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Pharmacist Recommendations for Non-Infectious Diarrhea Self-Medication: A Study in Padang, Indonesia

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ABSTRACT

Introduction: Diarrhea is a condition where a person defecates with a soft or liquid stool consistency or even just water which can be accompanied by blood or foam with a frequency that is more frequent than usual in a day. Self-medication is an action taken by someone to treat themselves by recognizing the symptoms and illnesses felt, usually minor illnesses, then choosing drugs according to their wishes without going through a doctor's prescription.
Methods: A descriptive study with cross-sectional approach to determine the recommended choice of diarrhea drugs without symptoms of infection for self-medication from pharmacies in Padang City, West Sumatra, Indonesia. Data were collected through proportional random sampling using the Slovin formula. From a total of 247 pharmacies in Padang City, data was collected from 38 pharmacies that had been proportioned in 11 sub-districts in Padang City. Participants in this study were pharmacists on duty at the pharmacy. Data were collected through structured interviews recorded by pharmacists in pharmacies with a single question, what drug do you give for self-medication to adult patients with mild diarrhea without symptoms of infection.
Results: Drug recommendations from pharmacist in Padang City pharmacies are attapulgite, kaolin-pectin, activated carbon, loperamide, Oral Re-hydration Formula (ORS), zinc supplements, probiotics, and antacids. The drug recommendations given are in the form of single therapy and combination therapy. Assessment of recommendations that are said to be appropriate refers to the recommendations of Dipiro (2020), namely the provision of a single absorbent or absorbent plus ORS. The results of appropriate recommendations were obtained at 44.74% and those that were not appropriate were obtained at 55.26%. There is no statistically significant evidence to suggest a relationship between the education level of pharmacist and appropriate of the answer ($p>0.05$).
Conclusion: There are still many mistakes made by pharmacists in recommending diarrhea drugs without symptoms of infection for self-medication in pharmacies.

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INTRODUCTION

The expensive cost of going to hospitals and doctors makes many people prefer to take self-medication measures also known as self-medication (1). Self-medication is the act of treating various minor complaints oneself using over-the-counter drugs at pharmacies and drugstores on one's own accord without a prescription from a doctor. The selection of drugs that can be used for self-medication is a group of over-the-counter drugs and limited over-the-counter drugs, both modern and traditional drugs that are relatively safe to use (2).

Self-medication is one of the alternative medicine actions for the community to increase the affordability of treatment which is usually used to treat various minor diseases such as fever, pain, dizziness, cough, influenza, ulcers, worms, diarrhea, skin diseases, and others (3). The practice of self-medication is widely practiced by Indonesians because it is driven by several dominant reasons, namely the disease is considered mild (46%), the price of medicine is cheaper (16%), and medicine is easily obtained (9%) (4).

In a study conducted by Pristianty (2021), it was stated that drug advertisements on television can also influence 33.3% of drug selection by the public in self-medication (5). Then in Wijaya research (2023), it is said that knowledge is the most dominant factor in influencing a person's actions in choosing drugs for self-medication. Knowledge can be influenced by age, education, information, environment, experience, and sociocultural factors (6). This is in line with research conducted by Andika (2020) which explains that a person's behavior in self-medication is influenced by several factors, namely family recommendations (76.7%), electronic or print media (12.5%), drug guidebooks (2.5%), and drugs that have been prescribed (8.3%) (7).

Based on data from the Central Bureau of Statistics in 2023, the Indonesian population did self-medication or self-medication by 61.87% and the people of West Sumatra Province who did self-medication or self-medication was 54.36 % (8). From these data, it can be stated that most people choose to do self-medication or self-medication in treating their illness. Self-medication or self-medication can be easily done because it can be done without having to use a prescription from a doctor. But this treatment is only intended for someone who has symptoms to treat minor illnesses, one of these minor illnesses is diarrhea (3).

Diarrhea is a common disease in all age groups. Diarrhea can manifest as a disease that is mild, severe, and can even cause severe complications to death (9). In general, diarrhea patients have symptoms in the form of a frequency of defecation three or more times a day with a soft or liquid stool consistency. Diarrhea that lasts for less than 2 weeks is called acute diarrhea, declared persistent when it occurs between 14-28 days, while if it lasts more than 4 weeks it is called chronic diarrhea. In general, diarrhea is divided into two, namely specific diarrhea (bacterial, viral, or parasitic infection factors) and non-specific (food error factors, indigestion (10)). Based on data from the Indonesian Ministry of Health, the prevalence of diarrhea in Indonesia in 2018 was spread across all age groups (8%) with the highest prevalence occurring in toddlers (12.3%) (11). In line with data from the Padang City Health Office, the prevalence of diarrhea in Padang City in 2018 was 6.3% for all age groups with the highest prevalence occurring in toddlers (13.95%). In 2022 in Padang City, the number of diarrhea cases served at healthcare facilities was 5,970 cases at all ages and 1,199 cases in children under five. This number increased from 2021, namely 4,114 cases at all ages and 906 cases in children under five years of age (12).

Prabasiwi (2018) conducted research in Tegal Regency as many as 86% of respondents did self-medication or self-medication of diarrhea because it was considered a mild disease (13). In another study conducted by Rusmariani (2019) in East Pontianak District, it was found that 100% of respondents did self-medication when their children suffered from acute diarrhea with a percentage reaching 56% of them going to the pharmacy to buy drugs for self-medication of diarrhea for the reason that they could ask for a direct explanation of information and how to use it to the side effects of the drug (14). This illustrates how high the public's interest in self-medication is in pharmacies, especially in diarrhea disease.

