Original Article

Implementation of Pharmacy Services for Cases of Acute Non-Dehydrated Diarrhea in Children in South Tangerang City, Banten, Indonesia

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Abstract

Background: Self-medication for minor ailment is a common practice worldwide, including in Indonesia such as when patient seek medication with acute non-dehydration diarrhea but many studies reported that there was still problems in patient knowledge when conducting their self medication. This study aimed to examine the implementation of services provided by Pharmacy staff in South Tangerang City, Banten Province, Indonesia, for pediatric patients with acute non-dehydration diarrhea.

Methods: This study had a cross-sectional design and the data obtained were described descriptively. Data were collected by interviewing selected pharmacy staff to explore how they responded or provided services to patients who asked for their advice on managing diarrhea. The interview rubric was created by referring to minor ailments service flow, which includes three parameters: the patient assessment, the drug recommendations given, and the information conveyed to patients. The sample were staff from 43 pharmacies in the South Tangerang city area who were randomly selected based on pharmacy data obtained from the local city health office.

Conclusion: As many as 48.84% of pharmacy staff provided treatment consistent with WHO recommendations. Pharmacy staff need to improve their role in managing acute non-dehydration diarrhea patient.

Keywords: self medication, minor ailment, pharmacy staff, acute diarrhea

Introduction or back ground

Self-medication is a form of self-care, defined as the selection and use of medications by individuals to independently treat recognized illnesses or symptoms. [(1)]Self-medication is a common practice worldwide, including in Indonesia. As many as 72.19% of Indonesians practice self-medication (Badan Pusat Statistik, 2021). This practice is used to treat minor ailments such as pain, fever, dizziness, stomach ulcers, influenza, worms, diarrhea, and skin conditions.[(2)]

Appropriate knowledge about medication is essential in self-medication practices to achieve

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therapeutic goals. However, several studies conducted in several regions in Indonesia found that the level of public knowledge regarding self-medication was predominantly moderate and low.[3][4][5]Inadequate knowledge and irrational medication practices can pose risks to patients, including errors in self-diagnosis, inability to seek appropriate medical advice, failure to recognize contraindications, incorrect medication choices, drug-food interactions, the risk of duplicate medication, inappropriate dosages, incorrect routes of administration, inappropriate long-term use, and improper storage. Several studies in several parts of the world have found incorrect practices in self-medication. Research in Taiwan found that the prevalence of inappropriate self-medication behavior was 10%, using excessive doses (21.6%), and using prescription and non-prescription drugs simultaneously (30%).[6] Another study conducted in Eritrea on over-the-counter self-medication in pharmacies reported that of 609 pharmacy customers, 93.7% self-medicated, 14% of respondents reported consuming more than the recommended dose, and 6.9% experienced problems after consuming over-the-counter medications.[7]

Community pharmacy staff, especially pharmacist, play an important role in educating their community about medicine. They are the healthcare professionals most readily accessible to public when seeking help with health problems. However, several studies have reported that their role in providing drug information to patients remains low, as found in pharmacies in Garut Regency, where the quality of drug information and counseling services provided by pharmacists averaged 59.82%.[8] The Indonesian Ministry of Health has issued pharmaceutical service standards in pharmacies, most recently in 2016. These standards serve as guidelines for pharmaceutical staff, in providing services to patients, including for them who conduct self-medication for minor illnesses.[9] This study aimed to examine the implementation of services provided by Pharmacy staff in South Tangerang City, Banten Province, Indonesia, for pediatric patients with acute non-dehydration diarrhea. Acute non-dehydration diarrhea was chosen because it is a public health problem in developing countries like Indonesia with high prevalenve.

Material and Methods

This study had a cross-sectional design and the data obtained were described descriptively. Data were collected by interviewing selected pharmacy staff to explore how they responded or provided services to patients who asked for their advice on managing diarrhea. The interview rubric was created by referring to minor ailments service flow, which includes three parameters: the patient assessment, the drug recommendations given, and the information conveyed to patients. Patient assessment refers to the ASMETHOD mnemonics (Age/appearance, Self/someone else, Medication, Extra medication, Time persisting, History, Other accompanying symptoms, Danger symptoms) to obtain patient-related information. Treatment recommendations refer to the WHO diarrhea management guidelines. Drug information parameters refer to the Ministry of Health's guidelines for the use of over-the-counter and restricted-prescription drugs. The sample were staff from 43 pharmacies in the South Tangerang city area who were randomly selected based on pharmacy data obtained from the local city health office with in March 2023 with the following inclusion criteria: the pharmacy was officially registered with the city health office; the pharmacy was still operating at the time of the researcher's visit and the pharmacy staff were willing to participate whereLwanga dan Lemeshow formula was used to measure the size with margin of error 10%.Stratified random sampling was used to determine the number of samples as representatives of the 7 existing sub-districts and simple random sampling was used to determine which pharmacies would be selected as samples in each sub-districts. The interviewer was trained before collecting the data to eliminate the mistakes. Ethical clearance was obtained from the Research Ethics Committee of the Faculty of Medicine, University of Indonesia with number Un.01/F.10/KP.01.1/KE.SP/02.08.019/2023. Data were analyzed descriptively.

