CLINICAL RECOMMENDATIONS BY PHARMACY STUDENTS USING THE CLINICAL VIGNETTE METHOD: A STUDY ON PEDIATRIC ACUTE DIARRHEA CASES

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ABSTRAK
Hingga saat ini, informasi mengenai kemampuan mahasiswa farmasi di Indonesia terkait permintaan obat swamedikasi untuk kasus diare akut anak masih jarang ditemukan dalam literatur yang dipublikasikan. Tujuan dari penelitian ini adalah untuk mendeskripsikan tipe dan ketepatan rekomendasi mahasiswa farmasi saat menangani kasus diare akut pada anak. Pengambilan data pada penelitian potong lintang ini dilakukan dengan menggunakan kuesioner yang terdiri dari karakteristik partisipan dan dua kasus diare akut anak. Dua kasus diare akut anak yang digunakan adalah diare akut anak tanpa alarm symptoms dan diare akut anak dengan dehidrasi. Tipe rekomendasi yang diberikan dianalisis dengan *content analysis*. Ketepatan rekomendasi ditetapkan berdasarkan pedoman dari literatur dan melalui diskusi pakar. Total 136 partisipan terlibat dalam penelitian ini (response rate 100%). Tipe rekomendasi yang diberikan sebagian besar partisipan 70,59% pada kasus diare akut anak tanpa *alarm symptoms* dan 75,74% kasus diare akut anak dengan dehidrasi adalah memberikan produk. Dari 136 partisipan, ketepatan rekomendasi pada kasus diare akut anak tanpa *alarm symptoms* diberikan oleh 16,92% partisipan dan pada kasus diare akut anak dengan dehidrasi diberikan oleh 6,61% partisipan. Penelitian ini menunjukkan ketepatan rekomendasi yang *sub optimal* pada partisipan mahasiswa farmasi dalam menanggapi kasus diare akut anak. Penelitian lanjutan diperlukan untuk mengeksplorasi penyebab ketidaktepatan rekomendasi pada mahasiswa sebagai upaya perbaikan capaian pembelajaran.

Kata kunci : *clinical vignette*, diare akut anak, mahasiswa farmasi, swamedikasi

ABSTRACT
There is limited published evidence on the ability of pharmacy students in Indonesia to manage self-medication requests for pediatric acute diarrhea. This study aimed to identify and assess the types and accuracy of clinical recommendations made by pharmacy students in response to acute diarrhea cases in children. The two cases of acute childhood diarrhea used were acute childhood diarrhea without alarm symptoms and acute childhood diarrhea with dehydration. A cross-sectional design was employed using a structured questionnaire covering participant demographics and two clinical case scenarios involving pediatric diarrhea. Recommendation types were analyzed through content analysis, while accuracy was evaluated based on literature-based guidelines and expert discussions. A total of 136 students participated (100% response rate). Most participants (70.59%) suggested a product in the non-alarm symptoms case, and 75.74% did so in the dehydration case. However, accurate recommendations were only provided by 16.92% of participants in the non-alarm symptoms case, and 6.61% in the dehydration case. These results suggest a suboptimal level of accuracy among pharmacy students when dealing with pediatric diarrhea cases. Further research is necessary to explore the causes of these inaccuracies and to improve learning outcomes.

Keywords *: acute diarrhea, clinical vignette, pharmacy students, self-medication*

INTRODUCTION

Indonesia ranks seventh among countries with the highest under-five mortality rates due to diarrhea. In the country, diarrhea remains an endemic disease with the potential for

widespread outbreaks, often leading to fatalities (Kementerian Kesehatan Republik Indonesia, 2018). Diarrhea is a digestive disorder characterized by more frequent bowel movements than usual—typically more than three times a day—with a change in stool consistency to soft, watery, or even entirely liquid. According to the Global Guidelines of the World Gastroenterology Organization (WGO), acute diarrhea is defined as an abnormal condition marked by loose or watery stools lasting fewer than 14 days (Manetu et al., 2021).

A large portion of the population prefers self-medication to manage diarrhea symptoms (Amalia et al., 2021). Self-medication refers to treating minor health issues independently, such as fever, pain, cough, headaches, flu, diarrhea, and various skin problems (Lei et al., 2018). Data from the Central Bureau of Statistics (2022) show that 84.34% of Indonesians engaged in self-medication, although this figure declined to 79.74% in 2023 (Badan Pusat Statistik, 2023). When practiced responsibly, self-medication can offer significant benefits. Responsible self-care involves the proper use of proven safe and effective medicines for recognizable symptoms, minor ailments, and certain chronic or recurring conditions (after an initial medical diagnosis) (World Health Organization, 2000).