According to research conducted by Andika (2020) in Bandung City, the profile of diarrhea drug selection from respondents used in self-medication is ORS (35.83%), herbal medicine (31.67%), norit (10.83%), a combination of attapulgite and pectin (7.7%), attapulgite (5%), loperamide (3.33%), antibiotics (3.33%), and probiotics (2.5%). From the research data, it can be seen that most people there generally treat their diarrhea disease with over-the-counter drugs and herbal medicines. However, in the self-medication of diarrhea, the use of antibiotics and loperamide is not appropriate because it is a class of hard drugs (7). The problem that often occurs in the community in self-medication is the lack of knowledge in the proper and rational use of drugs. The function and role of pharmaceutical personnel (pharmacists and pharmaceutical technical personnel) in the practice of self-medication are very important

because they are not only able to sell drugs but must also be able to provide pharmaceutical *care* to patients in the form of clear information about a drug. The information that must be provided is the efficacy, side effects, dosage, method and time of use, duration of use, contra-indications, actions if you forget to take medicine, how to treat leftover medicine, how to distinguish between good or expired medicine, and how to store medicine properly (15). The research was conducted in Padang City because it is a city with the largest population and pharmacies in West Sumatra Province, Indonesia namely 942,938 people with 247 pharmacies (16).

METHOD

This study was conducted from January to April 2024 at pharmacies in Padang City, West Sumatra, Indonesia. This study is a descriptive type of research with a cross-sectional approach. The population in this study were pharmacies located in Padang City, and met the inclusion and exclusion criteria. The population size in this study was 247 pharmacies.

Table 1. Number of pharmacies by Sub-district in Padang City (12)

No.	Sub-District	Number of pharmacies
1.	Bungus Teluk Kabung	3
2.	Lubuk Kilangan	10
3.	Lubuk Begalung	19
4.	Padang Selatan	9
5.	Padang Timur	61
6.	Padang Barat	22
7.	North Padang	27
8.	Nanggalo	20
9.	Kuranji	27
10.	Pauh	7
11.	Koto Tangah	42
Pharmacies in Padang City		247

Determination of the samples

The amount of data in this study was determined using the Slovin formula. This formula is used to determine the amount of data from a known population, which in this study is 247 pharmacies. The data calculation technique using the Slovin formula has provisions, namely e = 0.1 (10%) for large populations and e = 0.2 (20%) for small populations. Therefore, the range of data that can be used from this Slovin technique is 10-20% of the total research population. The Slovin formula used is (17):

$$\boldsymbol{n = \frac{N}{1+N.e^2}}$$

Description:
n = Size of sample
N = Population size
e = Percentage error; which can still be tolerated e = 0.2 (20%)
In this study, a value of e = 0.15 (15%) was used:

$$n = \frac{247}{1+247.0{,}15^2}$$

$$n = \frac{247}{1+247.0{,}0225}$$

$$n = \frac{247}{1+5{,}5575}$$

$$n = \frac{247}{6{,}5575}$$

n = 37.67 pharmacies rounded up to 38 pharmacies

Based on the results of these calculations, 38 pharmacies were obtained. The amount of data that has been determined is then divided into 11 sub-districts so that the determination of the amount of data in this study has the same proportion. So that the pharmacy data collection from each sub-district is as follows:

Bungus Teluk Kabung $= \frac{3}{247} \times 38 = 1$ pharmacy
Lubuk Kilangan $= \frac{10}{247} \times 38 = 2$ pharmacies
Lubuk Begalung $= \frac{19}{247} \times 38 = 3$ pharmacies
Padang Selatan $= \frac{9}{247} \times 38 = 2$ pharmacies
Padang Timur $= \frac{61}{247} \times 38 = 9$ pharmacies
Padang Barat $= \frac{22}{247} \times 38 = 3$ pharmacies
North Padang $= \frac{27}{247} \times 38 = 4$ pharmacies
Nanggalo $= \frac{20}{247} \times 38 = 3$ pharmacies
Kuranji $= \frac{27}{247} \times 38 = 4$ pharmacies
Pauh $= \frac{7}{247} \times 38 = 1$ pharmacy
Koto Tangah $= \frac{42}{247} \times 38 = 6$ pharmacies

Data Retrieval Technique

The data collection technique used is Proportional Random Sampling. Pharmacy data is divided into 11 groups according to the number of sub-districts in Padang City. Then the amount of pharmacy data taken from each group is by the number of pharmacies in each sub-district which has been proportioned into 38 pharmacies. After that, the selection of pharmacies in each sub-district according to the inclusion and exclusion criteria was carried out randomly through the "Spin the Wheel" application.

Inclusion Criteria

Pharmacies located in Padang City; Pharmacists from pharmacies who are willing to participate in this study (by filling out informed consent).

Exclusion Criteria

Pharmacies that were closed during the study.

Data Collection Technique

Data collection was conducted using a structured interview technique where the researcher prepared questions to be answered by the participants. The sequence of conversations between the researcher and participants is as follows: 1) The researcher greeted the participants, introduced herself, and asked for 5 minutes of their time to participate in the interview. 2) The researcher explained to the participants that she was conducting research at pharmacies in Padang City, Indonesia. 3) Participants who agreed to do the interview then filled out an informed consent form and were permitted to record the conversation. 4) Researchers collect data from participants by asking points on the interview guidelines that have been made. 5) The researcher asked questions to participants according to the case in the attached interview guide. 6) The researcher gave a closing greeting and thanked the participant for being willing to be interviewed for this research.

Pharmacists' respondent was not subjected to any training to obtain actual recommendation results. The Assessment is carried out based on the answers given by respondent. To maintain the comfort of the respondents, especially since the respondent's level of education also includes bachelor, and postgraduate (masters and doctoral), in this study the appropriate or Inappropriate answers were not informed or consulted with the respondents, but there were several respondents who asked whether the answers they gave were appropriate or Inappropriate, in this condition the researcher provided the requested information.

