kesehatan Kabupaten Sukoharjo, 2024). The high prevalence of diarrhea in the community encourages parents to perform self-medication as an initial approach to manage diarrhea symptoms in children before seeking professional healthcare services.Some of the causes of the high tendency to self-medicate are lower drug prices, public perception of milder illnesses, and the practicality of using drugs to treat milder illnesses by self-administration (Rikomah, 2016). Based on the Khan study, lack of health facilities is one of the factors for self-medication behavior (Khan, 2018). Research on the relationship between parental knowledge and self-medication for cold in children conducted in Grobogan Village, Purwodadi, showed that 9% of self-medication was influenced by knowledge (Maheswari, 2012). Knowledge is the most important factor in shaping a person's inner reactions into attitudes that produce actions in accordance with their perceptions (Notoatmodjo, 2011).

Despite the high prevalence of childhood diarrhea, parents often practice self-medication as the first treatment approach without adequate knowledge regarding appropriate diarrhea management. However, studies specifically investigating parental self-medication behavior toward childhood diarrhea, particularly in rural Indonesian communities, remain limited. Therefore, this study is important to evaluate the relationship between parental knowledge and self-medication practices in order to support rational and safe diarrhea management in children. The study results can encourage the community to seek information on active self-medication of diarrhea. This can also be used as input for pharmacists and the health department to improve education on diarrhea disease, especially in the Baki District area.

RESEARCH METHODOLOGY

Study Design

This research was a non-experimental study with a cross-sectional. A cross-sectional study explores the correlation between exposure or risk factors (independent) and effects (dependent) by collecting data simultaneously between risk factors and effects (point time approach) (Masturoh & Nauri, 2018). The independent variable of this study was demographic data. The dependent variable was the knowledge and practice of parents who engage in self-medication for diarrhea. This study has been reviewed and declared ethical by the Health Research Ethics Commission (KEPK) of the Faculty of Medicine, Universitas Muhammadiyah of Surakarta, with No. 4651/B.1/KEPK-FKUMS/XI/2022.

Research Tools

The research instrument used in this study was a questionnaire on parental knowledge regarding self-medication of diarrhea in children, adapted and modified from previous research by Putri (2012), Hendrastuti (2019), Hidayati (2012), Kusuma (2019), Mandal & Sahi (2017). The questionnaire was divided into three sections. Demographic data of the respondents in the first section included name/initials, address, gender, age of the respondent, age of the respondent's child, marital status, last education level, occupation, and income per month. The second part contained the respondents' knowledge, consisting of 14 questions which consisted of several domains: diarrhea (Q01 - Q03), causes of diarrhea (Q04 - Q06), signs and symptoms of diarrhea (Q07 - Q08), diarrhea medication (Q09 - Q11), and prevention of

diarrhea (Q12 - Q14). The scale for measuring respondents' knowledge used a Guttman scale. The correct answer was given a value of 1, the incorrect answer was given a value of 0, and the answer did not know was given a value of 0. The total knowledge score, which ranged from 0 to 14, was assessed based on Bloom's cut-off point into poor (< 60%; score 0 - 8), sufficient (60% - 80%; score 9 - 11), and good (> 80%; score 12 - 14) (Bloom, 1956).

The third section contains diarrhea self-medication actions consisting of 19 favorable and unfavorable questions which consist of several domains: diarrhea management (Q01 - Q05), diarrhea prevention (Q06 - Q07), how to get medicine (Q08 - Q09), and medicine use (Q10 - Q19). A Likert scale was used to measure respondents' self-medication actions. Favorable (positive) questions with answers were always given a value of 5, often given a value of 4, sometimes given a value of 3, rarely given a value of 2, and very rarely given a value of 1. Unfavorable (negative) questions with answers very rarely given a value of 5, rarely given a value of 4, sometimes given a value of 3, often given a value of 2, and always given a value of 1. The assessment results were categorized using Bloom's high, moderate, and low cut-off points. The total score of diarrhea self-medication ranged from 19 to 95. Based on the total score, the practices were classified into low (< 60%; score 19 - 56), moderate (60% - 80%; score 57 - 76), and high (> 80%; score 77 - 95).