Pharmacists play a crucial role in offering accurate guidance and information during self-medication. However, various studies have shown that the quality of self-medication services provided by pharmacists is often suboptimal. For instance, research by Hamadouk, Arbab, and Yousef (2021) in Sudan found that most pharmacists did not follow treatment guidelines in cases of acute diarrhea. The study observed 235 pharmacies twice, using two different acute diarrhea scenarios. The first scenario evaluated compliance with treatment protocols and counseling practices, while the second assessed referrals for further medical consultation. The most frequently asked question was about the patient's age (±89%), followed by inquiries about the presence of blood in stool (±25–28%). In the first scenario, loperamide was the most commonly dispensed medication (81.3%), whereas oral rehydration salts were rarely provided (0.9%).

Counseling was generally inadequate: only 47.7% of pharmacists gave both verbal and written instructions, 3.8% discussed the duration of treatment, and just 7.2% advised on fluid intake. In the second scenario, 17% of pharmacists made referrals after collecting sufficient information, and 42.6% did so after gathering additional data (Hamadouk et al., 2021). A study by Setiadi et al. (2022) in Indonesia also revealed that only 13.09% of pharmacists made accurate recommendations for diarrhea cases involving alarm symptoms (Setiadi et al., 2022). Similarly, Octafelia et al. (2021) found low accuracy among pharmacists when managing cases of diarrhea accompanied by blood. The appropriate action in such adult acute diarrhea cases is to refer the patient to a physician, with or without other recommendations. However, only 29 pharmacists (34.52%) made the correct referral (Octafelia et al., 2021).

Several factors affect the quality of self-medication counseling in pharmacies across developing countries, one of which is the quality of pharmaceutical education (Brata et al., 2016; Thang et al., 2013). In general, pharmacy students' capabilities are influenced by two main factors: individual student characteristics and the learning process they experience (Lin et al., 2016). A study by Olowookere et al. (2020) showed that female students tend to outperform male students academically (Olowookere et al., 2020). Age is also a contributing factor, as older students—particularly females—are more likely to adopt learning strategies that enhance academic achievement, as evidenced in a study by Douglas et al. (2020) conducted in Australia and the UK (Douglas et al., 2020). Research by Nahiyyah (2022) involving 159 pharmacy students found that the accuracy of recommendations was correlated with GPA and performance in self-medication coursework (Nahiyyah, 2022). On the other hand, the learning process itself also plays a vital role in shaping student mindsets. This includes curriculum design, teaching materials, instructional methods, and lecturer

competence (Lin et al., 2016). Studies examining pharmacy students' competencies in providing self-medication services have reported varying results. These variations may be attributed to differences in case scenarios, study populations, and assessment methods.

A cross-sectional study by Ramadanti et al. (2021), involving 86 pharmacy students at a university in East Java and utilizing a clinical vignette for a low back pain (LBP) case, found that 61 participants (70.93%) were able to provide appropriate recommendations (Ramadanti et al., 2021). Meanwhile, a simulated patient study conducted by Brata et al. (2021) involving 183 sixth-semester students who had completed coursework in self-medication services for a chronic cough case due to asthma revealed that fewer than 60% of the students collected essential information regarding symptoms, medications, and allergies. Only about 54% of participants delivered accurate treatment advice (Brata et al., 2021). These findings underscore the need to enhance students' consultation skills, particularly in gathering relevant information to support appropriate recommendations. Another study by Brata et al. (2024), which assessed pharmacy students' recommendations for primary dysmenorrhea and pediatric fever using clinical vignettes, reported that 86% and 76% of the 86 participants provided accurate recommendations for each case, respectively (Brata et al., 2024).

