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Profile of The Assessment of Pediatric Puyer Prescriptions at The Malili Public Health Center

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ABSTRACT

Purpose: This study aimed to analyze the assessment profile of pediatric compounded powder prescriptions at the Malili Community Health Center for the period October–December 2023, focusing on the completeness of administrative, pharmaceutical, and clinical aspects based on the Indonesian Minister of Health Regulation No. 74/2016. The research also aimed to identify potential incompatibilities, ensure accurate dosage, and assess potential drug interactions.

Research Method: A quantitative, descriptive, cross-sectional design with retrospective data collection was employed. A total of 237 pediatric compounded powder prescriptions, selected using Slovin's formula from 1,215 prescriptions, met the inclusion criteria. Data were analyzed descriptively to evaluate compliance percentages across administrative, pharmaceutical, and clinical parameters.

Results and Discussion: Administrative completeness reached 100% for patient name, age, doctor's name, initials, date, and unit of origin; however, patient weight was 83.96%, while height and gender were absent, and the doctor's SIP number was 38.39%. In pharmaceutical aspects, drug name, form, dosage, quantity, and usage instructions met 100% compliance, while strength of preparation was 26.16%. No drug incompatibilities were found. Clinically, treatment duplication and timeliness reached 100%, but dosage errors (underdose, overdose) and drug interactions (74.26%) were identified.

Implications: The findings underscore the need to enhance prescription completeness, particularly in terms of drug strength, SIP number, and patient anthropometric data, to align with national pharmaceutical service standards and improve patient safety. Further training for prescribers and pharmacists is recommended.

Keywords: pediatric compounded; prescription assessment; pharmaceutical service standards; dosage accuracy; drug interactions; powder prescriptions.

Introduction

Pharmaceutical workers refer to Pharmaceutical Service Standards as a benchmark for providing services. These services are defined as direct and responsible interactions with patients regarding pharmaceutical preparations, aimed at ensuring positive outcomes for the patient's quality of life. It is important to note that assessment is one of the pharmaceutical service standards required at Community Health Centers (Puskesmas). (Minister of Health Regulation No. 74, 2016). The prescription review process must be carried out before providing and dispensing medication to patients. This is

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regulated by the Minister of Health Regulation, which establishes three categories of requirements: administrative, which includes patient identity (name, age, gender, weight) and doctor information (name, signature, origin of prescription, date); pharmaceutical, which examines aspects of the drug such as form, strength, availability, stability, quantity, dosage, method of use, rules of use, and potential incompatibilities; and clinical, which evaluates the suitability of indications, dosage, time of administration, drug interactions, side effects, allergies, contraindications, use of various drugs, and potential addiction (Minister of Health Regulation No. 74, 2016).

A prescription is defined as a written instruction, either physical or digital, from a doctor or dentist to a pharmacist, instructing them to prepare and dispense medication in accordance with regulations (Ministry of Health Regulation, 2016). In Indonesia, compounded medications are often provided in powder form (Wiedyaningsih & Oetari, 2004). Treating children usually faces significant challenges because many medications approved for adults are prescribed to them outside the scope of their marketing authorization. The limited choice of medication types and formulations suitable for pediatric patients presents a challenge in healthcare, prompting doctors to prescribe compounded medications as a solution (Virginia, 2014).

As Allah SWT says in the Qur'an Surah Yunus Verse 57 as follows:

يَٰٓأَيُّهَا ٱلنَّاسُ قَدْ جَآءَتْكُم مَّوْعِظَةٌ مِّن رَّبِّكُمْ وَشِفَآءٌ لِّمَا فِى ٱلصُّدُورِ وَهُدًى وَرَحْمَةٌ لِّلْمُؤْمِنِينَ

Translation: "O people! Indeed, there has come to you a lesson (the Qur'an) from your Lord, a cure for diseases in the chest, and guidance and mercy for those who believe." (Indonesian Ministry of Religion, 2021). According to Prof. Dr. Wahbah Az-Zuhaili in Tafsir Al-Wajiz, the Qur'an is presented as a clear lesson from God, guiding humans toward the truth and away from evil. He presents the good news of heaven and warnings of the punishment of hell, while also serving as a healer for heart ailments such as false beliefs. The Qur'an is also God's guidance and mercy that guides believers to heaven (Az-Zuhaili, 2024). Based on this view, it can be concluded that Allah SWT has provided diseases and their antidotes, namely the Qur'an itself, along with medicines that can be used to treat them.

Based on a study by Gina Nurnasyah *et al.,* (2023) on the profile of pediatric prescription assessments at the Salotungo Community Health Center (January-March 2022, 159 prescriptions), it was found that the completeness of the administrative aspects was generally high. Patient data, including name, age, and gender, were 100% complete, followed by patient weight (88.67%), the doctor's name (95.59%), the doctor's initials (96.85%), and the date and unit of origin of the prescription (each at 99.37%). In terms of pharmaceutical aspects, the dosage, quantity, and rules and instructions for use of the drug were 100% complete. However, the strength of the preparation was recorded at 0% and stability (hygroscopic 37.33%, photolysis 66.5%) still varied, while the dosage form was 93.71%, and there were no incompatibilities. From a clinical aspect, 95% of the prescriptions showed the correct dosage, with 2% overdoses and 3% underdoses, and no drug duplication was found.

Based on previous research findings, particularly the results of Gina Nurnasyah *et al.,* (2023), which revealed varying levels of completeness in the assessment of pediatric compounded powder prescriptions, this study aimed to analyze the assessment profile of pediatric compounded powder prescriptions at the Malili Community Health Center. Previous research has highlighted the importance of the completeness of administrative, pharmaceutical, and clinical prescriptions, as well as several aspects that remain lacking (such as the completeness of drug strength and stability). Therefore, a similar

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investigation at a different location, namely the Malili Community Health Center, is relevant to obtain a comprehensive picture of pediatric compounded powder prescription assessment practices.

Literature Review and Hypothesis Development

Recipe

The prescription writing process itself involves applying medical knowledge to prescribe medication to patients in a standardized format, while adhering to established standards and regulations. It's important to note that every prescription must meet the criteria for rational drug use (Habibah, 2017). Prescriptions must be written clearly and in accordance with applicable writing standards to ensure they are easily understood by pharmacy staff. The prescription must be received by the pharmacist in charge of the pharmacy. If the pharmacist in charge is unavailable, their duties can be replaced by an assistant pharmacist or pharmacist assistant, but with primary supervision and responsibility resting with the pharmacist managing the pharmacy (Prawitosari, 2009). It is essential to recognize that poorly written prescriptions can lead to errors in compounding or preparing medications, as well as in their use by patients (Romdhoni, M.F., 2020).

Prescription writing is part of a therapeutic effort that must adhere to specific principles, including appropriate indications, suitable drug selection, accurate dosage, correct frequency of administration, and the most suitable method of administration for the patient's condition. Prescriptions must also be written entirely and easily read (KKI, 2012). The primary purpose of writing a prescription is to provide pharmaceutical services that meet the patient's needs and minimize potential side effects of the medication (Simatupang, 2012). Physically, prescriptions are generally written on 1/4 folio paper (10.5 cm x 16 cm) and must include the name and official title, type of service according to the Practice License (SIP), Doctor's License (SID)/Nurse License (SIP) number, practice address, telephone number, and practice hours (IDI, 2012).