Results and Discussion

Respondents consisted of 41.86% pharmacists, while others were non-pharmacist. The study's results indicate that pharmacists' roles and responsibilities are largely delegated to non-pharmacists. This finding significantly exceeds the

findings of several previous studies conducted in several cities in Indonesia. A study conducted at several pharmacies in East Jakarta found that only 6% of pharmacists provided self-medication services.[10] In another study in pharmacies in Jombang Regency, only 11% of pharmacists provided information on self-medication services.[11] Research in pharmacies in the Pekan Baru City area proved that not a single pharmacist collected patient information during self-medication.[12] Meanwhile, studies in other countries, Germany, reported that only 24% of pharmacists provided services to patients.[13] There are 3 types of pharmaceutical personnel in Indonesia, namely pharmacists, specialist pharmacists and pharmacy technician.[14] A community pharmacy is a facility where pharmacists practice their proffession. In carrying out their practice in a pharmacy, pharmacists may be assisted by other pharmacists and/or pharmacy technician. Treatment for minor ailments is one form of pharmacy service in a pharmacy. Pharmacists, as the most important health professionals in a pharmacy, should be the leading professionals in providing services to community who seek helpfor their health problems.[9] The suboptimal role of community pharmacists in providing direct patient care remains a problem in Indonesia, as identified in several previous studies. Existing regulations requiring pharmacies to have only one pharmacist as responsible one, who can be assisted by other pharmacist or pharmacy technician, create the potential for patients to be served exclusively by non-pharmacist (pharmacy technician) during a given service period, as it is impossible for pharmacists to work throughout pharmacy hours.

Table 1. Patient Assessment Process Conducted By Pharmacy Staff

Poin of assesment	Frequency (N= 43)	Persentage (%)
Age / appearance	43	100
Self/someone else	37	83,72
Medication	40	93,02
Extra medicines	40	93,02
Time persisting	41	95.34
History	40	93,02
Other symptoms	38	88,37
Danger symptoms	29	67,44

Patient assessment is an important stage for minor illnesses service that must be carried out by pharmacists.[15] The purpose of this stage is to gain a more detailed understanding of the patient's presenting condition, ultimately avoiding the risk of errors. To conduct this, pharmacists must be able to gather as much information as possible about the patient's condition. They must listen and ask questions to obtain the necessary information. The information obtained from the patient is used to make decisions about recommending and prescribing medications.[16] Table 1 describe the patient assessment stage conducted by pharmacists. All respondents obtained information related to the patient's age. The least frequently obtained information was related to potentially dangerous symptoms the patient might be experiencing, at 67.44%. Information regarding patient identification, such as age/appearance and self or someone else, is the initial information pharmacists should inquire about to determine whether the patient is the individual visiting the pharmacy or someone else, possibly a family member. Information regarding age is crucial because it will determine the accuracy of medication and dosage recommendations.[15] This finding is much higher compared to other research in the East Jakarta area, where 56.87% of pharmacy staff conducted information gathering regarding age/appearance.[10]

Pharmacy staff should inquire about medication history (the patient's medication history). This was obtained by 93.02% of respondents. This information (whether any medications are being taken regularly) is used to ensure that the patient's diarrhea is not caused by a side effect of medication. Information about extra medication (whether any other medications have been used to treat symptoms) should be inquired. This was obtained by 93.02% of respondents much higher compared to study connducted in East Jakarta where pharmacy staff who inquired about the medications patients currently taking for diarrhea were 5.56%.[10]