Data Analysis

The characteristic data obtained from the research participants were analyzed descriptively. Then complete the research with the results obtained in the form of numbers and/or percentages (%). Related to the recommendations given (open-ended questions), recorded answers from participants who gave recommendations were first converted into interview narratives. The results of the recommendations from participants were then analyzed by comparing these recommendations based on literature recommendations, namely Dipiro (2020) (18).

Ethical approval

This research has received research ethics approval from the Research Ethics Committee Pharmacy Andalas University Padang west Sumatra, Number: 28/UN.16.10.D.KEPK-FF/2024.

RESULTS

Total of pharmacies in Padang City based on City Health Office is 247, and based on inclusion and exclusion criteria with proportional sampling formulation, 38 pharmacies were obtained as data in this study. The amount of pharmacy data in this study has been proportioned in each sub-district with a total of 11 sub-district in Padang City.

In this study, an interview question sheet, a data collection sheet, a voice recorder, and documentation in the form of photos as evidence that interviews have been conducted with participants. The interview question sheet contains one case and one question to be asked, as seen in Table 2.

Table 2. Research Cases and Answer Keys

Case	
"A 21-year-old man came to the pharmacy and asked for diarrhea medicine. He has been complaining of mild diarrhea since 2 days ago with 3 bowel movements a day, without fever symptoms with liquid, non-frothy, and non-bloody stools. He said that he did not know the exact cause of the diarrhea. This man is a university student, has no history of drug allergy, and no previous history of other diseases, and is not currently using any medication to treat his diarrhea. Based on this case, what would you recommend for his diarrhea?"	
Answer Key	
Appropriate	Give anti diarrhea agents of the absorbent class or Give anti diarrhea agents from the absorbent group plus ORS
Inappropriate	Give anti diarrhea agents other than absorbents Only give medicine in the form of Oral Rehydration Solution (ORS)/ without giving anti diarrhea from the absorbent group

According to the literature, in this case, it is said that "mild diarrhea since 2 days ago with defecation 3 times a day, without symptoms of fever with liquid, non-frothy, and non-bloody stools" so that it can be analyzed that the patient's diarrhea history does not have symptoms of infection (10). From the case, it can be stated that the patient has diarrhea without dehydration because the frequency of bowel movements is only 3 times a day so the use of ORS / ORS is not necessary. Research by Hidayah (2022) in one of the health service units in Jombang Regency, namely the number of patients with acute diarrhea without dehydration found as many as 8 people (11.6%) with a frequency of defecation 3-4 times a day, which in these conditions can still eat and drink and do activities as usual (19).

The case in this study is classified as mild diarrhea. Research by Masdiana (2016) on the assessment of symptoms experienced by patients with diarrhea, namely if mild diarrhea is characterized by liquid, yellow stools, the frequency of defecation is less than 4 times a day. Severe diarrhea is characterized by slightly whitish yellow feces, bubbly or bloody, frequency more than 4 times a day, fever, vomiting, weakness, impaired skin integrity, and severe dehydration (20). This statement is supported in the Pharmacotherapy Principles & Practice Book by Marie A (2019) which explains that there are three levels of diarrhea severity, namely mild (diarrhea three or more times a day with occasional abdominal discomfort), moderate (diarrhea three or more times a day accompanied by painful abdominal cramps and thirst), severe (diarrhea three or more times a day accompanied by severe abdominal cramps, thirst, nausea, vomiting, and fatigue) (21).

Table 3. Characteristics of Pharmacist Respondents

Characteristics	Description	Total
Age	26-35	18
(year)	36-45	14
	46-55	3
	56-65	2
	>65	1
Gender	Male	1
	Female	37
Level education	Bachelor	33
	Master	4
	Doctor	1
Role at the pharmacy	Pharmacist in Charge	37
	Accompanying Pharmacist	1

In Table 3, it is interesting that 33 pharmacists out of 38 respondents have a Bachelor's degree, which plays a major role in the choice of drugs recommended in this study. The practice of self-medication is allowed to be carried out in Indonesia, on a legal basis, namely the Decree of the Minister of Health Number 919 / MENKES / PER / X / 1993 article 2 concerning Non-Prescription Drugs, which explains that the choice of drugs that are allowed for self-medication is free drugs, limited free drugs, and mandatory pharmacy drugs (22). In supporting the accuracy of drug selection for self-medication, as stated in the Regulation of the Minister of Health of the Republic of Indonesia Number 51 of 2009, it is said that self-medication is the responsibility of a pharmacist in carrying out his pharmaceutical work, namely supporting patients who carry out self-medication based on evidence and advice on choosing the right drug according to the patient's health condition to support rational drug use (23).

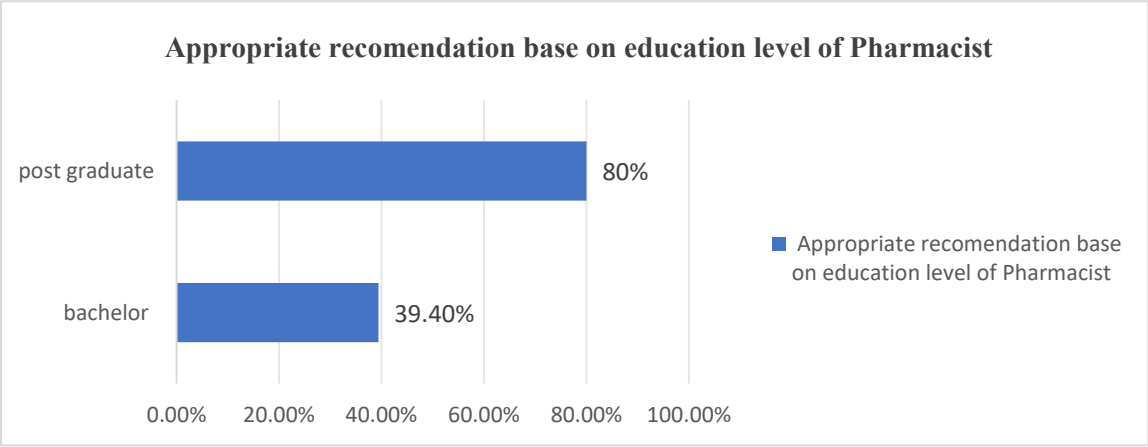
Table 4. Results of Drug Recommendations for Acute Non-infectious Diarrhea from Pharmacists