Mixed Recipe

Compounding prescriptions refers to medications made by altering or mixing active ingredients. These medications are generally formulated in liquid, solid, or semi-solid form. In Indonesia, powders and syrups are the most frequently prescribed forms of compounding (Yulianis *et al.,* 2022). Compounding prescriptions, also known as compounding medicines, involves creating customized medications by altering or mixing active ingredients. These medications are generally formulated in liquid, solid, or semi-solid form. In Indonesia, powders and syrups are the most frequently prescribed types of compounding. Prescribing compounded medications remains common in Indonesia due to several advantages. Compounding allows for more precise dosage adjustments based on the child's weight, is relatively inexpensive, can reduce patient anxiety about the large number of medications, and also minimizes potential side effects (Habibah, 2017). Compounding medications requires special attention because it has the potential to cause adverse events, such as medication errors, distribution quality issues, and bacterial contamination (Allen, 2003). Compounded medications are defined as medications that are made by altering or mixing active ingredients and can be in solid, semi-solid, or liquid form. In Indonesia, the majority of compounded medications are produced in powder form (Wiedyaningsing & Oetari, 2004). Furthermore, concerns arise because many medications approved for adults are used in children, despite not meeting the marketing authorization requirements for that population.

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Recipe Review

Prescription review is the initial step a pharmacist takes after receiving a prescription. In this process, pharmacists must consider three main aspects: administrative requirements, pharmaceutical requirements, and clinical considerations (Putri, 2020). Prescription review is the process of examining a prescription to analyze potential medication-related issues. If any errors or irregularities are found, the prescribing physician should be consulted immediately. The goal is to avoid the risk of medication errors in patients (Prabandari, 2018). Reviewing the administrative aspects of a prescription is crucial to ensure that all information listed, including the clarity of the medication's prescription, the validity of the prescription, and detailed drug information, is complete. Incomplete administrative details can hurt patients. This stage is a crucial initial screening step to prevent medication errors (Megawati, 2017). Prescription review aims to analyze potential drug-related problems. If these problems, known as Drug-Related Problems (DRPs), are identified, immediate consultation with the prescribing physician is necessary. DRPs are defined as unexpected events that can potentially arise from drug therapy and hinder the success of treatment (Leschiutta & Troncon, 2012).

Pediatrics

Pediatric patients have a variety of medication administration routes, and one common dosage form is powder. Many children have difficulty swallowing tablets, with some of the main obstacles including anxiety and fear of unpleasant tastes (Heitman *et al.,* 2019). Pediatric patients are a vulnerable group because their immune systems and organ physiology are not yet fully developed, often facing challenges in treatment. Selecting the proper medication and the limited availability of appropriate formulations for pediatric patients pose challenges for healthcare providers. Therefore, physicians usually create compounded prescriptions to overcome these challenges (Virginia, 2014). Medication administration to pediatric patients involves various routes, including oral (such as powders, capsules, or syrups), inhalation, and parenteral, each of which contributes to the effectiveness and efficiency of the treatment. However, challenges arise from the large number of compounded preparations prescribed to pediatric patients. Virginia, (2014) explains that this condition significantly increases the opportunity for medication errors due to the potential for errors inherent in the drug compounding process. Pediatric patients, defined as those aged 2 to 12 years (AAP, 2013), are a vulnerable group and were the primary target of the 2009 National Health System (SKN). Their disease susceptibility is very high. This is because their immune systems and organ function are not yet fully developed, coupled with their growth and development stage, which involves interactions in environments with inadequate hygiene, thus increasing the risk of illness.

Research Method

This study employed a quantitative approach with a descriptive, correlational design and a cross-sectional method. This study was conducted at the Pharmacy Unit of the Malili Community Health Center, East Luwu Regency, and was completed between July 2024 and the date of completion. The pediatric prescriptions received at the Pharmacy Unit of the Malili Community Health Center. The sample in this study was

Inclusion Criteria:

- Prescriptions received at Malili Health Center in October-December 2023.

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- Pediatric powder concoction recipe in the Malili Health Center pharmacy room
- Pediatric prescription for ages 0 months - 11 years

Exclusion Criteria:

- Unclear/unreadable or damaged pediatric prescription
- Prescriptions that only contain 1 type of drug (no combination)

This study, employing a descriptive design that combines qualitative and quantitative methods, aims to provide an overview of the assessment profile of pediatric powder prescriptions at the Malili Community Health Center. Data obtained in this study will be analyzed using descriptive analysis with a retrospective approach, where the process is based on prescribed parameters.

Results and Discussion

Analysis Result

This study was conducted at the Malili Community Health Center in Malili District, East Luwu Regency, to gather data and information regarding the profile of pediatric powder prescription assessments at the Malili Community Health Center for the period of October to December 2023. Of all the Districts in East Luwu Regency, Malili has the largest population, so we chose this Community Health Center because it has become the primary reference for health services in Malili District. In this prescription assessment, the guidelines of Minister of Health Regulation No. 74 of 2016, concerning Pharmaceutical Service Standards at Community Health Centers, and the Technical Instructions for Pharmaceutical Service Standards at Community Health Centers (2019) were utilized in line with research conducted by Gina Nurnasyah *et al.,* (2023), which states that the completeness of prescriptions in the administrative, pharmaceutical, and clinical categories remains incomplete.

The research conducted at the Malili Community Health Center, using samples that met the inclusion and exclusion criteria, employed a retrospective descriptive design that combined qualitative and quantitative approaches. The qualitative approach is used because it provides an in-depth explanation of the prescription compliance percentage table following a review, comparing it with the existing literature. The quantitative approach is employed because several parameters are calculated quantitatively to determine the prescription compliance percentage from various aspects, including administrative, pharmaceutical, and clinical aspects. After that, the total prescription compliance percentage is calculated.

The data source in this study is primary data, namely data obtained directly from the source (Pramiyati, T., *et al.,* 2017). Primary data were collected directly from pediatric powder prescriptions at the Malili Community Health Center, using established inclusion and exclusion criteria. After observation and Slovin calculations, the data obtained totaled 237 pediatric powder prescriptions at the Malili Community Health Center pharmacy during the period from October to December 2023. This study focuses on the analysis of pediatric prescriptions. This is because medication errors in children can pose a very fatal risk. According to Maiz, Nu'Man *et al.,* (2014), medication errors in children can worsen the disease and damage the child's organs. This is because the enzyme system involved in drug metabolism in children has not yet fully developed or is present in small amounts, resulting in suboptimal metabolism. Furthermore, children's kidneys are also not fully developed, so their ability to excrete drugs is not yet optimal.

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Table 1 shows the number of pediatric powder prescriptions received in the pharmacy during October-December 2023. This table shows the number of pediatric patients during October-December 2023.