Validity was conducted on 30 respondents using the r table 0.361 (α = 0.05) with 22 question items in the knowledge section and 26 in the diarrhea self-medication section. There were eight invalid items in the knowledge section and seven in the diarrhea self-medication section. The number of valid and distributed items to respondents in the knowledge and self-medication of diarrhea was 14 and 19. The reliability test results for the questionnaire for 14 knowledge question items and 19 diarrhea self-medication question items were 0.878 and 0.910.

Sample and Data Collection

The target population in this study was parents who have children aged 2-12 years in Baki District, Sukoharjo Regency, and have ever performed diarrhea self-medication. According to Hurlock (1990), early childhood begins at 2-6 years and late childhood at 6-12 years. The minimum number of respondents was calculated using the formula according Equation 1 (Lemeshow et al., 1997).

$$n = \frac{Z^2 1-\frac{\propto}{2}(0,25)}{d^2} \quad \text{.....(1)}$$

$$n = \frac{(1,96)^2\ (0,25)}{(0,05)^2}$$

$$n = 384$$

Description:

n = Number of samples

$Z^2 1\ -\ \frac{\propto}{2}$ = Z score at 95% confidence level

d = error rate (5%)

The calculation results show that the minimum sample size for this study is 384 respondents. The inclusion criteria for this research sample are parents who have children aged 2-12 years who live in Baki District, Sukoharjo Regency, who remember taking self-medication for diarrhea, can read, write, and communicate well, namely respondents who understand the

instructions given, willing to be research subjects. The sample exclusion criteria in this study were health workers.

The research sample was taken using the cluster sampling method. Cluster sampling was an area sampling technique that identifies patterns when the subject under investigation was very large (Sugiyono, 2018). The Baki sub-district consists of fourteen villages, and village selection was made using judgmental sampling based on the limited number of health workers available. Duwet Village, Siwal Village, Mancasan Village, and Waru Village were selected. The number of respondents for the villages to be researched was determined based on Equation 2 (Masturoh & Nauri, 2018).

$$ni = \frac{Ni}{N}\ x\ n \text{.....(2)}$$

Description:
ni = Number of samples in the cluster
Ni = Total population in the cluster
N = Total population
n = Total sample size
Total population of Duwet village = 3843; Siwal village = 4727; Mancasan village = 6462; Waru village = 6663; total population of Duwet village, Siwal village, Mancasan village and Waru village = 21,695. The calculation results obtained the minimum number of samples for each village, including Duwet Village (68 samples), Siwal Village (84 samples), Mancasan Village (114 samples), and Waru Village (118 samples). Data collection was conducted using the door-to-door method.

Data Analysis

Univariate analysis was used to describe the data set in frequencies, namely sociodemographic characteristics. The questionnaire in the knowledge and self-medication of diarrhea section was assessed descriptively with the percentage of respondents' answers to each statement. Bivariate analysis was conducted to test whether there was a relationship between the two variables. A data normality test was conducted to check whether the data were normally distributed. The Kolmogorov-Smirnov normality test showed that the data were not normally distributed because the significance value was 0.000 < 0.05. The relationship between sociodemographic factors with knowledge and self-medication for diarrhea was analyzed using Spearman-Rank Correlation for ordinal data (age, last education level, and income) and Chi-Square test for nominal data (gender, occupation, and marital status). The relationship between parental knowledge and diarrhea self-medication was analyzed using the Spearman-Rank Correlation. Multivariate analysis was conducted to examine more than two variables simultaneously. Multivariate analysis used multiple logistic because the data was non-parametric.

RESULT AND DISCUSSION

Characteristics of Respondents

The number of respondents who participated in this study was 384 parents (Figure 1).