Pharmacy	Participant Code	Results	Accuracy
Pharmacy A	P1	attapulgite + ORS+ zinc	TT
Pharmacy B	P2	attapulgite + probiotics	TT
Pharmacy C	P3	loperamide + zinc	TT
Pharmacy D	P4	loperamide	TT
Pharmacy E	P5	loperamide) + ORS + zinc	TT
Pharmacy F	P6	Kaolin-pectin + ORS	T
Pharmacy G	P7	ORS	TT
Pharmacy H	P8	Kaolin-pectin + ORS + zinc	TT
Pharmacy I	P9	attapulgite + ORS	T
Pharmacy J	P10	loperamide + ORS	TT
Pharmacy K	P11	attapulgite	T
Pharmacy L	P12	ORS + zinc	TT
Pharmacy M	P13	Attapulgite + ORS + zinc	TT
Pharmacy N	P14	loperamide	TT
Pharmacy O	P15	attapulgite-pectin	T
Pharmacy P	P16	attapulgite + ORS + zinc	TT
Pharmacy Q	P17	attapulgite + ORS	T
Pharmacy R	P18	loperamide + zinc	TT
Pharmacy S	P19	attapulgite	T
Pharmacy T	P20	activated carbon + ORS	T
Pharmacy U	P21	attapulgite	T
Pharmacy V	P22	attapulgite + zinc	TT
Pharmacy W	P23	attapulgite	T
Pharmacy X	P24	attapulgite	T
Pharmacy Y	P25	Antacids	TT
Pharmacy Z	P26	attapulgite-pectin	T
Pharmacy AA	P27	loperamide + ORS	TT
Pharmacy BB	P28	loperamide + zinc + probiotics	TT

Pharmacy	Participant Code	Results	Accuracy
Pharmacy CC	P29	loperamide	TT
Pharmacy DD	P30	attapulgite	T
Pharmacy EE	P31	attapulgite-pectin + ORS	T
Pharmacy FF	P32	attapulgite	T
Pharmacy GG	P33	ORS + zinc	TT
Pharmacy HH	P34	antacids	TT
Pharmacy II	P35	attapulgite-pectin+ORS+zinc	TT
Pharmacy JJ	P36	activated carbon	T
Pharmacy KK	P37	attapulgite + ORS	T
Pharmacy LL	P38	attapulgite + ORS	T

Description: T = Appropriate, TT = Inappropriate

Based on the results of the study, the types of diarrhea drug recommendations given by pharmacists can be seen in Table 4, anti-diarrhea options from recommended over-the-counter drugs are absorbent groups with active substances attapulgite, attapulgite-pectin, kaolin-pectin, and activated carbon. Anti diarrhel options from hard drugs that should use a doctor's prescription are recommended to be the antimotility group with the active substance loperamide. In this study, participants recommended Oral-Rehydration solution (ORS), zinc, and probiotics. In addition, some participants recommended antacids. Drug recommendations were given in the form of single therapy and combination therapy.



Figture 1. Relationship between education level and Appropriate Recommendations

Figture 1. shows that 33 respondents in this study were with bachelor education and post-graduate (master and doctoral) only 5 respondents. The provision of appropriate recommendations from pharmacists with bachelor education was quite low at 39.40% while for pharmacists with postgraduate education it was 80%. There is no statistically significant evidence to suggest a relationship between the education\ level and appropriate of the answer ($p>0.05$)

DISCUSSION

The assessment of accuracy in providing recommendations for drug selection according to the title of this study, namely self-medication of diarrhea without symptoms of infection, refers to the literature "Pharmacotherapy & Pathophysiology Approach" by Dipiro (2020), so that 17 recommendations (44.74%) were appropriate and 21 recommendations (55.26%) were inappropriate. From various types of recommendations, an illustration was obtained that the anti-diarrhea agents commonly given were attapulgite and loperamide. This is in line with research by Vitriaadhitama (2023) on evaluating the rationality of diarrhea treatment at the Bangil Health Center, explaining that attapulgite and loperamide are considered effective and are often used in cases of non-specific diarrhea, especially in

adults. In the study, the total number given anti diarrhea was 206 patients, of which the most were given to adults as many as 173 patients, while in children only 33 patients (24).

In a study by Sari (2018) on the treatment response in diarrhea patients in a Banten Provincial hospital, the results of the analysis explained that absorbents were considered to have no significant and harmful side effects, but only in the form of mild constipation because absorbents are not absorbed systemically in the body and only have a local effect in the intestine. Meanwhile, loperamide is absorbed systemically reaches the blood circulation, and interacts with opioid receptors in the intestines and central nervous system. The use of loperamide in high doses can cause severe side effects such as severe constipation, abdominal distension, paralytic ileus, or even serious opioid toxicity (25).

The use of all types of anti diarrhe absorbents (attapulgite, kaolin, pectin, and activated carbon) is considered appropriate to recommend because it is included in the class of over-the-counter drugs or non-prescription drugs so that it can be used in self-medication. Meanwhile, the use of loperamide is considered inappropriate to recommend because it is included in the class of hard drugs and is not included in compulsory pharmacy drugs, in Indonesia called an OWA group drug, so it cannot be used for self-medication. According to Dipiro (2020), it is explained that drugs with active substances attapulgite, attapulgite-pectin, and kaolin-pectin are indicated for symptomatic treatment of diarrhea that has no clear cause or is known as non-specific diarrhea. according to MIMS (2023), it is explained that drugs with activated carbon content have absorption power which is also considered strong like other absorbents in absorbing excess fluid, toxins, bacteria, or toxic substances from food so these drugs are also indicated for non-specific diarrhea (26).