Table 1. Percentage of the number of prescriptions for pediatric powder formulations in the pharmacy room received in October-December 2023

No	Month	Population	Number of Prescription Sheets	Percentage
1.	October	489	82	34.59%
2.	November	390	79	33.33%
3.	December	336	76	32.06%
	Total	1215	237	100%

Table 1 presents the population, specifically the total number of pediatric patients treated at the Malili Community Health Center from October to December 2023, which totaled 1,215 prescriptions. The analysis conducted on samples meeting the inclusion criteria from October to December 2023 yielded 1,135 prescriptions. Slovin's calculations were carried out, yielding a total of 237 prescriptions. In October, there were 82 prescriptions with a conformity percentage of 34.59%. In November, there were 79 prescriptions with a conformity percentage of 33.33%. In December, there were 76 prescriptions with a conformity percentage of 32.06%.

The analysis carried out on samples meeting the inclusion criteria consists of 237 prescription sheets, each indicating the presence of a combination of several drugs in the compounding process. Various drug combinations are, of course, tailored to the disease the patient is suffering from. According to KBBI (2008), a combination is a combination of several things, so that a drug combination can be interpreted as a combination of 2 or more drugs. The greater the number of drug combinations in one powder mixture, the greater the possibility of incompatibility or drug interactions. Pediatric patients often receive drug dosage forms in the form of powder mixtures consisting of several drug combinations because the level of compliance in consuming drugs for pediatric patients is very low so that if given more than one drug separately it will be difficult when consuming so that doctors often provide it in combination form to increase the level of compliance in consuming drugs, usually the disease suffered by pediatric patients is a disease that requires a combination treatment of several types of drugs so the role of the pharmacist is vital to assess whether the combined drugs are correct or not.

Table 2. The number of drugs mixed in each combination prescription sheet

No	Combination	Number of Prescription Sheets	Percentage N = 237
1.	2 types of drugs	48	20.25%
2.	3 types of drugs	80	33.75%
3.	4 types of drugs	87	36.70%
4.	5 types of drugs	21	8.86%
5.	6 types of drugs	1	0.42%
	Total	237	100%

Table 2 shows that the prescriptions for powdered medicine received at the Malili Health Center pharmacy range from 2 to 6 types of medicine. The table shows that the prescriptions for pediatric powdered medicine consisting of 2 types of medicine comprise 48 prescription sheets (20.25%), three types of medicine comprise 80 prescription sheets (33.75%), four types of medicine comprise 87

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prescription sheets (36.70%), five types of medicine comprise 21 prescription sheets (8.86%), and six types of medicine comprise one prescription sheet (0.42%). Of the total prescriptions analyzed, 22 indicated the presence of polypharmacy. Polypharmacy is defined as the concurrent use of more than five medications (Naomi Andarias Buri Bonga, 2017). This simultaneous use of multiple medications increases the risk of drug interactions.

The following table shows medications prescribed and formulated for pediatric patients. The prescribed medicines are, of course, those approved for use in children. Some treatments are not recommended for use in children and require special attention. One example is antibiotics. According to the Indonesian Minister of Health, (2021) antibiotic selection for infants and children must consider the maturity of organ function and its impact on growth and development.

Table 3. List of names of drugs prescribed for pediatric patients

No	Drug name	Therapy class	Number of prescription sheets	Percentage
1.	Chlorpheniramine	Antihistamine	220	27.74%
2.	maleate	Vitamin	218	27.49%
3.	Vitamin C	Mucolytic	165	20.80%
4.	Ambroxol	Corticosteroids	142	17.90%
5.	Dexamethasone	Bronchodilator adrenoreceptor	16	2.01%
6.	Salbutamol	Analgesic and Antipyretic	11	1.38%
7.	Paracetamol	Vitamin	10	1.26%
8.	Vitamin B Complex	Corticosteroids	4	0.50%
9.	Methylprednisolone	Antiemetic (anti-vomiting)	2	0.25%
10.	Domperidone	Anti virus	1	0.12%
11.	Acyclovir	NSAID analgesics	1	0.12%
12.	Ibuprofen	Antiemetic (anti-vomiting)	1	0.12%
13.	Metoclopramide	Vitamin	1	0.12%
14.	Vitamin B6 Vitamin B12	Vitamin	1	0.12%
Total			**793**	**100%**

Table 3 shows that the most frequently prescribed drug in the Malili Community Health Center pharmacy is chlorpheniramine. Maleate (CTM), which has a therapeutic effect as an antihistamine, vitamin C has a therapeutic effect as a vitamin, ambroxol has a mucolytic therapy, and dexamethasone has a therapeutic effect as a corticosteroid. The table shows 220 prescriptions for chlorpheniramine maleate (CTM), with a percentage of 27.74%; 218 prescriptions for vitamin C, with a percentage of 27.49%; 165 prescriptions for Ambroxol, with a percentage of 20.80%; and 142 prescriptions for dexamethasone, with a percentage of 17.90%. Salbutamol with indication as adrenoreceptor bronchodilator as many as 16 prescription sheets with percentage of 2.01%, paracetamol with indication as analgesic and antipyretic as many as 11 prescription sheets with percentage of 1.38%, vitamin B complex with indication as vitamin as many as 10 prescription sheets entered with percentage of 1.26%, then methylprednisolone with indication as corticosteroid as many as four prescription sheets entered with percentage of 0.50%, then domperidone with indication as anti-emetic (anti-vomiting) as many as two prescription sheets with percentage of 0.25%, then acyclovir with indication as anti-virus, ibuprofen with indication as analgesic NSAID, metoclopramide with indication as anti-emetic (anti-vomiting),

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vitamin B6 and vitamin B12 with indication as vitamin each as many as one drug with percentage of 0.12%.

Prescription review is crucial to prevent medication errors. Administrative, pharmaceutical, and clinical aspects each play a vital role in ensuring a correct prescription. Administrative prescription review, by the guidelines of the Minister of Health of the Republic of Indonesia Regulation No. 74 of 2016 concerning pharmaceutical service standards in community health centers, includes several components: age, name, weight and gender of the patient; name and initials of the doctor, unit of origin of the prescription; date of writing the prescription. Based on the results of the data obtained can be seen in the following table.

Table 4. Results of the study of the administrative aspects of prescriptions at the Malili Health Center

No	Administrative Aspects	Number of recipes		Percentage of compliance (n = 237)	
		M	TM	M	TM
1.	Patient name	237	0	100%	0%
2.	Patient age	237	0	100%	0%
3.	Patient weight	199	38	83.96%	16.03%
4.	Patient's height	0	237	0%	100%
5.	Patient gender	0	237	0%	100%
6.	Doctor's name	237	0	100%	0%
7.	Doctor's SIP number	91	146	38.39%	61.60%
8.	Doctor's initials	237	0	100%	0%
9.	Prescription date	237	0	100%	0%
10.	Prescription origin unit room	237	0	100%	0%

Information:
M: Fulfilled
TM: Not meeting

Based on Table 4, the analysis of pediatric powder prescriptions at the Malili Community Health Center pharmacy from October to December 2023 reveals that only a few administrative aspects were entirely fulfilled. These aspects are the patient's name, age, doctor's name, doctor's initials, prescription date, and the unit where the prescription originated. Including the patient's name on the prescription is crucial to prevent medication mix-ups between patients during pharmacy services (Pratiwi, M., & Pratiwi, 2018). Similarly, including the patient's age is essential in determining accurate medication dosages and selecting the appropriate dosage form for the patient (Sheikh, Mateti, Kabekkodu, & Sanal, 2017). Table 4 shows that 199 prescriptions (83.96%) were fulfilled according to the patient's weight, while 38 prescriptions (16.03%) were not. None of the prescriptions included the patient's height and gender. Weight and height are crucial factors in determining dosages, particularly for pediatric patients. Including weight in prescriptions ensures the correct dosage and prevents overdose or underdose, especially when prescribing medications to children (Cholisoh, 2019). However, this study did not account for the presence or absence of body weight data, as the dose calculation was based on the patient's age. Gender is an essential aspect of dose planning. It helps differentiate between male and female patients, especially since patient names can sometimes be the same for both genders (Putri,

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2020). However, if a prescription does not include the patient's gender, this can be resolved immediately by asking the patient's family directly to avoid errors in administering medication.