Additionally, a simulated patient study by Wigmore et al. (2018) in Australia, which evaluated pharmacy students at the University of Sydney in managing pediatric fever cases, showed that 52% of 65 second-year students and 92% of 51 fourth-year students gave correct recommendations. These results suggest a significant improvement in skills between early and final-year students, indicating that senior pharmacy students have generally received adequate training to provide accurate self-medication guidance (Wigmore et al., 2018). To date, limited data exist on the ability of Indonesian pharmacy students to respond to requests for self-medication in pediatric acute diarrhea cases. This study aims to evaluate the types of recommendations made by pharmacy students and assess the accuracy of those recommendations in addressing acute diarrhea in children. Two different pediatric scenarios are used: acute diarrhea without alarm symptoms and acute diarrhea with signs of dehydration. These cases are expected to reflect commonly encountered situations in the community and provide insight into the preparedness of pharmacy students in handling pediatric self-medication cases effectively.

METHODS

Study Desgin

This quantitative study employed a descriptive analytic design with a cross-sectional approach to evaluate pharmacy students' ability to recommend self-medication for pediatric acute diarrhea using clinical vignettes. Conducted at the Faculty of Pharmacy, University X (East Java), the study involved all fourth-year students who had completed a self-medication course (n=136) through total sampling. Data were collected via an online questionnaire on Google Forms, comprising informed consent, demographic information, and two clinical vignettes—one validated case without alarm symptoms (Ningsih et al., 2021) and one expert-reviewed case with dehydration. Detailed descriptions of the two diarrhea cases are shown in table 1.

Table 1. Case of Acute Diarrhea in Children Without Alarm Symptoms

Case:	A mother visits the pharmacy to buy diarrhea medication for her 4-year-old child, weighing 20 kg and measuring 100 cm tall. The diarrhea began approximately 6 hours ago, and the child has had three episodes of diarrhea with a consistency resembling porridge—liquid and more watery than usual. Apart from diarrhea, the child has no other symptoms like nausea, vomiting, stomach pain, fever, mucus, or blood in the stool. The child is still able to play, is not irritable or lethargic, and

	continues to drink as usual. No changes have been made to the child's formula or the food they consume, which is always home-cooked. The child has no allergies or underlying health conditions and does not take any daily medications. To date, the mother has not given any medication to treat the diarrhea
Question:	What would you recommend or advise for this patient?
Correct Answer:	Administration of a combination of Oral Rehydration Solution (ORS) and zinc, with or without non-pharmacological advice, and a follow-up with a doctor if symptoms do not improve.

Table 2. Case of Acute Diarrhea with Dehydration

Case:	A mother visits the pharmacy to buy diarrhea medication for her 5-month-old baby, weighing 9 kg. The diarrhea is watery, greasy, without mucus or blood. The diarrhea started the day before, after the father gave the baby supplemental formula due to the mother's insufficient breast milk. In addition to diarrhea, the baby sometimes vomits, has a mild fever, appears irritable, with sunken eyes, wrinkled skin, and less frequent urination than usual. The baby does not have a cough or cold. The treatment the mother has attempted includes giving the baby a mixture of sugar and salt solution (½ teaspoon each mixed with a glass of water), but the mother finds this method cumbersome and impractical. The baby is not on any routine medications, has no history of other diseases, and has no known allergies.
Question:	What would you recommend or advise for this patient?
Correct Answer:	Immediate referral to a doctor, with or without the administration of ORS and zinc, and/or non-pharmacological advice.

Data Collection

The data collection was conducted from October to December 2024, involving fourth-year pharmacy students at University X who had completed a self-medication course. Participation was voluntary and confirmed through informed consent distributed via a Google Form, which also gathered demographic information and participants' recommendations for pediatric acute diarrhea cases. The recommendations were analyzed using the content analysis method by Elo and Kyngas, involving independent coding by two researchers, resolution of discrepancies by a third reviewer, categorization of similar responses, and frequency analysis. Accuracy was determined by comparing participant responses to standardized key answers based on guidelines from the Indonesian Ministry of Health and WHO, with ambiguous cases reviewed by an expert panel. Descriptive statistics were employed to analyze both demographic characteristics and recommendation accuracy using SPSS version 26. This study received ethical approval from the Institutional Ethical Committee of the University of Surabaya (No. 393/KE/VI/2024).