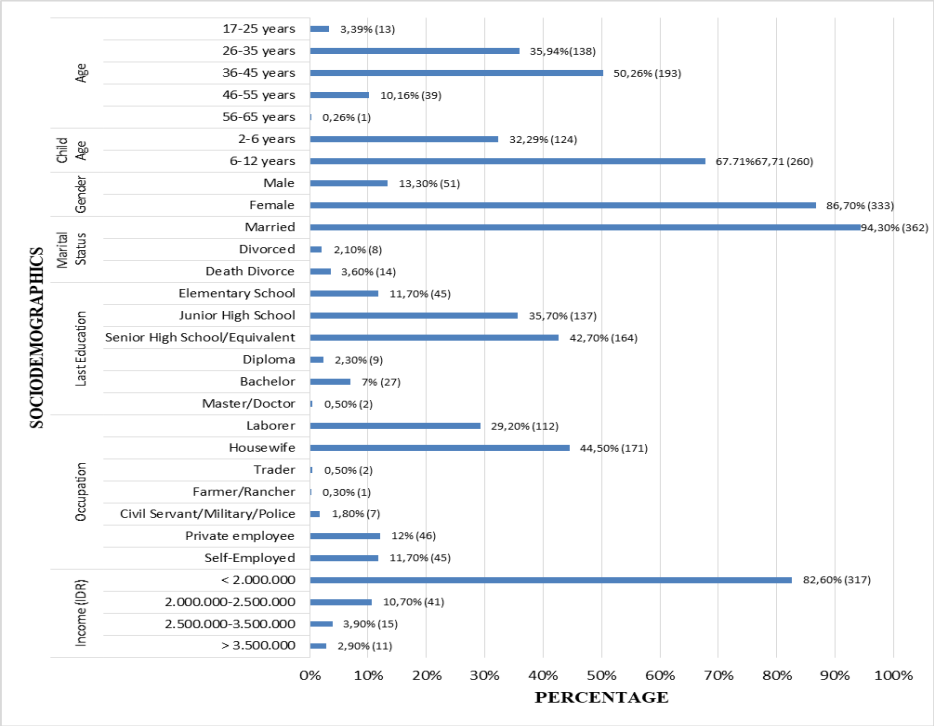

Figure 1. Demographic data of respondents

The results showed that the respondents' age was 36 - 45 years, with an average of 50.26%. From the results of these percentages, it was found that the majority of respondents in this study were categorized as late adults. The more mature a person was, the more mature they were in thinking and decision-making. As one's understanding and thinking increase, the knowledge absorbed also improved (Suwaryo & Podo, 2017). A total of 333 respondents (86.70%) were female. This was because most of the data collection was conducted in the morning and evening. During those times, the respondents, mostly housewives, did activities at home, so they had time to complete the questionnaire.

A total of 164 respondents (42.70%) had completed Senior High School/equivalent as their highest level education. The level of education affected the learning process and the receipt of information. A previous study showed that people with lower educational level might have been less confident in practicing self-medication and felt a greater need to visit a doctor (Shaamekhi et al., 2019). In addition, 82.60% (317) of respondents had incomes below the minimum wage of Sukoharjo Regency. This was because 44.50% (171 respondents) were housewives without income. This figure contributed to the number of respondents income category.

Knowledge

The mean ± SD of knowledge was 83.76 ± 12.15 (Table 1). The majority of respondents had good knowledge, with a percentage of 56.60% (217 respondents). Knowledge of diarrhea consists of 5 domains: diarrhea, causes of diarrhea, signs and symptoms of diarrhea, diarrhea medication, and prevention of diarrhea. Over 50% of the respondents correctly answered all knowledge question items (Q01 - Q14) (Table 2). The lowest mean score of respondents' knowledge was about diarrhea medication, 76.54 ± 27.38.

Table 1. Range, score, and percentage of parent's knowledge and self-medication for diarrhea in children in Baki sub-district, Sukoharjo (n=386)

Category	Score range	Total score (%) (Mean±SD)	Level N (%) Low (<60%)	Moderate (60-80%)	High (80-100%)
Knowledge	0-100	83.76±12.15	17 (4.40)	150 (39.10)	217 (56.50)
Practice	0-100	78.78±8.86	21 (5.50)	166 (43.20)	197 (51.30)

The domain "diarrhea" domain,which consisted of three statements, showed that the respondents had an average score of 79.42 ± 19.04 (Table 2). A total of 30.7% of respondents answered incorrectly, and 19.0% stated that they did not know the statement "infectious diarrhea or diarrhea caused by bacteria or viruses can be transmitted." These findings indicated that the respondents did not fully understand that diarrhea was infectious. It should be noted that infectious diarrhea was a contagious disease, as stated by the Department of Kesehatan RI (2015), therefore, parents should be more careful in preventing their children from becoming infected. In the "diarrhea prevention" domain, 20.6% of respondents answered incorrectly to the statement "A latrine with a septic tank or pit can prevent fecal contamination that can cause diarrhea". Furthermore, in the "diarrhea medication" domain, 22.9% of respondents answered incorrectly to "Zinc tablets improve a child's condition during diarrhea". Zinc was an essential micronutrient for child development and health. A significant amount of zinc was lost during diarrhea. Replacing the lost zinc was important for the child to recover and stay healthy over the coming months. Zinc supplementation during diarrhea has been shown to reduce the duration, severity, and incidence over the subsequent 2 to 3 months (Sammulia et al., 2020).