The above statement is also contained in the book "Pharmacotherapy Principles & Practice" by Marie A (2019) which explains that absorbents are considered the most appropriate for treating symptoms of acute diarrhea without infection for reasons, namely self-medication because absorbents include non-prescription drugs, non-toxic absorbents because they are not absorbed systemically by the body, and only have a local effect in the intestine to absorb harmful substances or toxins and excess fluid in the stool with few and mild side effects (21). According to Da Silva (2021) in studies related to attapulgite, it is explained that attapulgite is a clay mineral found in clay soil types. Attapulgite has characteristics, namely white-gray, strong absorption, good cohesive and colloidal, plastic, heat resistant, and inert (does not easily react with other chemicals). These characteristics make attapulgite widely used in industry and the pharmaceutical field, especially as anti diarrhea. Attapulgite has become famous in recent years because it combines low production costs and high performance. Attapulgite has a large surface area, strong absorption capacity, and is superior to other natural minerals, as well as good mechanical resistance and thermal stability (27).

According to Anderson (2001) in the review of the physicochemical properties of attapulgite, it is explained that attapulgite is a charged complex molecule containing magnesium aluminum silicate which is polar. Complex molecules in attapulgite have a larger particle surface area than other natural minerals so the adsorption power will also be higher. With the ability of high adsorption power to fluids and toxic substances in the digestive tract the resulting anti diarrhea effect will also be faster in reducing the frequency of bowel movements and liquid stool consistency (28). The administration of attapulgite is considered appropriate to be recommended in self-medication of diarrhea without symptoms of infection. By research by Muliyani (2021) on the description of self-medication of digestive system drugs at the Banjarmasin Formula Pharmacy, the results of the use of drugs for self-medication of diarrhea whose cause is not known, namely attapulgite as much as (44%) is declared appropriate (29). The administration of the active substance attapulgite-pectin is considered appropriate to be recommended in self-medication of diarrhea without symptoms of infection because it belongs to the absorbent group. By research by Putri (2022) on the accuracy of diarrhea self-medication in one of the Probolinggo City pharmacies, the results obtained from the use of drugs as the first treatment for consumers with a history of acute diarrhea who came to the pharmacy, namely attapulgite-pectin as much as (50%) was declared appropriate (30). The administration of kaolin-pectin is considered appropriate to be recommended in self-medication of diarrhea without symptoms of infection because it includes non-prescription drugs in the absorbent group. Research by Ningsih (2021) on pharmacist recommendations in Surabaya in cases of acute diarrhea treatment without infection and comorbidities, the results showed that one type of absorbent that is also often given is kaolin-pectin. The content of kaolin-pectin is considered effective and appropriate in handling these diarrhea cases (31).

The administration of activated carbon is considered appropriate to be recommended in the self-medication of diarrhea without symptoms of infection because it is a non-prescription drug from the absorbent group. In the book, Aisyah (2019) explains that activated carbon is a well-known can absorb about 60% of toxic substances that enter the digestive tract of the human body. The mixture of activated carbon powder with water will form a colloid that can adsorb harmful bacteria and excess gas that causes stomach pain or poisoning. Therefore, activated carbon can treat food poisoning, diarrhea, and flatulence. The ability of activated carbon to absorb toxins only occurs in the stomach and intestines, when the toxic substances have not yet been absorbed and entered the blood. The faster it is given, the more toxins will be absorbed (32).

Giving ORS as an additional therapy in the treatment of diarrhea is considered appropriate, but it is considered inappropriate if participants only recommend ORS without giving anti diarrhea as a drug to treat diarrhea symptoms. This statement is supported in the Pharmacotherapy Book by Dipiro (2020) and Marie A (2019) which explains that oral rehydration solution (ORS) is not a treatment to relieve diarrhea symptoms but an effort to restore fluid balance. Usage of a single ORS is not recommended because its function is only to overcome dehydration while diarrhea which is the main problem is not treated Rehydration and maintenance of water and electrolytes in the body must be maintained by replacing losses until the diarrhea episode ends. Zinc administration in cases of diarrhea without symptoms of infection is considered inappropriate. Research by Restuti (2019) and Kusumawardani (2020) on the mechanism of action of zinc for diarrhea has reported, namely zinc plays a role in stimulating the immune response to fight infectious pathogens that enter the gastrointestinal tract and improve villi and intestinal function to regenerate quickly (33, 34). Another study by Wahyuni (2018) reported the effects of zinc use on diarrhea, which functions in strengthening the immune system as well as defending against infection and reducing the severity of risk. Zinc mainly works on tissues with high turnover rates (regeneration) as well as in the gastrointestinal tract and immune system because zinc is needed in DNA and protein synthesis (35).

In a review by Islamiah (2023) zinc administration is usually recommended for children, especially under 5 years of age, because they are more susceptible to infection and zinc depletion which can worsen diarrhea and prolong its duration. In studies that have been found in children, zinc helps reduce the duration and severity of diarrhea and prevents recurrence after treatment. Zinc is considered important as a defense function in children because they are more susceptible to infections and have lower immunity than adults (36). Giving probiotics in cases of diarrhea without symptoms of infection is also considered inappropriate. The Pharmacotherapy Book by Dipiro (2020) and Marie A (2019) explains that probiotics are microorganisms given to restore normal intestinal micro flora. Probiotics work by restoring normal gut function by suppressing pathogen growth. Probiotics can stimulate the immune response and suppress the inflammatory response. Probiotics are appropriate in cases of infectious diarrhea and antibiotic-induced acute diarrhea. This statement is supported in a review by El Husna (2023) on the effect of probiotic administration on acute diarrhea due to infection, explaining that probiotics work by helping restore the balance of intestinal microbial that is disturbed due to infection or due to the use of antibiotics by strengthening the number of good bacteria such as lactobacilli and bifidobacteria to improve gut health (37).