RESULTS

Participant Characteristics

Table 3. Participant Characteristics

Characteristic	Data	Percentage (%)
Gender		
Male	24	17.65
Female	112	82.35
Age		
< 20	1	0.73
20 – 25	134	98.54
> 25	1	0.73
GPA		
< 2.5	1	0.73
2.5 – 3.0	13	9.56

3.0 – 3.5	87	63.97
> 3.5	1	25.73
Average GPA	3.32 ± 2.44	
High School Background		
SMA	97	71.32
SMK	23	16.91
MA	16	11.76
Grade in Self-medication Course		
A	23	16.91
AB	66	48.53
B	47	34.56
Work or Internship Experience		
Yes	71	52.20
No	65	47.79

A total of 136 participants took part in this study (100% response rate). The majority of participants were female (82.35%), with an average age of 21 years. Most participants came from high school (71.32%). Of the 136 participants, 87 (63.97%) had a GPA between 3.0 and 3.5, with an average GPA of 3.32. Regarding the course on self-medication, the most common grade was AB, with 66 participants (48.53%). Additionally, 75 of the participants (52.20%) had work or internship experience. The detailed characteristics of the participants are shown in table 3.

Type and Accuracy of Recommendations

Table 4. Type and Accuracy of Recommendations for Acute Diarrhea without Alarm Symptoms (N=136)

Recommendation Type	Count (%)	Accuracy
Product Recommendation	96 (70.59%)	
Oral Rehydration Solution (ORS) + Zinc	20 (14.71%)	Correct
Oral Rehydration Solution (ORS)	27 (19.85%)	Incorrect
Probiotics + Oral Rehydration Solution (ORS)	15 (11.03%)	Incorrect
Probiotics	9 (6.62%)	Incorrect
Zinc	8 (5.88%)	Incorrect
Loperamide	2 (1.47%)	Incorrect
Combantrin	1 (0.74%)	Incorrect
Oral Rehydration Solution (ORS) + Herbal Medicine	1 (0.74%)	Incorrect
Adsorbents	13 (9.56%)	Incorrect
Probiotics + Herbal Medicine	1 (0.74%)	Incorrect
Oral Rehydration Solution (ORS) + Antidiarrheal	3 (2.21%)	Incorrect
Oral Rehydration Solution (ORS) + Adsorbents	5 (3.68%)	Incorrect
Laxative	1 (0.74%)	Incorrect
Electrolyte Solution	1 (0.74%)	Incorrect
Adsorbents and Zinc	1 (0.74%)	Incorrect
Herbal Products	2 (1.47%)	Incorrect
Oral Rehydration Solution (ORS), Zinc, and Probiotics	3 (2.21%)	Correct
Antidiarrheal and Zinc	2 (1.47%)	Incorrect
Oral Rehydration Solution (ORS)/ Zinc	1 (0.74%)	Incorrect
Product Recommendation + Non-pharmacological advice	5 (3.68%)	
Oral Rehydration Solution (ORS) + Non-pharmacological	3 (2.21%)	Incorrect
Herbal Product + Non-pharmacological	1 (0.74%)	Incorrect
Probiotics + Zinc + Non-pharmacological	1 (0.74%)	Incorrect
Product Recommendation + Follow-up to Doctor	1 (0.74%)	
Adsorbents + Follow-up	1 (0.74%)	Incorrect
Other Recommendations	7 (5.15%)	
Non-pharmacological	4 (2.94%)	Incorrect

Non-pharmacological + Monitoring Dehydration Signs	1 (0.74%)	Incorrect
Non-pharmacological + Follow-up (ORS if dehydration)	1 (0.74%)	Incorrect
No intervention + Follow-up (refer to doctor if dehydration occurs)	1 (0.74%)	Incorrect
No Recommendation	7 (5.15%)	Incorrect

Table 5. Type and Accuracy of Recommendations for Acute Diarrhea with Dehydration (N=136)