Table 2. Answers of respondents to the knowledge section of the questionnaire

Domain	Statement	Ideal Answer	Respondent Answer n (%) True	False	Don't Know	Total Average Score Mean ± SD
Diarrhea	Q1. Diarrhea is defecation more than three times a day and is liquid	True	373 (97.1)	10 (2.6)	1 (0.3)	79.42 ± 19.04
	P2. Infectious diarrhea or diarrhea caused by bacteria or viruses can be transmitted	True	193 (50.3)	118 (30.7)	73 (19.0)	
Causes of Diarrhea	P3. If not treated immediately diarrhea can get worse	True	347 (90.4)	35 (9.1)	2 (0.5)	93.79 ± 14.84
	P4. Diarrhea can be caused by bacterial infection	True	362 (94.3)	17 (4.4)	5 (1.3)	
	P5. Allergy to cow's milk can cause diarrhea	True	352 (91.7)	25 (6.5)	7 (1.8)	
	P6. Food and drink contaminated with germs can cause diarrhea	True	366 (95.3)	14 (3.6)	4 (1.0)	
Signs and Symptoms of Diarrhea	P7. Dry skin and sunken eyes are signs of fluid loss	True	337 (87.8)	32 (8.3)	15 (3.9)	86.98 ± 23.41
	P8. Malnutrition during diarrhea can lead to weight loss	True	331 (86.2)	34 (8.9)	19 (4.9)	
Diarrhea Medication	P9. Zinc tablets improve the child's condition during diarrhea	True	251 (65.4)	45 (11.7)	88 (22.9)	76.54 ± 27.38
	Q10. ORS can be made at home	True	314 (81.8)	55 (14.3)	15 (3.9)	
	Q11. If you want to make your sugar-salt solution. The composition is Water (1 glass ± 200 mL). sugar (1 teaspoon), and salt (1/4 teaspoon)	True	315 (82.0)	47 (12.2)	22 (5.7)	
Prevention of Diarrhea	Q12. Using clean water for daily use can prevent diarrhea	True	371 (96.6)	10 (2.6)	3 (0.8)	83.50 ± 22.58
	Q13. Fetching water from clean sources and storing water in a clean and closed place can prevent diarrhea in children	True	346 (90.1)	34 (8.9)	4 (1.0)	
	Q14. A latrine with a septic tank or pit can prevent fecal contamination that can cause diarrhea	True	244 (63.5)	79 (20.6)	61 (15.9)	

Practice of Self-Medication

The medicine most commonly used by the people of Baki Sub-district for self-medication of diarrhea was ORS. Dehydration that occurred during diarrhea could be prevented and treated with ORS. ORS was classified as an over-the-counter medicine that could be used for self-medication. The second most frequently used medicine was Enterostop Anak®. Enterostop Anak® was a brand of herbal medicine used to help solidify stool (Table 3).

Table 3. The percentage of drugs used by parents to self-medication of diarrhea in children

Medicine Name	Active Substance	Frequency	Percentage (%)
ORS	sodium chloride, potassium chloride, trisodium citrate dihydrate, anhydrous glucose	134	28.76
Enterostop anak®	-	91	19.53
Lacto-B®	probiotic	83	17.81
Diapet Anak®	-	59	12.66
Zinkid®	zinc sulfate	34	7.30
Traditional medicine	-	17	3.65
Super Tetra®	tetracycline	17	3.65
Guanistrep®	kaolin, pectin	6	1.29
Diatabs®	attapulgit	5	1.07
Lopamid®	loperamide hcl	4	0.86
Inamid®	loperamide hcl	3	0.64
Kaolin Pektin	kaolin, pectin	3	0.64
Sanprima®	co-trimoxazol	3	0.64
L-bio®	probiotic	2	0.43
Imodium	loperamide hcl	1	0.21
Loperamide	loperamide hcl	1	0.21
Domperidone	domperidone	1	0.21
Activated carbon	activated carbon	1	0.21
Tay Pin San®	-	1	0.21

A Total of six respondents used Guanistrep® containing the active ingredient kaolin-pectin, five respondents used Diatabs® with the active ingredient attapulgite, and one respondent used activated carbon. Kaolin-pectin, attapulgite, and activated carbon are adsorbents that relieve diarrhea symptoms. Adsorbents work by absorbing nutrients, toxins, drugs, and digestive fluids (Dipiro et al., 2020). Although these agents do not require a prescription and were considered non-toxic, they are not recommended for the treatment of diarrhea and dehydration in children. There was no conclusive evidence that any of the three can reduce stool output, diarrhea duration, or diarrhea frequency. In addition, their disadvantages may include intestinal absorption of nutrients, enzymes, and antibiotics, as well as masking the severity of fluid loss in the intestine (World Health Organization, 1990).