Information gathering regarding symptoms such as time persisting (how long has the disease been present), history (what is the patient's medical history), other symptoms (are there any other accompanying

symptoms), and danger symptoms (are there any dangerous symptoms shown) is no less important to know because this information can describe the severity of diarrhea so that it can be a consideration for pharmaceutical personnel in pharmacies in providing recommendations, whether in the form of drug product recommendations only or should be referred to a doctor. Pharmacy staff who asked about time persisting were 95.34%, History (93.02%), Other symptoms (88.37%). Information regarding Time persisting is very important to know because if a patient experiences diarrhea for more than 7 days, they must be referred to a doctor.[15] Information regarding history can include frequency of bowel movements and stool consistency.[17] A patient is defined to have diarrhea if they experience a frequency of loose, watery stools > 3 times in a 24-hour period and if they have experienced a frequency of loose stools 6 times or more in a 24-hour period, they must be referred to a doctor. [18] In research in other regions, in the information gathering process, only 16.66% of pharmacy staff asked about the frequency of bowel movements in patients.[19] *Other symptoms (are there any other accompanying symptoms) that are asked during the patient assessment include other, less dangerous symptoms such as abdominal cramps, dyspepsia, and nausea. Meanwhile, danger symptoms (are there any dangerous symptoms shown) are important to ask for consideration by pharmacy staff when recommending a referral to a doctor if the patient has other dangerous symptoms or signs. Dangerous diarrhea symptoms that require referral to a doctor include: fever (≥38.5 °C), severe abdominal cramps, ≥6 loose stools in a 24-hour period, bloody stools, symptoms lasting 7 days, symptoms of dehydration (dark urine, decreased urine output, marked thirst, dizziness, dry mouth, decreased skin turgor, weight loss).*[15]

Table 2 showed the medications recommended by pharmacy staff to patients. In the study scenario, the patient experienced diarrhea without any signs of dehydration or other serious symptoms. It can be seen that 48.84% of respondents recommended zinc and oral rehydration salts in accordance with the World Health Organization's recommendations for treating mild diarrhea without dehydration, as can be seen in Table 3.

Table 2. Profile of medicine recommended by pharmacists

No	Medicine	Frequency	Percentage (%)
1	Diapet (Guava leaf extract and turmeric (herbal)	1	2,33
2	Kaolin-pectin + probiotic	1	2,33
3	probiotic, kaolin-pectin, Diapet	1	2,33
4	Nifuroxazide	1	2,33
5	Probiotic, Oralit	1	2,33
6	Kaolin-pectin	3	6,98
7	One brand of probiotic	10	23,26
8	two different brand of probiotics	3	6,99
9	three different brand of probiotics	1	2,33
10	Zinc dan Oralit	21	48,84

Table 3. Management of diarrhea without dehydration based on WHO guidelines[20]

Diarrhea without dehydration therapy
1. administer more fluids than usual. Administer ORS until the diarrhea stops. If vomiting occurs, wait 10 minutes and then gradually increase the dose. Children over 1 year old should be given 100-200 ml each time they have diarrhea.
2. administer zinc medication administer zinc for 10 consecutive days, even if the diarrhea has stopped. It can be given by chewing or dissolving it in 1 tablespoon of boiled water. Children over 6 months old are given 20 mg (1 tablet) per day.
3. Provide Food to Prevent Malnutrition • Provide age-appropriate food with the same menu as when the child was healthy. • Add 1-2 teaspoons of vegetable oil to each meal. • Provide potassium-rich foods such as fresh fruit juice, bananas, and green coconut water. • Provide smaller portions more frequently than usual (every 3-4 hours). • After the diarrhea stops, provide the same food and additional food for 2 weeks.

Diarrhea without dehydration therapy
4. Advise the mother/caregiver to bring the child back to staff if: • Watery stools more frequently • Recurrent vomiting • Very thirsty • Eat and drink very little • Fever develops • Bloody stools • Does not improve within 3 days