Giving zinc and probiotics to diarrhea with a history of infection is also found in research by Purnamasari (2016) which explains that zinc supplementation and probiotics are given when diarrhea with recurrent events. Recurrent diarrhea is a persistent infection due to an incomplete healing process, new infection by other pathogens, and food intolerance due to incomplete bowel function. Zinc and probiotics play an important role as supplements for immunity during recurrent diarrhea. The results of the study showed that zinc supplementation and probiotics together had an effect in providing longer mean protection against recurrent diarrhea (38) .According to Dipiro (2020), the administration of antacids as antidiarrheal is considered inappropriate because of their content, namely aluminum hydroxide and magnesium hydroxide, so it is more appropriate to be indicated as a drug to treat symptoms of gastric disorders, such as ulcers or increased stomach acid by neutralizing the acidic atmosphere in the stomach. In addition, due to the side effects of inappropriate administration of antacids, it can cause diarrhea, nausea, vomiting, and constipation, which will disappear by stopping its use.

Research by Ariastuti (2020) on the use of antacids in cases of acute diarrhea without other disease symptoms, explains that antacids are considered irrational to be given in these cases. Most patients get antacid therapy to overcome the nausea experienced. Antacids are given if stomach acid production increases which can trigger a nausea and vomiting response (39). Supported in another study by Siswidiasari (2014) on the profile of acute diarrhea treatment at the State Hospital, the results of the analysis explained that antacids are considered drugs to neutralize

stomach acid so that they are used as pain relievers in patients with ulcer symptoms or peptic ulcers. Antacids do not reduce the volume of Hcl released by the stomach but can neutralize and increase the pH of the stomach. In addition, the administration of antacids is considered irrational because it is not directly correlated to patients with acute diarrhea. However, antacids are the right choice for patients with acute diarrhea accompanied by other symptoms such as ulcers and increased stomach acid (40).

In this case, the role of pharmacists is very important in guiding and providing the right choice of drug recommendations for patients according to the symptoms of the disease experienced, especially those who are doing self-medication at the pharmacy. In addition, pharmacy technicians also have an important role to play in assisting pharmacists in conveying drug information, ensuring the safety of drug use, preventing drug abuse, drug availability, and educating drug use. The information provided must be correct and precise, clear and easy to understand, and to the needs of consumers in the pharmacy.In research by Anggraini (2023) on a review of the practice of self-medication and drug counseling without a prescription to respondents (pharmacy visitors in Tempel District), it was found that as many as (100%) of visitors who bought drugs at the pharmacy said they needed drug counseling services by pharmacists. Counseling for consumers in pharmacies is considered important because it helps them understand all important information related to drugs including how to use, dosage, and side effects that may occur so that patients can do self-medication with the right drug selection (41). Similar studies conducted abroad show similar results, for example, in a study by Jaisue et al (2017) in Thailand, which examined the pattern of giving recommendations for acute anti diarrhea drugs without symptoms of infection from pharmacies in Thailand specifically for children, only 7.7% were appropriate (42). In another study by Hamadauk et al (2021) in Sudan, the results of giving the most recommendations were with the drug Loperamide as much as 81.3%, but in this study, usage of Loperamide both in single and combined forms was only 26% (43)

According to research by Chen H (2018) on public perceptions of pharmaceutical services provided by pharmacists, it is said that improving the accuracy of providing recommendations by pharmacists is very important because people have high expectations of the accuracy of advice from pharmacists when they request drugs for self-medication. If these expectations are not met, public trust in the credibility of pharmacists as health professionals may decline (44).

It is suspected that the lack of knowledge or interest in clinical pharmacy may be the cause of the many errors in the recommendations given by pharmacists in this case because we know that bachelor pharmaceutical education in Indonesia has several sections, namely the fields of pharmaceutical biology, pharmaceutical chemistry, pharmaceutics, pharmacology and clinical pharmacy. However, this certainly needs further, more comprehensive research.

Possible solutions to the many mistakes made by pharmacists in recommending diarrhea drugs must involve educational institutions such as upgrading the curriculum, for example by adding lecture content on clinical pharmacy and pharmacotherapy. The role of professional organizations is also important in conducting continuing education for pharmacists because after graduation, professional development is carried out by professional organizations. Another thing that can be done is to provide standardized training to pharmacists about drug choices in self-medication because the rapid development of pharmaceutical science and changes in the rules applied may make drug choices different than what they learned in college.

CONCLUSION

Based on the results of the study, it can be concluded that there are appropriate drug recommendations only 44.74% and inappropriate is 55.26%. Assessment of recommendations that are said to be appropriate is to provide anti diarrhea from the absorbent group or provide anti diarrhea from the absorbent group plus ORS.On future research directions, assessing patient outcomes based on pharmacist recommendations may be very interesting, and must advocating for standardized pharmacy training on self-medication. We recommend to pharmacist in pharmacy to increase their knowledge about drug for diarrhea, so that they can choose the right drug for the patients.

AUTHOR'S CONTRIBUTION STATEMENT

Hansen Nasif responsible for conceptualization, manuscript and methodology. Dwisari Dillasamolla responsible for original draft preparation, review, and editing. Wira Sanjaya responsible for Data Collection and validation. Dian Ayu Juwita responsible for validation, and supervision.

CONFLICTS OF INTEREST

The authors declare no conflict interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that no Generative AI was used in the creation of this manuscript.