A total of 1 respondent used Domperidone for self-medication for diarrhea. Domperidone is a dopamine antagonist with a specific affinity for D2 receptors in the peripheral nervous system, including the gastrointestinal tract. Domperidone accelerates gastric emptying and prevents vomiting and gastroesophageal reflux (Irene et al., 2007). The use of Domperidone for self-medication for diarrhea was considered inappropriate because Domperidone requires a doctor's prescription. Research by Shimakawa (2015) showed that prescribing Domperidone

in combination with ORT for the treatment of acute gastroenteritis did not reduce vomiting in pediatric patients within a short time.

Respondents also used antibiotics for diarrhea self-medication, such as Super Tetra® (Tetracyclin) and Sanprima® (co-trimoxazole). Co-trimoxazole is recommended in conditions where diarrhea is caused by bacteria and small intestinal bacterial overgrowth (SIBO), a condition characterized by abnormal excessive bacterial growth in the small intestine (Bruzzese et al., 2018). The use of tetracycline and co-trimoxazole for self-medication of diarrhea without a doctor's diagnosis and microbiological testing could lead to increased resistance, unnecessary costs, and significant side effects (Lübbert, 2016). The results of the study were consistent with the reported by Rogawski et al. (2015), who found that 28.9% of children with diarrhea were still given antibiotics without a doctor's prescription.

The medicine use domain, less than half of the respondents (48.96%) (figure 2) immediately gave oral rehydration salt (ORS) when the child has diarrhea. This percentage, which is still less than 50%, should be a concern, and it is necessary to improve knowledge and practice in giving ORS. ORS is a recommended treatment for diarrhea, especially diarrhea accompanied by dehydration, which can be fatal if not treated promptly (Departemen Kesehatan RI, 2015).

A total of 41.15% of respondents never gave zinc tablets to children for ten consecutive days. In addition, 36.20% of respondents never administered one zinc tablet per day. Children older than six months should receive one zinc tablet. Zinc replaces zinc lost during diarrhea episodes and helps prevent recurrent diarrhea for 2-3 months (Departemen Kesehatan RI, 2015).

A total of 40.63% of respondents always gave probiotics (Lacto-B®) to their children, whereas 19.53% never gave probiotics. Probiotics can reduce the duration and severity of diarrhea in children and are used to accelerate recovery. Probiotics may provide benefit AAD (Antibiotic-Associated Diarrhea), however scientific evidence from community-based studies are limited, WHO has not recommended probiotics as standard diarrhea treatment. Research by Szajewska et al. (2013) showed shorter treatment duration in children who received probiotics compared to the control group.

A total of 11% of respondents always gave their children Tetracyclin (Super Tetra®) when they haf diarrhea. As many as 8% of respondents get antibiotics from friends or family, and 12% get them at stalls or supermarkets. These findings were consistent with the previous studies. Research by Karuniawati et al. (2020) showed that most antibiotics given are Super Tetra®. These antibiotics were obtained either from health workers including doctors, pharmacy workers, midwives, and nurses or from non-health workers such as stall owners. Another study by Karuniawati et al. (2021) showed that 40% of respondents obtained antibiotics from pharmacies, doctors, nurses, or midwives. The use of antibiotics is inappropriate because not all diarrhea cases require antibiotics. Antibiotics should only be administered for specific indications, such as dysentery, cholera, and other diseases. The inappropiate use of antibiotics for self-medication is not only inefficient but also potentially harmful because improper use may contribute to bacterial resistance. Antibiotics may eliminate normal flora required by the body and may caused antibiotic-associated diarrhea as well as impaired kidney and liver function if used excessively and inappropriately (Departemen Kesehatan RI, 2015).