Based on the doctor's identity error, 91 prescriptions were found to comply with the SIP number, representing 38.39%, while 146 prescriptions were not in compliance, representing 61.60%. According to Megawati, (2017) writing a doctor's Practice Permit (SIP) is a mandatory element that must be included in the prescription. Including this SIP number is essential to ensure patient safety, as it ensures that the doctor in question has the necessary authorization and is protected by law when providing treatment to their patients (Marina, 2012). In pediatric powder prescriptions, not all prescriptions include the doctor's license number, as it may not be considered crucial for prescriptions that do not require strict supervision or are already listed in standard guidelines. However, prescriptions that require special supervision may be better off including the doctor's license number.

The prescription review for pharmaceutical aspects, as outlined in Minister of Health Regulation No. 74 of 2016, which concerns pharmaceutical service standards in community health centers, includes the form and strength of the preparation, dosage, quantity of medication, stability, and rules and instructions for use. The results of the pharmaceutical review are presented in Table 5.

Table 5. Results of the review of pharmaceutical aspects of prescriptions at the Malili Community Health Center

No	Pharmaceutical Aspects	Number of recipes		Percentage of compliance (n = 237)	
		M	TM	M	TM
1.	Drug name	237	0	100%	0%
2.	Dosage form	237	0	100%	0%
3.	Strength of the	62	175	26.16%	73.83%
4.	preparation	237	0	100%	0%
5.	Drug dosage	237	0	100%	0%
6.	Amount of medication	237	0	100%	0%
	Rules and how to use				

Information:
M: Fulfilled
TM: Not meeting

Based on Table 5, an analysis of the pharmaceutical aspects of pediatric powder prescriptions at the Malili Community Health Center pharmacy for the period of October to December 2023 reveals that several elements met the 100% requirements. These aspects include the drug name, dosage form, quantity, dosage, and rules and instructions for use. Including the names of compounded medications in prescriptions is crucial. This aims to prevent medication mixing errors during administration, given that not all medicines are compatible or mix well. Therefore, doctors are required to clearly state the names of medications, taking into account the compatibility of each medication to prevent medication errors (Yusuf *et al.,* 2020). The dosage form of a medication must be clearly stated on the prescription, as it needs to be tailored to the patient's specific condition. For example, for pediatric patients, the most appropriate dosage form is a pulverized (split) powder or capsules. These dosage forms can be prescribed for medications originally in solid form, such as tablets, caplets, pills, or capsules. Given that some medicines are available in more than one dosage form, clearly stating the dosage form on the prescription is crucial to prevent potential medication errors. Based on data analysis, 100% of the 237

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prescriptions studied included the dosage form. Data analysis shows that only 26.16% (62 of 237) of prescription sheets listed the strength of the medication. However, including strength is crucial for determining the correct dosage for patients. If the prescribed dose is incorrect (either over- or under-dosed), the therapeutic goal will not be achieved (Bilqis, 2019). Strength also serves as a guide for pharmacists to avoid errors in preparing medication. However, the lack of dosage strengths on prescriptions at the Malili Community Health Center is generally due to the pharmacy already being aware of the dosage strengths commonly used. There is also an unwritten agreement within the drug service that if a medication strength is not listed on the prescription, the lowest dosage strength will be prescribed. The study results showed that 100% of the 237 prescriptions analyzed included the drug dosage, quantity, and instructions for use. Including the drug dosage and quantity in the prescription is crucial. Too low a dose can hinder healing and prolong the patient's hospital stay, while too high a dose can be dangerous by increasing drug toxicity (Pradani & Kundarto, 2018). Therefore, the dosage of a drug preparation must be written to avoid errors in administering the drug. Furthermore, including the quantity of the drug is crucial for determining the medication needs to be prepared. The instructions and instructions for use must also be clear and complete (e.g., "take twice a day, 1 hour before or 2 hours after meals") to avoid misinformation during the service process (Yusuf *et al.,* 2020). This ensures that patients receive correct and precise drug information.

In addition to the aspects already discussed, drug stability and drug incompatibility are also two essential points reviewed in pharmaceutical elements. Drug stability refers to a drug's ability to maintain its properties and characteristics from the manufacturing process through storage until administration to the patient. This stability is divided into two types. ***Physical Stability:*** This is the ability of a drug preparation to maintain its original physical properties, including appearance, conformability, uniformity, dissolution, disintegration, and hardness. ***Chemical Stability:*** This refers to a material's ability to maintain its chemical integrity and potency as stated on the label. This stability is greatly influenced by storage conditions and location (Ansel, 2014).

Table 6. Stability of hygroscopic and photolytic drugs

No.	Drug name	Recipe sheet	Stability
1.	Ambroxol	165	Hygroscopic
2.	Acyclovir	1	Slightly hygroscopic
3.	chlorpheniramine maleate (CTM)	220	Hygroscopic, Photolysis
4.	Dexamethasone	142	Hygroscopic, Photolysis
5.	Domperidone	2	Hygroscopic, Photolysis
6.	Ibuprofen	1	Hygroscopic, Photolysis
7.	Methylprednisolone	4	Photolysis
8.	Metoclopramide	1	Photolysis
9.	Paracetamol	11	Hygroscopic, Photolysis
10.	Salbutamol	16	Hygroscopic, Photolysis
11.	Vitamin B complex	9	Hygroscopic, Photolysis
12.	Vitamin B12	1	Hygroscopic, Photolysis
13.	Vitamin C	218	Hygroscopic, Photolysis
14.	Vitamin B6	1	Hygroscopic, Photolysis
15.	Vitamin B	1	Hygroscopic, Photolysis

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- Sweetman SC., 2009. Martindale 36th edition
- Lund, Walter. 1993. The Pharmaceutical Codex, 12th edition
- Ministry of Health of the Republic of Indonesia, 2020. Pharmacopoeia 6th edition
- Bernardus Richardo Kurniawan, 2013
- Annisyah, Nur., et al. 2023. Profile of Outpatient Prescription Assessment at Labuang Baji Regional General Hospital for the Period June-December 2022.

A drug is considered stable if its concentration does not decrease during storage. Conversely, if the drug experiences physical changes such as color, odor, or shape, it is considered unstable (Ansel, 2014). Drug stability is categorized into two main types: chemical stability and physical stability. It is essential to consider that physical factors, such as heat, oxygen, light, and humidity, can significantly accelerate chemical reactions; therefore, chemical stability evaluation must also account for these physical factors (Attwood and Florence, 2011).

Based on Table 6, several drugs exhibit hygroscopic properties, which are the ability of a substance to absorb moisture from the environment. Hygroscopicity in pharmaceutical solids is often evaluated because absorbed moisture can affect the physical and chemical stability of the product.