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BIBLIOGRAPHY

1. Wahyudi W, Siregar AM, Sahputra M, Lika NP, Tanjung SW, Chairiyah TA. Perbandingan Pola Swamedikasi Masyarakat Perkotaan Dengan Masyarakat Pedesaan Sumatera Utara. Jurnal Kolaboratif Sains. 2023;6(8):950-7. https://doi.org/10.56338/jks.v6i8.3813
2. Amalia RN, Dianingati RS. Gambaran Perilaku Swamedikasi Nyeri, Diare, Batuk Dan Maag Oleh Masyarakat. Generics: Journal Of Research In Pharmacy. 2021;1(2):53-9. https://doi.org/10.14710/genres.v1i2.11105
3. Kristianti M, Zakiah F, Pandanwangi S, Bayu A. Description Of The Use Of Traditional Medicine For Swamedication In The Community Of Bayuning Village, Kadugede District, Kuningan Regency. Indonesian Journal Of Multidisciplinary Science. 2022;1(8):810-7. https://doi.org/10.55324/ijoms.v1i8.148
4. Kartajaya H, Taufik, Mussry J, Setiawan I, Asmara B, Winasis NT, Satrio BE, Jie II, Yulianti L, Darmaja A. Self-Medication, Who Benefits And Who Its At Loss. Mark Plus Insight; 2011.
5. Pristianty L. Korelasi Iklan Obat Demam Di Televisi Terhadap Pemilihan Obat Pada Swamedikasi. Jurnal Sains Farmasi & Klinis. 2021;8(3):271-8. http://dx.doi.org/10.25077/jsfk.8.3.271-278.2021
6. Wijaya WP, Yulianti T. Pengetahuan, Sikap Dan Perilaku Swamedikasi Masyarakat Pengunjung Di Empat Apotek Kabupaten Boyolali. Usadha Journal Of Pharmacy. 2023:163-77.https://doi.org/10.23917/ujp.v2i2.144
7. Andika A, Choesrina R, Lestari F. Pola Swamedikasi Obat Diare Pada Mahasiswa Universitas Islam Bandung. Prosiding Farmasi. 2020:28-39.
8. BPS. Statistik Indonesia 2024. Vol. 52, Badan Pusat Statistik. 2024.
9. Wasliah I, Syamdarniati S, Aristiawan D. Pemberian Edukasi Kesehatan Tentang Pencegahan Diare Pada Anak Di Posyandu Wilayah Kerja Puskesmas Dasan Agung Kota Mataram, NTB. Jurnal Abdimas Kesehatan Perintis. 2020;2(1):13-6.
10. Setiati S, Alwi I, Sudoyo AW. Buku Ajar Ilmu Penyakit Dalam. Jilid I Edisi 6. Jakarta: Interna Publishing; 2014. 1899-1905
11. Kemenkes RI. Laporan Kinerja Kementerian Kesehatan Tahun 2022. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
12. Dinas Kesehatan Kota Padang. Profil Kesehatan Tahun 2022. Padang: Dinas Kesehatan Kota Padang; 2023.
13. Prabasiwi A, Prabandari S. Kajian Deskriptif Kuantitatif Tingkat Pengetahuan Dan Tindakan Swamedikasi Diare Pada Siswa SMK Farmasi Saka Medika Kabupaten Tegal. Jurnal Farmasi Galenika. 2018;5(3): 141-50.
14. Rusmariani A. Pengetahuan Dan Pola Swamedikasi Diare Akut Pada Anak Oleh Ibu-Ibu PKK Di Kecamatan Pontianak Timur. Jurnal Mahasiswa Farmasi Fakultas Kedokteran UNTAN. 2019;4(1).
15. Muharni S, Aryani F, Mizanni M. Gambaran Tenaga Kefarmasian Dalam Memberikan Informasi Kepada Pelaku Swamedikasi Di Apotek-Apotek Kecamatan Tampan, Pekanbaru. JSFK (Jurnal Sains Farmasi & Klinis). 2015;2(1):47-53. http://dx.doi.org/10.29208/jsfk.2015.2.1.46
16. Badan Pusat Statistik. Kota Padang Dalam Angka 2024. Padang: BPS Kota Padang; 2024.
17. Thoifah, I'anatut. Statistika Pendidikan Dan Metode Penelitian Kuantitatif. Malang: Madani; 2015. 18