The study results showed that 48.84% of pharmacy staff provided recommendations consistent with WHO recommendations for diarrhea management, namely administering oral rehydration salts (ORS) and zinc supplements. This finding is higher than a similar study conducted in Surabaya, where only 13.09% of pharmacists provided appropriate recommendations for zinc and ORS.[21]81% The results of a similar study conducted in Ethiopia reported higher results that more than 90% of pharmacists recommended oralit and zinc. [22]Oral rehydration salts (ORS) are essential because toddlers with diarrhea lose a lot of fluid, so the focus of treatment is to prevent dehydration. Even if there are no symptoms of dehydration, patients still need to be given ORS to replace water and electrolytes lost due to diarrhea. If ORS is not given, signs of dehydration can develop and worsen the patient's condition. Meanwhile, zinc is needed immediately after diarrhea begins to reduce the duration and severity of diarrhea and the risk of dehydration. Zinc should be given for 10 days, even if the diarrhea has stopped, the goal is to prevent diarrhea from recurring within the next 3 months.[20] According to the medical guidelines for acute diarrhea issued by the Indonesian Pediatrician Association, antidiarrheal medications are unnecessary for toddlers. When toddlers have diarrhea, there is increased motility and peristaltic movement in the intestines, which usually causes nausea, vomiting, and diarrhea to expel waste and toxins from the body. If given antidiarrheals, this peristaltic movement will inhibit, so that waste that should be excreted is actually hampered. Therefore, the focus of toddler diarrhea treatment is not on administering medication, but rather on preventing the patient from becoming dehydrated. Because dehydration can worsen the patient's health.[23] Zinc is a micronutrient in the body that can inhibit the enzyme INOS (Inducible Nitric Oxide Synthase), which can increase during diarrhea and can cause intestinal epithelial hypersecretion. Using zinc in recommended doses can reduce the incidence of diarrhea for the next 3 months, and reduce accidental deaths by 50%. According to the WHO and the Indonesian Ministry of Health's toddler diarrhea guidebook, the appropriate recommendation for toddler diarrhea is to provide a combination of ORS and zinc. Providing zinc alone cannot be considered appropriate, because zinc only plays a role in the epithelialization of the intestinal wall that experiences morphological and functional damage during diarrhea.(23) Meanwhile, toddlers with diarrhea should also be given electrolyte fluids, so using zinc alone without a combination of oral rehydration salts cannot be said to be appropriate. Another interesting finding from this study was that quite a number of pharmacy staff recommended probiotics. This is in line with research in Turkey, where probiotics were more commonly used to treat infant diarrhea than other diarrhea medications, either alone or in combination with other medications.[24] Probiotics are live, non-pathogenic microorganisms. When consumed, they survive passage through the stomach and small intestine. Research has shown that probiotics are effective in reducing the duration of diarrhea by 14% and the frequency of bowel movements on the second day of treatment by 13.10% in pediatric patients with acute diarrhea.[25] The high number of pharmacy staff who do not follow WHO recommendations for giving medications for diarrhea may be due to limited knowledge and a lack of updating on current treatment trends. Professional organizations and the Ministry of Health have made efforts to maintain and improve the competence of pharmacists through seminars, workshops, and other similar activities.

Patients need to be provided with adequate information regarding the medications/ pharmaceutical preparations they receive. Table 4 showed the drug information provided by pharmacists to patients. It can be seen that the most common information provided by pharmacists was information on how to use, at 97.14%, followed by information on the time of use, indications, duration

of use, and dosage, at 92.5%, 89.64%, 88.57%, and 88.21%, respectively. Information regarding drug indications needs to be provided so that patients know what medication they are taking and can feel calm and confident that the medication they are taking is appropriate for their symptoms. In this study, although not all pharmacies provided information regarding indications, the percentage was quite good compared to studies in other areas, where information on indications provided by pharmacy staff in the Mertiyudan District was only 7%.[26]

Table 4. Drug information items provided by pharmacy staff

Point of drug information	Percentage (%)
indication	89.64
contraindication	67.38
Side effect	83.09
How to take	97.14
dose	88.21
Time of administration	92.5
duration	88.57
Attention/warning	80.91
storage	83.76
Treatment of residual drugs	67.57
Identify damaged drugs	55.79

Information on how long the medication should be used is also important. Knowing how long patients can self-medicate without a doctor's help is crucial so they know when to seek medical help if the condition persists. Information about medication side effects is crucial so patients can be more vigilant when taking their medication and be more aware of any unusual symptoms, allowing them to stop taking the medication and see a doctor immediately. For example, information provided by pharmacists about the side effects of kaolin-pectin, which can cause itching. However, this is not a cause for concern, as the itching is usually brief and does not occur in all patients. Overall, more than half of the respondents reported receiving these information points based on this study. This result is significantly higher than that of a study conducted in East Jakarta, where pharmacy staff did not provide any information regarding side effects, drug interactions, storage instructions, precautions/warnings, contraindications, handling of leftover medication, or identification of damaged medication.[10]

Conclusion

Pharmaceutical services by pharmacy staff for pediatric patients with acute diarrhea without dehydration in pharmacies in South Tangerang city can be said to be good in terms of patient assessment and drug information provided to patients, however, in terms of appropriate drug recommendations to patients, only 48.84% of pharmacy staff gave medication recommendation in accordance with WHO guidline. Pharmacy staff still need to improve their services to patients so that therapeutic goals can be achieved optimally. Other methods besides interviews in evaluating the implementation of pharmaceutical services are recommended, such as the simulated patient method.

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Conflict of Interest: NIL

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