- Physical stability is related to the maintenance of the initial physical properties of the drug preparation, which can be observed organoleptically.
- Chemical stability is the ability of a material to maintain its chemical integrity and potency as per the label, which is greatly influenced by storage conditions and location.

The presence of certain hygroscopic or damp drugs often causes wet powder formulations. Hygroscopic active drug ingredients can affect the stability of the drug itself. When the drug is formulated, the resulting moisture can affect other medicines, encourage microbial growth, reduce aesthetics, and damage the active ingredients, such as changes in color, odor, and clumping of the powder (Aztriana *et al.,* 2022). Hygroscopic drugs are characterized by their ability to become wet or even melt if left open. Potentially hygroscopic drugs include ambroxol, acyclovir, vitamin B complex, vitamin B12, vitamin B6, CTM, dexamethasone, domperidone, ibuprofen, paracetamol, salbutamol, vitamin C, and vitamin B6. Furthermore, some drugs are also prone to instability due to photolysis, a process that breaks down chemical compounds with the aid of light or photons. Drugs susceptible to photolysis include vitamin B complex, vitamin B12, vitamin B, CTM, domperidone, dexamethasone, ibuprofen, methylprednisolone, metoclopramide, paracetamol, salbutamol, vitamin C, and vitamin B6. To address this, materials prone to photolysis should be stored in tightly closed containers and protected from light (Gultom, Zilfa & Rahmayani, 2020).

In the powder preparation process, after the medication is removed from the packaging, it needs to be crushed using a mixer or mortar and pestle. Several crucial factors to consider for preventing drug instability include homogeneous mixing, as well as controlling humidity, room temperature, and light conditions in the mixing area (Purnamasari *et al.,* 2022). When dispensing medication, it is crucial to educate patients about proper medication storage under appropriate conditions that ensure the stability of the drug ingredients, thereby maintaining the stability of the medication (Kurniawan, 2013).

Drug incompatibility is a condition where undesirable changes occur in pharmaceutical products due to drug components interacting in such a way that the properties of the drug are adversely affected, which can affect the safety, efficacy, and stability of the pharmaceutical product (Directorate-General, 2019; Shah *et al.,* 2013; Begum *et al.,* 2018). Drug incompatibility occurs when a drug reacts with another drug in the formulation or with the additional ingredients (excipients) used (Aulton, 2013). This is a condition where drugs don't mix, either physically or chemically, which can lead to decreased

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potency, increased toxicity, or other side effects. Incompatibility can even occur before the drug reaches the patient, for example, due to physicochemical reactions between drugs and the compounding equipment used (Rochjana *et al.,* 2019).

Table 7. Potentially Incompatible Drugs

No	Drug Combination	Amount	Incompatible
1.	Vit CB complex	7	-
2.	Dexamethasone-CTM-Vit C	23	-
3.	Ambroxol-Dexamethasone-CTM-Vit C	79	-
4.	Paracetamol-CTM-Vit C	1	-
5.	Ambroxol-CTM-Vit C	49	-
6.	Paracetamol-Ambroxol-CTM-Vit C	7	-
7.	Paracetamol-Ambroxol-CTM-Dexamethasone-Vit C Domperidone-Vit C	3	-
8.	Ambroxol-CTM-Dexamethasone-Salbutamol-Vit C	1	-
9.	CTM-Dexamethasone Ibuprofen-B12	15	- -
10.	CTM-B complex	9	-
11.	CTM-Vit C	1	-
12.	Ambroxol-CTM	1	-
13.	CTM-Methylprednisolone-Vit C	21	-
14.	Ambroxol-CTM-Dexamethasone	1	-
15	Ambroxol-Dexamethasone-CTM-Vit C-Vit B	1	-
16.	Methylprednisolone-Vit C	3	-
17.	Ambroxol-CTM-Vit B6	1	-
18.	Ambroxol-CTM-B complex	1	-
19.	Ambroxol-CTM-Dexamethasone-Metoclopramide-	1	-
20.	Vit C-Salbutamol	1	-
21.	Dexamethasone-Vit C Ambroxol-CTM-Dexamethasone-Vit C-Acyclovir	1	-
22.	Ambroxol-CTM-Dexamethasone-Vit C-	5	-
23.	Domperidone Paracetamol-Ambroxol-CTM-Dexamethasone	1	-
24.	Ambroxol-methylprednisolone-CTM-Vit C Incompatible Percentage	1	-
25.		1	-
26.		2 237	 0%

Based on Table 7, the drug combinations prescribed for pediatric patients at the Malili Community Health Center showed no incompatibilities, indicating that the drugs were combined appropriately. Drug incompatibilities can occur even before the drug reaches the patient, resulting from physicochemical reactions between drugs, between drugs and solvents, or with the equipment used in compounding (Widiyati *et al.,* 2019). The following table presents data from a clinical study of pediatric powder prescriptions at the Malili Community Health Center pharmacy from October to December 2023, covering dosage accuracy, treatment duplication, and potential drug interactions. The clinical

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study is the stage to determine whether the prescribed medication is achieving its therapeutic effect on patients.

Table 8. Results of the clinical aspect prescription assessment at the Malili Community Health Center

No.	Clinical Aspects	Number of Recipes	Percentage
1.	Duplication of treatment	237	100%
2.	Timeliness of use	237	100%

Based on the research results at the Malili Health Center above, it can be seen that the percentage of treatment duplication and timeliness of use is 100%, indicating that there is no duplication and the treatment is administered promptly. Duplication of medication, namely the multiple prescriptions of similar medications (Amanda, 2016), should be avoided because it has the potential to cause drug interactions and medication errors during the prescribing phase (Waluyo, 2015). The results of this study showed no duplication of medication, indicating that the prescriptions were appropriate.

The dose is the amount of medication administered to a patient to achieve the desired therapeutic effect. In determining the appropriate dosage for pediatric patients, it is essential to consider the maximum and usual doses of the prescribed medication. According to Syamsuni (2006), the maximum dose is the highest limit of drug administration that still provides a therapeutic effect without causing toxicity, while the usual dose is the average dose that is generally effective. Once the maximum and usual doses are known, the specific dose for the child is calculated based on age using formulas such as Young, Fried, or Dilling, to assess the appropriateness of the dosage in the prescription. A prescription is considered inappropriate if there is a drug at an incorrect dose, as indicated in the attached table.

Table 9. Dosage accuracy based on age

No	Dosage Accuracy	Number of Drugs	Percentage
1.	Underdose		
	Very	147	62.02%
	A day	119	50.21%
2.	Right dosage		
	Very	134	56.54%
	A day	210	88.60%
3.	Exceeding the usual dose		
	Very	234	98.73%
	A day	218	91.98%
4.	Overdose		
	Very	103	43.45%
	A day	51	21.51%

In Table 9, it can be seen that from 237 prescription sheets, there were 147 (62.02%) underdoses once and 119 (50.21%) drugs per day. Additionally, 134 (56.54%) drugs were administered the correct dose once, and 210 (88.60%) medications were administered correctly daily. At the same time, 234 (98.73%) drugs were given the correct dose once, and 218 (91.98%) medications per day, and 103

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(43.45%) drugs were given the overdose once, and 51 (21.51%) medications per day. Factors causing incorrect drug dosage. These errors can include doctors' failure to consider the patient's weight, condition, and diagnosis. Furthermore, the accuracy of the prescription dosage at the Malili Community Health Center does not comply with Indonesian Minister of Health Regulation No. 74 of 2019, particularly regarding dosage calculations based on age. These errors risk triggering adverse side effects, defeating the therapeutic goal of treatment, and ultimately jeopardizing patient safety.