18. Dipiro, J.T. Et Al. Pharmacotherapy: A Pathophysiology Approach 11th Edition. New York: Mcgraw Hill; 2020.
19. Hidayah L, Herawati W, Prasetyawan F. Evaluasi Terapi Dan Kesesuaian Penggunaan Obat Pada Pasien Diare Akut Anak Di Instalasi Rawat Inap Rs X Kabupaten Jombang. Java Health Jounal. 2022;9(3). https://doi.org/10.30737/jafi.v3i1.2071
20. Masdiana TT. Persepsi, Sikap, & Perilaku Ibu Dalam Merawat Balita Dengan Diare. Jurnal Ilmu Keperawatan. 2016;4(1).
21. Marie A. Chisholm-Burns; Terry L. Schwinghammer; Barbara G. Wells; Patrick M. Malone; Jill M. Kolesar; Joseph T. Dipiro. Pharmacotherapy Principles & Practice, Fifth Edition. 2019.
22. Departemen Kesehatan. Peraturan Menteri Kesehatan Nomor 919/Menkes/Per/X/L993 Tentang Wajib Daftar Obat Jadi. Pasal 11 Ayat 1-3. 1993.
23. Departemen Kesehatan Republik Indonesia. Peraturan Pemerintah. Republik Indonesia Nomor 51 Tahun 2009 Tentang Pekerjaan Kefarmasian. Jakarta; 2009.
24. Vitriaadhitama L, Lukitasari D, Martasari M. Evaluasi Rasionalitas Dan Profil Peresepan Pada Kasus Diare Non Spesifik Di Puskesmas Bangil. Java Health Jounal. 2023;10(2).https://doi.org/10.1210/jhj.v9i2.550
25. Sari CP, Indriani HY, Febrianti Y. Respon Pengobatan Pada Pasien Diare Spesifik Rawat Inap Di Rumah Sakit Swasta Provinsi Banten. Jurnal Ilmiah Farmasi. 2018;14(1):35-45.https://doi.org/10.20885/jif.vol14.iss1.art04
26. MIMS. Referensi Obat-Bahasa Indonesia. Volume 24. Jakarta: Bhuana Ilmu Popular; 2023.
27. Da Silva TF, De Souza GP, De Melo Morgado GF, Wearn YN, Albers AP, Quinteiro E, Passador FR. A Brief Review Of The Latest Advances Of Attapulgite As A Reinforcing Agent In Polymer Matrix Nanocomposites. Am. J. Eng. Appl. Sci. 2021;14:292-307.
28. Anderson, C.G., De Pablo, N., And Romo, C.R. Physical Chemistry Of Surfaces. In :Adsorption Desorption Of Organic Chemicals. International Conference On Chitosan. 2001. P.49-53.
29. Muliyani M, Isnani N, Aulya NA. Gambaran Penggunaan Swamedikasi Obat Sistem Pencernaan Di Apotek Formula Banjarmasin. Jurnal Insan Farmasi Indonesia. 2021 Dec 29;4(2):275-83.https://doi.org/10.36387/jifi.v4i2.832
30. Putri MA, Susanto NA. Pengaruh Sosiodemografi Terhadap Ketepatan Swamedikasi Diare Pada Konsumen Di Apotek Sumber Waras Kecamatan Mayangan Kota Probolinggo. PHARMADEMICA: Jurnal Kefarmasian dan Gizi. 2022;2(1):1-8.https://doi.org/10.54445/pharmademica.v2i1.14
31. Ningsih LF, Setiadi AA, Brata C, Wibowo YI, Setiawan E, Halim SV. Apa Yang Direkomendasikan Apoteker Untuk Tatalaksana Diare Akut Pada Anak? Sebuah Survei Di Wilayah Timur Kota Surabaya. Jurnal Manajemen Dan Pelayanan Farmasi. 2021;11(1):39-53.https://doi.org/10.22146/jmpf.59719
32. Aisyah I. Multimanfaat karbon dan Asap Cair dari Limbah Biomasa. Yogyakarta: Deepublish, 2019.
33. Restuti AN, Fitri YA. Hubungan Antara Tingkat Asupan Vitamin A, Zinc, dan Polyunsaturated Fatty Acid (PUFA) Dengan Kejadian Diare Balita. Indonesian Journal of Human Nutrition. 2019;6(1):32-40.10.21776/ub.ijhn.2019.006.01.4
34. Kusumawardani YK. Pemberian Tablet Zinc Dengan Durasi Diare Pada Balita. Indonesian Journal Of Health Development. 2021;3(2):239-44. https://doi.org/10.52021/ijhd.v3i2.87
35. Wahyuni E, Dermawan S. Hubungan Asupan Seng Dan Vitamin A Dengan Kejadian Diare Pada Anak Umur 1-5 Tahun. Holistik Jurnal Kesehatan. 2018;12(3):136-145. https://doi.org/10.33024/hjk.v12i3
36. Islamiah WE, Nadhiroh SR. Literature Review: The Role of Selenium and Zink in the Healing Process of Acute Gastroenteritis (AGE) in Child. Media Gizi Kesmas. 2023;12(1):417-26. https://doi.org/10.20473/mgk.v12i1.2023.417-426
37. El Husna F, Inawati I. Literature Review: Pengaruh Pemberian Probiotik Pada Diare Akut Akibat Infeksi. In prosiding Seminar Nasional COSMIC Kedokteran 2023;1:58-68.https://prosidingcosmic.fk.uwks.ac.id/index.php/cosmic/article/view/10
38. Purnamasari H, Santosa B, Puruhita N. Pengaruh Suplementasi Seng dan Probiotik Terhadap Kejadian Diare Berulang. Sari Pediatri. 2016;13(2):96-104.http://dx.doi.org/10.14238/sp13.2.2011

39. Ariastuti R, Kusumawati D. Gambaran Pengobatan Diare Akut Anak Di Puskesmas Jiwan Madiun. Cerata Jurnal Ilmu Farmasi. 2020;11(1):35-42.https://doi.org/10.61902/cerata.v11i1.110
40. Siswidiasari A, Astuti KW, Yowani SC. Profil Terapi Obat Pada Pasien Rawat Inap Dengan Diare Akut Pada Anak Di Rumah Sakit Umum Negara. Jurnal Kimia. 2014;8(2):183-90. https://doi.org/10.24843/JCHEM.2014.v08.i02.p07
41. Anggraini L, Yuliastuti F. Tinjauan Praktik Swamedikasi Dan Konseling Obat Tanpa Resep Di Apotek Kecamatan Tempel. Borobudur Pharmacy Review. 2023;3(2):44-50. https://doi.org/10.31603/bphr.v3i2.8625
42. Jaisue S, Phomtavong S, Euaanant S, Borlace G.Dispensing pattern for acute non-infectious diarrhoea in children at community pharmacies in Thailand.Journal of Pharmacy Practice and Research 47(5):383-388.DOI:10.1002/jppr.1345
43. Hamadauk RM, Arbab AH, Yousef BA.Assessment of Community Pharmacist's Practice and Patient Counselling Toward Acute Diarrhea Treatment in Khartoum Locality: A Simulated Patient Study.Integrated Pharmacy Research and Practice 2021;(10): 145–152. DOI: https://doi.org/10.2147/IPRP.S340528
44. Chen H, Ung CO, Chi P, Wu J, Tang D, Hu H. Consumers' Perceptions About Pharmaceutical Care Provided By Community Pharmacists In China In Relation To Over-The-Counter Drugs: A Qualitative Study. INQUIRY: The Journal Of Health Care Organization, Provision, And Financing. 2018 Jan-Dec; 55 https://doi.org/10.1177%2F0046958018793292