A total of 9 respondents used loperamide. Loperamide decreases intestinal transit, increases water and electrolyte absorption, and strengthens rectal sphincter tone (Dipiro et al., 2020). The American Academy of Pediatrics (AAP) does not recommend the use of loperamide in children under six years of age because it has no clinically significant effect on stool volume or disease duration and carries the risk of adverse side effects, such as paralytic ileus and toxic megacolon.

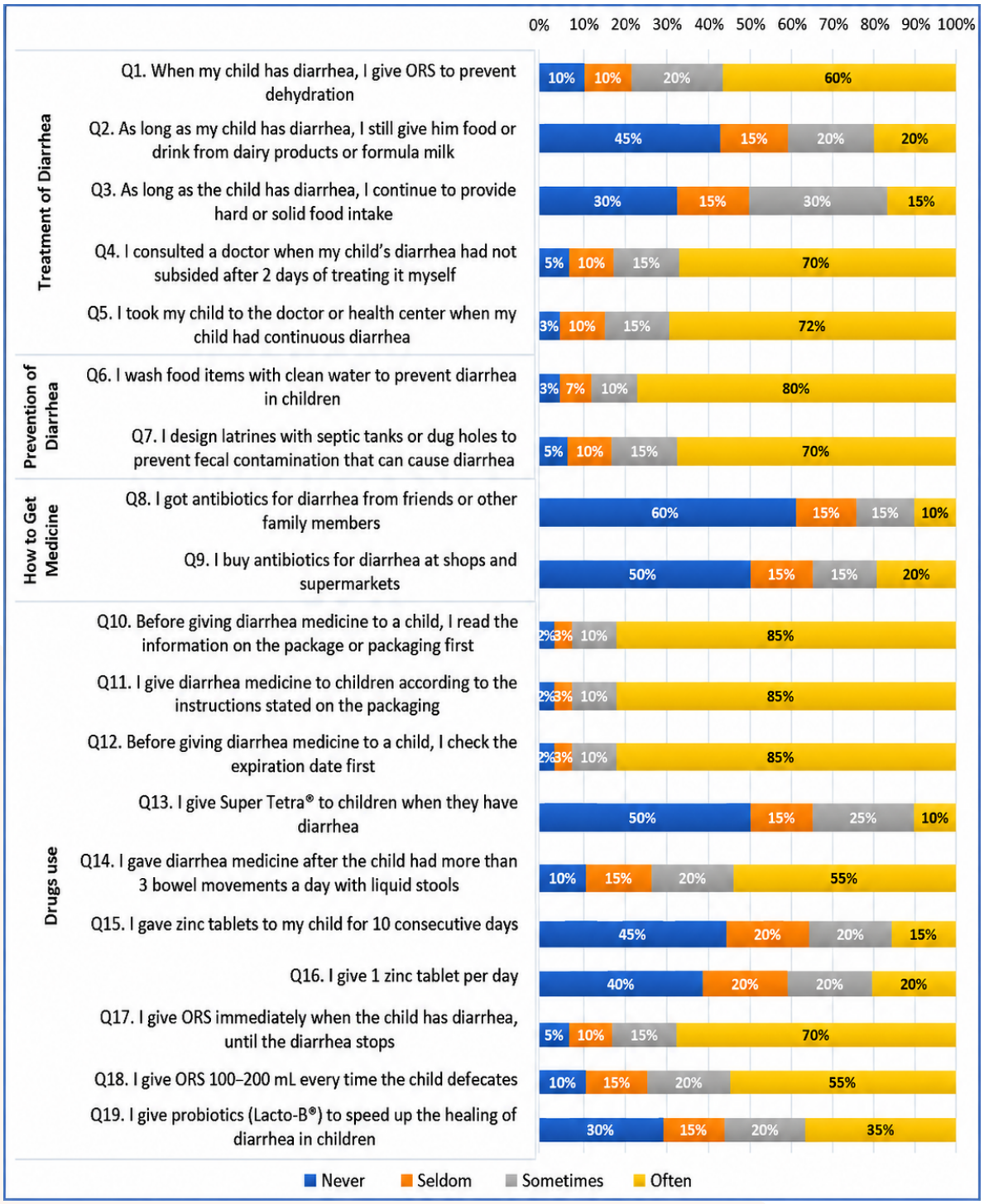

Figure 2. Response to self-medication for diarrhea among parents (n=384)

Association between Sociodemography and Knowledge and Practice in Self-medication

The test results showed that age was not significantly associated with knowledge (P value 0.152 > 0.05) (Table 4). These findings were consistent with the study by Kusuma's (2019) in Yogyakarta, which stated that there was no relationship between age and a person's knowledge. Knowledge can be obtained from both personal experiences and the experiences of others. Experience is one way to get the truth from knowledge. However, at a certain age, the growth of mental development processes may no longer progress as rapidly during adolescence. The learning, thinking, and working processes of adults can be hampered due to physical factors (Munfarida, 2012; Notoatmodjo, 2010).