Drug interactions occur when the effect of a drug is altered by another drug, food, or drink, potentially leading to decreased therapeutic effectiveness, increased toxicity, or the emergence of unwanted pharmacological effects. According to Agustin (2020), these interactions can be classified based on their severity: minor (generally harmless), moderate (risk of increasing side effects), and significant (potentially hazardous, requiring monitoring or intervention). According to Stockley (2006), pharmacokinetic interactions occur when one drug affects the absorption, distribution, metabolism, and excretion (ADME) of another drug. As a result, the pharmacological effects of the drug may be increased or decreased. Meanwhile, pharmacodynamic interactions involve drugs with different effects, such as pharmacological, side effects, or similar antagonistic properties. Each drug combination in the prescription was analyzed using DrugBank.com and Drugs.com. Of the 237 prescriptions examined, 19 drug combinations resulted in 25 drug interactions, representing a percentage of 74.26%. These interactions ranged from significant to minor in nature. The most common interactions involved pharmacodynamic mechanisms. Details of the interaction mechanisms are presented in Table A1 of the Appendix. The severity of drug interactions found in prescriptions includes minor (9 cases), moderate (12 cases), and significant (4 cases). Although major interactions were the least common (4 cases), their presence remains concerning due to the potential dangers they pose, especially for pediatric patients. Of the 25 total drug interactions, 11 were pharmacokinetic interactions and 14 were pharmacodynamic interactions. Chelkeba et al. (2013) explained that pharmacodynamic interactions occur when drugs affect the same receptor, site of action, or physiological system, triggering additive, synergistic, or antagonistic effects. Conversely, Baxter (2010) stated that pharmacokinetic interactions occur when one drug (the index drug) alters the absorption, distribution, metabolism, or excretion of another drug (the precipitant drug), which can ultimately increase its toxicity or reduce its effectiveness.

To improve treatment quality, it is recommended that medications with potential interactions not be used concurrently. Herdaningsih et al. (2016) explain that this minimizes the risk of interactions that might outweigh the benefits and reduces side effects, thus achieving treatment goals more effectively. Prescription compliance at community health centers, both administratively, pharmaceutically, and clinically, does not fully comply with Minister of Health Regulation No. 74 of 2016 concerning Pharmaceutical Service Standards in Community Health Centers. This situation has the potential to endanger patient safety by increasing the risk of medication errors.

Conclusion

Based on the results of research on the profile of pediatric powder prescription assessment at Malili Health Center, it can be concluded that:

This study analyzed 237 pediatric powder prescriptions from the Malili Community Health Center between October and December 2023, with the highest number of prescriptions occurring in October. The results show the percentage of completeness in three main aspects:

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- The administrative aspects are patient name, patient age, doctor's name, doctor's initials, prescription date, and unit room where the prescription originated (100%), patient weight (16.03%), patient height and patient gender (0%), doctor's SIP number (38.39%).
- In terms of pharmaceutical aspects, namely the name of the drug, dosage form, amount of drug, rules and methods of use for each (100%), strength of the preparation (26.16%), and there were no incompatible drugs (0%).
- The suitability of clinical aspects, namely duplication of treatment and timeliness of use has met the requirements with a percentage of (100%), the accuracy of the dose there were underdoses once as many as 147 (62.02%) and a day as many as 119 (50.21%) drugs, then the correct dose once as many as 134 (56.54%) and a day as many as 210 (88.60%) drugs, while those exceeding the usual dose once as many as 234 (98.73%) and a day as many as 218 (91.98%) drugs, and overdose once as many as 103 (43.45%) and a day as many as 51 (21.51%). In addition, there was a drug interaction with a percentage of 74.26%.

Prescriptions at the Malili Community Health Center were found not to fully comply with the standards stipulated in Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016 concerning Pharmaceutical Service Standards at Community Health Centers, as well as the 2019 Pharmaceutical Technical Instructions for Community Health Centers.

References

Agustin, Ovi Amelia & Fitrianingsih. 2020. Study of Drug Interactions Based on Clinical Significance Categories on Outpatient Prescribing Patterns at Pharmacy X Jambi. E-SEHAD, Volume 1, Number 1.

Allegaert, K., Smit, A., den Anker, J.N. 2012. "Physiologically Based Pharmacokinetic Modeling in Pediatric Drug Development: A Clinician's Request for a More Integrated Approach". Journal of Biomedicine and Biotechnology. P. 1-4.

Allen, LV., 2003. Contemporary Pharmaceutical Compounding, The Annals of Pharmacotherapy: 37(10), 1526-1528.

Allen, LV and Ansel, H. 2014. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems Tenth Edition. Tenth Edit. Philadelphia: Lippincott Williams & Wilkins

Anggraini, W., Hadriyati, A., & Sutrisno, D. 2022. Pharmaceutics and Clinical Prescriptions at H. Abdurrahman Sayoeti Regional Hospital, Jambi City. Tambusai Health Journal, 3 (1).

Attwood, D., & Alexander, T. Florence. 2011. Physicochemical Principles of Pharmacy, 2nd Edition, 81, 89-94, Pharmaceutical Press. London.

Aulton ME., Taylor, KMG, 2013. Aulton's Pharmaceuticals: The Design and Manufacture pf Medicines fourth Edition. Churchill; Libingstone Elsevier.

Aztriana, et al. 2022. Suitability of Non-Sterile Pediatric Prescriptions at Ibnu Sina Hospital, Makassar: Compatibility and Stability Study. Scientific Journal of Maritime Pharmacy. Vol. 13 No. 1. Makassar.

Az-Zuhaili, Wahbah., 2024., Tafsir Al-Wajiz., https://tafsirweb.com/3331-surat-yunus-ayat-57.html, accessed on March 10, 2024.

Beggs, SA., Cranswick, NE., Reed MD. 2005. Improving drug use for children in the developing world, Archives of Disease in Childhood 90:1091-1093

Bilqis, SU 2019. Administration, Clinical Studies, and Patients, Outpatient Prescriptions, CareRumkital, DR Mintohardjo, DR Bulan, Pada. Scientific Paper.

BNF. 2009. BNF Children: The essential resource for clinical use
medicines in children, BMJ Group, Germany

Brinkman, DJ, Tichelaar, J., Okorie, M., Bissell, L., Christiaens, T., Likic, R., Maciulaitis, R., Costa, J., Sanz, EJ, Tamba, BI, Maxwell, SR, Richir, MC, & van Agtmael, MA 2017. Pharmacology and Therapeutics Education in the

OPEN ACCESS
e-ISSN: 2985-9808

European Union Needs Harmonization and Modernization: A Cross-sectional Survey Among 185 Medical Schools in 27 Countries. Clinical Pharmacology and Therapeutics. 102(5), 815-822.