Recommendation Type	Count (%)	Accuracy
Product Recommendation	103 (75.74%)	
Oral Rehydration Solution (ORS) + Zinc	17 (12.5%)	Incorrect
Oral Rehydration Solution (ORS) + Zinc + Probiotics	1 (0.74%)	Incorrect
Adsorbents	1 (0.74%)	Incorrect
Oral Rehydration Solution (ORS)	9 (6.62%)	Incorrect
Probiotics	37 (27.21%)	Incorrect
Zinc	30 (22.06%)	Incorrect
Oral Rehydration Solution (ORS) + Probiotics	6 (4.41%)	Incorrect
Oral Rehydration Solution (ORS) + Zinc + Paracetamol	1 (0.74%)	Incorrect
Zinc + Probiotics	1 (0.74%)	Incorrect
Product Recommendation + Follow-up to Doctor	2 (1.47%)	
Oral Rehydration Solution (ORS) + Follow-up to doctor	1 (0.74%)	Incorrect
Oral Rehydration Solution (ORS), Probiotics, Zinc + Follow-up	1 (0.74%)	Incorrect
Product Recommendation + Referral to Doctor	3 (2.21%)	
Oral Rehydration Solution (ORS) + Referral to doctor	3 (2.21%)	Correct
Product Recommendation + Glucose Salt Solution	1 (0.74%)	
Zinc + Glucose Salt Solution	1 (0.74%)	Incorrect
Product Recommendation + Non-pharmacological advice	10 (7.35%)	
Probiotics + Zinc + Non-pharmacological	2 (1.47%)	Incorrect
Non-pharmacological + Probiotics	1 (0.74%)	Incorrect
Zinc + Non-pharmacological	3 (2.21%)	Incorrect
Non-pharmacological + Oral Rehydration Solution (ORS)	2 (1.47%)	Incorrect
Oral Rehydration Solution (ORS) + Zinc + Non-pharmacological	2 (1.47%)	Incorrect
Product Recommendation + Non-pharmacological + Referral to Doctor	1 (0.74%)	Correct
ORS + Non-pharmacological + Referral to doctor	1 (0.74%)	Correct
Other Recommendations	10 (7.35%)	
Referral to doctor	4 (2.94%)	Correct
Non-pharmacological	5 (3.68%)	Incorrect
Non-pharmacological + Referral to doctor	1 (0.74%)	Correct
No Recommendation	6 (4.41%)	Incorrect

Type and Accuracy of Recommendations

Regarding the recommendations for acute diarrhea cases without alarm symptoms, 129 (94.85%) of the 136 participants provided recommendations, while 7 (5.15%) did not. In the case of acute diarrhea with dehydration, 130 (95.59%) participants offered recommendations, while 6 (4.41%) did not provide any or responded with uncertainty. The most common recommendation type was product-based, both for cases without alarm symptoms and those with dehydration, at 96 (70.59%) and 103 (75.74%) participants, respectively. The product recommendations included both single and combined products. Apart from product-based recommendations, some participants suggested referring the patient to a doctor, follow-up if the patient's condition does not improve with the recommended product, and/or non-pharmacological suggestions. Around 7 (5.15%) participants for acute diarrhea without alarm symptoms and 10 (7.35%) participants for acute diarrhea with dehydration did not recommend any medication but suggested directly referring the patient to a doctor, non-pharmacological advice, or monitoring dehydration signs.

Out of 136 participants, only 23 (16.92%) accurately provided recommendations for acute diarrhea without alarm symptoms, and 9 (6.61%) accurately recommended for cases of acute diarrhea with dehydration. For acute diarrhea without alarm symptoms, the correct recommendations included the administration of ORS and zinc by 20 (14.71%) participants, and ORS, zinc, and probiotics by 3 (2.21%) participants. For acute diarrhea with dehydration, the correct recommendations involved administering ORS and referring to a doctor, by 3 (2.21%) participants; ORS, non-pharmacological advice, and referring to a doctor by 1 (0.74%); directly referring to a doctor by 4 (2.94%); and non-pharmacological advice and referring to a doctor by 1 (0.74%). Details regarding the accuracy of recommendations provided by participants can be found in tables 3 and 4.

DISCUSSION

This study aimed to assess the accuracy of recommendations given by S1 Pharmacy students at University X in East Java regarding self-medication for acute diarrhea in children. The demographic characteristics of the participants showed that, out of 136 participants, the majority were female (82.35%), with an average age of 21 years. Most participants had a background from Senior High School (SMA) (71.32%). These findings are similar to those in studies of pharmacy students at other universities, where the majority were female, with an average age of 20 years, and most came from a high school background (Brata et al., 2021). Of the 136 participants, 87 (63.97%) had a GPA between 3.0 and 3.5, with an average GPA of 3.32. The most common grade for courses related to self-medication was AB, with 66 students (48.53%). Half of the participants in this study (52.20%) had pharmacy internship experience, which is higher than previous studies where only about 30% of students had pharmacy internship experience. This increase was due to a grant received by the university in East Java, which supported the implementation of the MBKM (Merdeka Belajar Kampus Merdeka) program. This program allowed third-year students interested in gaining practical experience to work directly in pharmacies across East Java.