Table 4. Relationship between sociodemographic characteristics with parenteral knowledge and self-medication for diarrhea in children (n=384)

Variable	Knowledge n (%)			Total (n)	P Value	Practice n (%)			Total (n)	P Value
	High	Moderate	Low			High	Moderate	Low		
Gender*										
Male	27(52.9)	23 (45.1)	1 (1.96)	51	0.475	25 (49)	25 (49)	1 (1.96)	51	0.399
Female	190 (57)	127 (38.1)	16 (4.8)	333		172 (51)	141(42.3)	20 (6)	333	
Marital Status*										
Married	202 (55)	144 (39.8)	16 (4.4)	362		186 (51)	155 (42.8)	21 (5.8)	362	
Divorced	5 (62.5)	2 (25)	1 (12.5)	8	0.512	3 (37.5)	5 (62.5)	0 (0)	8	0.668
Death Divorces	10 (71.4)	4 (28.57)	0 (0)	14		8 (57.1)	6 (42.86)	0 (0)	14	
Occupation*										
Laborer	50 (44.6)	53 (47.3)	9 (8.04)	112		45 (40.2)	60 (53.6)	7 (6.3)	112	
Housewife	103 (60)	65 (38)	3 (1.75)	171		91 (53.2)	72 (42.11)	8 (4.7)	171	
Trader	0 (0)	2 (100)	0 (0)	2		0 (0)	2 (100)	0 (0)	2	
Farmer/ Rancher	0 (0)	1 (100)	0 (0)	1		1 (100)	0 (0)	0 (0)	1	
Civil Servant/ Military/ Police	6 (85.7)	1 (14.3)	0 (0)	7	0.036	6 (85.7)	1 (14.3)	0 (0)	7	0.167
Private Employee	27 (58.7)	16 (34.8)	3 (6.5)	46		29 (63)	14 (30.4)	3 (6.5)	46	
Self-Employed	31 (68.8)	12 (26.7)	2 (4.4)	45		25 (58)	17 (39.5)	3 (6.9)	43	
Age**		-0.072			0.152		0.001			0.984
Level of Educational**		0.202			0.001		0.201			0.001
Income**		0.029			0.566		0.086			0.093

*Chi-Square
**Spearman Correlation

Gender and knowledge also no significant relationship (P Value 0.475 > 0.05). Differences in gender may give rise to different perceptions because men and women may experiences different influences on attitudes and knowledge. Women are generally considered to be more diligent, hardworking, and dedicated when performing task, this does not necessarily indicate better knowledge or a greater ability to increase awareness (Suwaryo & Podo, 2017).

Marital status and knowledge showed no significant relationship (P value 0.512 > 0.05). The results of this study were consistent with those reported by Azuike et al. (2017), who stated that there was no relationship between the respondents' marital status and knowledge.

Several studies have shown that self-medication was more common among married individuals. Most of the respondents in this study were married (94.30%), so there were no significant differences based on marital status for knowledge of diarrhea.

The last level of education and knowledge showed a significant relationship (P value 0.001 < 0.05). The results of this research were consistent with the findings reported by Kusuma (2019), which showed a significant relationship between the level of education and the level of knowledge. This indicated that the individuals with higher educational levels tended to have better knowledge about disease. Educational level influences the learning process, and higher education facilitates easier access to information (Marjan, 2018). Several studies showed that people with lower education were less confident in self-medicating and had a greater need to consult a doctor (Shaamekhi et al., 2019).

Occupation with knowledge also showed a significant relationship (P value 0.036 < 0.05). The findings were consistent with the study by Anis (2017), which showed a significant relationship between occupation and level of knowledge. A total of 44.50% of respondents (171 respondents) were unemployed and identified as housewives. Housewives' often obtained knowledge through social interactions and communication with community members during PKK activities, Qur'an recitation gatherings, or other social activities. Elements of work and knowledge are often associated with social dependency or peer ties. Communities tend to gather and socialize to share experiences and stories, including their history of self-medication (Octavia et al., 2019).