BPOM. Regulation of the Food and Drug Monitoring Agency Number 24 of 2021 concerning Supervision of the Management of Drugs, Drug Ingredients, Narcotics, Psychotropics, and Pharmaceutical Precursors in Pharmaceutical Service Facilities.

Ceci, A., Baiardia, P., Bonifazib, F., Giaquintoc, C., Pe'nad, MJM, Mincaroneb, P., Nicolosie, A., Sturkenboomf, M., Wongg, I. 2009. TEEDY NoE project in the framework of the EU Pediatric Regulation, Pharmaceuticals Policy and Law 11, 13-21

Cholisoh, Z. 2019. Quality of Prescription Writing for Pediatric Patients at Home. The 10th University Research Colloqium 2019.

Conroy, S. 2003. Pediatric pharmacy rug therapy, Hospital Pharmacists 10;49-57

Ministry of Health of the Republic of Indonesia. 2020. Indonesian Pharmacopoeia, VI Edition. Ministry of Health of the Republic of Indonesia. Jakarta: Ministry of Health of the Republic of Indonesia.

Drug Interaction Checker can be accessed at:https://go.drugbank.com/drug-interaction-checker

Fitria Megawati, P. S/ 2017. Administrative Prescription Assessment Based on the Regulation of the Minister of Health of the Republic of Indonesia No. 35 of 2014. Scientific Journal of Medicine, 3(35), 12-16

Gill, D. 2004. Ethical principles and operational guidelines for good clinical practice inpediatric research. Recommendations of the Ethics Working Group of the Confederation of European Specialists in Pediatrics (CESP), European Journal of Pediatrics, 163:53-57

Gultom, SD, Zilfa., & Rahmayeni. 2020. Determination of Decreased Fe3+ Concentration Results of Muara Padang River Degradation and Value of COD, Bod, and TSS Photolysis Using TiO2/Zeolite. Journal of Chemistry Unand. 9 (4).

Ministry of Religion of the Republic of Indonesia, 2021., Al-Quranulkarim: Al-Quran memorization_. 1st edition. Bandung: cordoba, page 215

Ministry of Health of the Republic of Indonesia. 2019. Technical Instructions Pharmaceutical Service Standards in Community Health Centers. Jakarta: Ministry of Health of the Republic of Indonesia.

Ministry of Health of the Republic of Indonesia. 2021. Ministerial Regulation Health of the Republic of Indonesia Number 34 of 2021 Concerning Standards for Pharmaceutical Services in Clinics. Jakarta: Ministry of Health of the Republic of Indonesia.

Ministry of Health of the Republic of Indonesia. 2009. Guidelines for Pharmaceutical Services for Pediatric Patients. Directorate of Community and Clinical Pharmacy Development, Directorate General of Pharmaceutical and Medical Device Development, Ministry of Health of the Republic of Indonesia, 2009.

Kurniawan, BR 2013. Stability of Prescriptions with Potential Pharmaceutical Incompatibilities Stored in Well-Closed Containers. Student Scientific Journal of the University of Surabaya Vol . 2 No.2 (2013).

Maiz, N., Nurmainah., & Untari, EK, 2014. 'Analysis of Medication Errors in the Prescribing Phase of Outpatient Pediatric Prescriptions at the Pharmacy Installation of Sambas Regional Hospital in 2014'. Vol. 3 No. 1. Faculty of Medicine, Tanjungpura University, Pontianak.

Megawati, F., & Santoso, P. 2017. Administrative Prescription Assessment Based on the Regulation of the Minister of Health of the Republic of Indonesia No. 35 of 2014 On Obstetrician's Prescription at Sthira Dhipa Pharmacy, Medicamento Scientific Journal.Vol. 3 No. 1 2017. ISSN-e: 2356-4814.

Nurnasyah, Gina, *et al.,* 2023. Profile of Pediatric Prescription Assessment at Salotungo Community Health Center, Soppeng Regency, January-March 2022. Multidisciplinary Journal, Volume 2, No. 04, ISSN 2829-2049

Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016. Standards Pharmaceutical Services at Community Health Centers. Indonesian Ministry of Health: Jakarta.

Regulation of the Minister of Health Number 43 of 2019 concerning the Community Health Center. Indonesian Ministry of Health: Jakarta.

Prabandari, S. 2018. Overview of Service Standards Management Pharmacy at Permata Pharmacy, Tegal City. Journal of Thinkers, 7(1), 202- -208.

OPEN ACCESS
e-ISSN: 2985-9808

Pramiyati, T., Jayanta, & Yulnelly. 2017. The Role of Primary Data in Formation of Factual Conceptual Schemes (Case Study: Scheme Conceptual Database of Simbumil). SIMETRIS Journal, Vol 8 No 2 November 2017. ISSN: 2252-4983.

Pratiwi, D., M, NR, & Pratiwi, DR 2018. Analysis of Administrative Completeness of Prescriptions at Bhumi Bunda Pharmacy, Ketejer Praya, Central Lombok. Qamarul Huda Health Journal, 6 (1), 6-11.

Prawitosari, D. 2009. Review of Legality and Completeness Aspects of Diah Prawitosari, Faculty of Pharmacy, Muhammadiyah University Surakarta.

Priadana, Sidik., Denok Sunarsi., 2021. Quantitative Research Methods. Tangerang: Pascal Books Publisher.

Purnamasari, Vina et al. 2022. The Suitability of the Prescription of Non-Sterile Concoctions for Children at Ibnu Sina Hospital, Makassar: Compatibility and Stability Study. Maritime Pharmacology Scientific Journal. Vol . 13. No. 1.

Ramkita. 2018. Prescription Writing Guidebook. Palembang: Leprosy Hospital Dr.Rivai Abdullah Palembang.

Romano, M.J., Dinh, A. 2001. A 1000-fold overdose of clonidine caused by a compounding error.

Rojhana, Anna UH et al. 2019. Pharmaceutical Issues and Drug Interactions in Pediatric Patient Prescriptions: A Retrospective Study at a Hospital in Bogor Regency. Indonesian Journal of Clinical Pharmacy, Vol. 8. No. 1

Sheikh, D., Mateti, UV, Kabekkodu, S., & Sanal, T. 2017. Assessment of medication errors and adherence to WHO prescription writing guidelines in a tertiary care hospital. Future Journal of Pharmaceutical Science, 3, 60-64, doi: 10.1016/j.fjps. 2017.03.001

Simatupang, A. 2012. WHO Guidelines on Good Prescription Writing As Part of the Rational Use of Medicines. Magazine Medicine. Indonesian Christian University Medical Journal, 28 (1), 26-36.