The accuracy of recommendations given by participants in both diarrhea cases was generally low. For the case of acute diarrhea in children without alarm symptoms, 23 participants (16.92%) out of 136 gave the correct recommendation, which was the combination of ORS and zinc. This accuracy rate was slightly better compared to a study by Brevmana et al. in 2021, which used a similar case. In that study, only 14.3% of fourth-year pharmacy students could make correct recommendations for managing acute diarrhea in children (Brevamana et al, 2021). Although more than half of the participants recommended oral rehydration salts (ORS) for acute diarrhea without alarm symptoms, many did not include zinc in their recommendation. Research conducted at Idaman Regional Hospital in Banjarbaru City from July to October 2017 with two patient groups supported this. The first group received standard therapy without zinc, while the second group received standard therapy plus zinc.

The results indicated that the addition of zinc to the treatment of acute diarrhea in children was more effective in speeding up recovery compared to patients who only received standard therapy without zinc ($p<0.05$) (Wati et al., 2019). Treatment guidelines from the World Health Organization (WHO) and the Indonesian Ministry of Health also recommend adding zinc to the treatment of acute diarrhea in young children (World Health Organization, 2005; Depkes RI, 2011). Emphasizing the importance of combining ORS and zinc in educational programs is necessary. In the case of acute diarrhea without alarm symptoms, 11.03% of participants recommended a combination of ORS and probiotics. Probiotics are beneficial bacteria that help restore the balance of gut microflora. However, a study by

Oviani et al. (2014) at Sanglah General Hospital, Bali, showed that probiotics did not have a significant effect on stool consistency, frequency of bowel movements, or the duration of acute diarrhea in children (Wawan, 2013; Oviani, G.A., et al, 2015). Besides probiotics, adsorbents are also frequently recommended. Adsorbents work by binding and neutralizing bacterial toxins and are claimed to protect the intestinal mucosa. However, there is still no strong scientific evidence supporting the practical benefits of adsorbents in the treatment of acute diarrhea in children.

In cases of acute diarrhea in children with dehydration, the most appropriate recommendation is to refer the child directly to a doctor. Dehydration occurs when the body loses more fluids than it takes in, leaving insufficient water to perform normal functions. Common symptoms of dehydration include excessive thirst, dry mouth, dark urine, weakness, and dizziness. Dehydration can result from various factors such as insufficient water intake, diarrhea, vomiting, excessive sweating, or fever. Children and the elderly are more vulnerable to dehydration because their bodies are less capable of balancing fluid levels (World Health Organization, 2024). The inaccuracy of recommendations for cases with dehydration was also observed in studies involving pharmacists. This finding aligns with a study by Miller & Goodman (2016), who found that pharmacists in low- and middle-income Asian countries rarely referred patients for further examination and often incorrectly recommended medications (Miller & Goodman, 2016).

The accuracy of recommendations given by pharmacy students in this study was relatively low: only 16.92% for acute diarrhea without alarm symptoms and 6.61% for acute diarrhea with dehydration. These results indicate that students have not fully grasped standard treatment guidelines, such as the combination of ORS and zinc for uncomplicated cases and the need for immediate referral in cases of dehydration. This inaccuracy could be due to limited applied clinical knowledge, limited practical experience, and the potential suboptimal use of case-based learning approaches in the curriculum. This finding is consistent with the studies of Brevmana et al. (2021) and Hamadouk et al. (2021), which also reported low accuracy in recommendations by students and community pharmacists. This suggests that suboptimal self-medication services in pharmacies might be rooted in educational practices, highlighting the need for improvements in teaching strategies to enhance clinical competence among pharmacy students. Further research on factors influencing students' ability to provide recommendations in self-medication cases is necessary to design effective interventions aimed at improving student competence (Brevamana et al, 2021; Hamadouk et al., 2021).

There are several limitations to this study. The research method used does not fully capture the students' performance in providing self-medication services. Information-gathering, an essential parameter for determining the accuracy of recommendations in self-medication services, was not measured in this study. Additionally, this study only used two cases of acute diarrhea in children and was conducted at a single university. Therefore, the generalization of these findings to other clinical cases and research settings requires further investigation.

CONCLUSION

The majority of students in this study were unable to provide accurate recommendations for cases of acute diarrhea in children without alarm symptoms and acute diarrhea in children with dehydration. Further research is needed to understand the factors contributing to the inaccurate recommendations made by students, so that intervention strategies can be designed and implemented to improve their capabilities.

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