The test results showed that income and knowledge were not significantly relationship (P value 0.566 > 0.05). Similar findings by Mukarromah (2019) who found no relationship between level of knowledge and income. Age and practice also showed no significant relationship (P value 0.984 > 0.05). Gender and practice showed no significant relationship (P value 0.399 > 0.05), and marital status and practice also showed no significant relationship (P value 0.688 > 0.05).

Finally, education level and practice showed a significant relationship (P value 0.001 < 0.05). According to Notoatmodjo (2012), external factors such as learning influence self-medication behavior. Differences in educational levels may lead to differences in the utilization of health services depending on individual health behavior. Higher education allows individuals to gain health knowledge that influences treatment choices.

Occupation showed no significant relationship with action (P value 0.167 > 0.05). This could be because jobs cannot be classified as high or low. Similar research conducted by (Mardliyah, 2016) showed that there was no significant relationship with the behavior of self-medicating pain medication use. Income did not show a significant relationship with action (P value 0.093 > 0.05).

Female respondents had more knowledge and self-medication practices than males, with percentages 57.06% and 51.65% (table 4). Respondents with divorced marriage status showed the highest percentages of good knowledge and self medication practices, at 71.43% and 57.14%, respectively. The occupation of respondents with the highest percentage of good knowledge was civil servants/Military/Police at 85.71%. Respondents with income > 3,500,000 had the most good self-medication knowledge and actions, namely 72.73% and 72.73%.

Table 5. Multivariate analysis of the association between demographics and knowledge of self-medication practice

Variable	OR	CI 95%
Knowledge	1.150	0,918 – 1,162
Age	1,093	0,817 – 1,462
Last Education	1,517	1,222 – 1,884
Occupation	0,981	0,865 – 1,113

Knowledge of confounding respondents' age, highest level of education, and income was analyzed using multiple logistic regression analysis (Table 5). The results showed that, among the independent variables thought to influence children's diarrhea self-medication actions, the most recent education had the greatest influence, with a P value of 0.001 < 0.05. The OR value obtained is 1.517, meaning that the last education has a 1.517 chance of causing good self-medication for diarrhea.

Correlation between Parental Knowledge and Self-Medication for Diarrhea

The result of this study shows that knowledge and self-medication for diarrhea have a moderate correlation in the positive direction (r = 0.413, p-value <0.001). According to Sugiyono (2018), the strength relationship based on the correlation coefficient value can be classified into five categories: very strong (0.80 – 1.000), strong (0.60 – 0.799), medium (0.40 – 0.599), low (0.20 – 0.399), and very low (0.00 – 0.199). This means that the better the parents' knowledge, the better the self-medication practice. Similar research conducted by Wulandari & Madhani (2022) in Jagakarsa shows a relationship between maternal knowledge about diarrhea and self-medication for diarrhea. Other research by Suffah (2017) shows the influence of the level of knowledge on self-medication for diarrhea.

This study has a limitation in that it relied on self-reported questionnaires, which may have introduced recall bias and social desirability bias, as respondents may not accurately remember or may overreport appropriate self-medication practices. However, several efforts were made to minimize these limitations. The questionnaire used in this study was adapted from previously validated instruments and underwent validity and reliability testing before data collection. In addition, trained researchers directly assisted respondents during the door-to-door data collection process to ensure that the questions were clearly understood and answered consistently. Respondents were also informed that their responses would remain confidential and anonymous to reduce the likelihood of socially desirable answers.

CONCLUSIONS

In conclusion, this study demonstrated that parental knowledge was significantly associated with self-medication practices for childhood diarrhea in Baki Sub-district, Sukoharjo District, Indonesia. Most respondents had good levels of knowledge and self-medication practices; however, misconceptions regarding the appropriate use of antibiotics, zinc supplementation, and ORS administration were still identified. The study also found that educational level and occupation were significantly associated with parental knowledge, while knowledge itself showed a moderate positive correlation with self-medication practices.

These findings highlight the importance of improving community education regarding rational diarrhea management in children, particularly concerning the appropriate use of ORS, zinc supplementation, and antibiotics. Strengthening health promotion programs and public

awareness campaigns may help improve parental knowledge and encourage safer and more appropriate self-medication practices for childhood diarrhea.

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