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Appendix

Table A1. Prescriptions that experience Drug Interactions (Drugbank.com)

No	Drug Combination	Number of Recipes	Interaction	Forms of Interaction	Percentage of Tase
1.	• *Ambroxol-Dexamethasone-CTM-Vit C* • Paracetamol+Amoxicillin+Ambroxol-Dexamethasone-CTM-Vit C • Ambroxol-CTM-Dexamethasone-Vit C+Paracetamol • Ambroxol-Dexamethasone-CTM-Vit C+Amoxicillin • Paracetamol+Domperidone+Ambroxol-CTM-Dexamethasone-Vit C	27 12 36 2 2	• Dexamethasone-CTM • Dexamethasone-Ambroxol • Paracetamol + Ambroxol • Dexamethasone + Paracetamol • Dexamethasone + Domperidone • CTM+Domperidone • Paracetamol + Domperidone	* Mayor Pharmacokinetics * Moderate Pharmacodynamics * Moderate Pharmacodynamics Moderate Pharmacokinetics Major Pharmacokinetics Major Pharmacodynamics Moderate Pharmacokinetics	33.33%
2.	• *Dexamethasone-CTM-Vit C* • Amoxicillin+Dexamethasone-CTM-Vit C • Dexamethasone-CTM-Vit C+Paracetamol	10 6 7	• Dexamethasone-CTM • Dexamethasone + Paracetamol	Major Pharmacokinetics * Moderate Pharmacokinetics	9.70%
3.	• ***Paracetamol-Ambroxol-CTM-Vit C*** • **Paracetamol+Ambroxol-CTM-Vit C**	**7** **20**	• **Paracetamol-Ambroxol**	*** Moderate Pharmacodynamics**	**11.39**
4.	• *Paracetamol-Ambroxol-CTM-Dexamethasone-Vit C* • Ambroxol-CTM-Dexamethasone-Vit C-Paracetamol+Amoxicilin	2 1	• Paracetamol-Ambroxol • Dexamethasone-Ambroxol • Dexamethasone-CTM • Dexamethasone-Paracetamol • Paracetamol + Amoxicillin	* Moderate Pharmacodynamics * Moderate Pharmacodynamics * Mayor Pharmacokinetics * Moderate Pharmacokinetics * Minor Pharmacokinetics	1.26%
5.	• *Salbutamol-Dexamethasone-Ambroxol-CTM-Vit C* • Amoxicilin+Ambroxol-CTM-Dexamethasone-Salbutamol-Vit C+Paracetamol • Ambroxol-CTM-Dexamethasone-Vit C-Salbutamol+Paracetamol • Ambroxol-Dexamethasone-	6 1 5	• Dexamethasone-Salbutamol • Dexamethasone-Ambroxol • Dexamethasone-CTM • Salbutamol-CTM • Salbutamol + Amoxicillin	* Moderate Pharmacodynamics * Moderate Pharmacodynamics * Mayor Pharmacokinetics * Minor Pharmacodynamics * Minor	

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	CTM-Vit C-Salbutamol+Amoxicilin • Paracetamol+Ambroxol-Dexamethasone-CTM-Vit C-Salbutamol+Amoxicilin+Domperidone	2 1	• Paracetamol-Ambroxol • Dexamethasone + Paracetamol • Paracetamol + Salbutamol • Paracetamol + Amoxicillin • Paracetamol + Domperidone • CTM-Domperidone • Dexamethasone + Domperidone • Salbutamol-Domperidone	Pharmacokinetics * Moderate Pharmacodynamics * Moderate Pharmacokinetics * Minor Pharmacokinetics * Minor Pharmacokinetics * Moderate Pharmacokinetics * Mayor Pharmacodynamics * Mayor Pharmacokinetics * Moderate Pharmacodynamics	6.32%
6.	• *CTM-Dexamethasone* • CTM-Dexamethasone+Amoxicillin	6 3	• Dexamethasone-CTM	Major Pharmacokinetics	3.79%
7.	• Ambroxol-CTM-Dexamethasone-Vit C-Acyclovir	1	• Dexamethasone-CTM • CTM-Acyclovir • Dexamethasone-Ambroxol • Acyclovir-Dexamethasone	* Mayor Pharmacokinetics * Moderate Pharmacodynamics * Moderate Pharmacodynamics * Moderate Pharmacokinetics	0.42%
8.	• Domperidone-Ambroxol-CTM-Dexamethasone-Vit C	1	• Dexamethasone-Domperidone • CTM-Domperidone • Dexamethasone-Ambroxol • Dexamethasone-CTM	* Mayor Pharmacokinetics * Mayor Pharmacodynamics * Moderate Pharmacodynamics * Mayor Pharmacokinetics	0.42%
9.	• Paracetamol-Ambroxol-CTM-Dexamethasone	1	• Paracetamol-Ambroxol • Dexamethasone-Ambroxol • Dexamethasone-CTM • Dexamethasone-Paracetamol	* Moderate Pharmacodynamics * Moderate Pharmacodynamics * Mayor Pharmacokinetics * Moderate Pharmacokinetics	0.42%
10.	• Ambroxol-Dexamethasone-Vit C	2	• Dexamethasone-Ambroxol	* Moderate Pharmacodynamics	0.84%
11.	• *Ambroxol-CTM-Dexamethasone* • Ambroxol-CTM-Dexamethasone+Domperidone +Paracetamol	2 1	• Dexamethasone-Ambroxol • Dexamethasone-CTM	* Moderate Pharmacodynamics * Mayor Pharmacokinetics	

			• Paracetamol + Ambroxol	* Moderate Pharmacodynamics	
			• Dexamethasone + Paracetamol	* Moderate Pharmacokinetics	1.26%
			• Dexamethasone + Domperidone	* Mayor Pharmacokinetics	
			• CTM+Domperidone	* Mayor Pharmacodynamics	
			• Paracetamol + Domperidone	* Moderate Pharmacokinetics	
12.	• Amoxicillin+CTM-Vit C+Ibuprofen	1	• Amoxicillin-Ibuprofen	* Minor Pharmacokinetics	0.42%
13.	• Paracetamol+Ambroxol-CTM-Vit C+Albendazole	1	• Albendazole-Paracetamol	* Mayor Pharmacokinetics	
			• Paracetamol-Ambroxol	* Moderate Pharmacodynamics	0.42%
14.	• Ambroxol-Dexamethasone-CTM-Vit C-Vit B	1	• Dexamethasone-CTM	* Mayor Pharmacokinetics	
			• Dexamethasone-Ambroxol	* Moderate Pharmacodynamics	0.42%
15.	• Ambroxol-CTM-Methylprednisolone-Vit C	2	• Methylprednisolone-Ambroxol	* Moderate Pharmacodynamics	0.84%
16.	• Domperidone-Ambroxol-CTM-B com+Amoxicilin	1	• CTM-Domperidone	* Mayor Pharmacodynamics	
			• B com-Amoxicillin	* Minor Pharmacokinetics	0.42%
17.	• Paracetamol+Ambroxol-CTM-Dexamethasone-Vit C-Metoclopramide-Salbutamol	1	• Metoclopramide-Ambroxol	* Moderate Pharmacodynamics	
			• Metoclopramide-CTM	* Moderate Pharmacodynamics	
			• Paracetamol + Metoclopramide	* Moderate Pharmacodynamics	
			• Dexamethasone-Ambroxol	* Moderate Pharmacodynamics	
			• Dexamethasone-CTM	* Mayor Pharmacokinetics	
			• Dexamethasone-Paracetamol	* Moderate Pharmacokinetics	0.42%
			• Dexamethasone-Metoclopramide	* Minor Pharmacodynamics	
			• Paracetamol-Ambroxol	* Moderate Pharmacodynamics	
			• Dexamethasone-Salbutamol	* Moderate Pharmacodynamics	
			• Salbutamol-CTM	* Minor Pharmacodynamics	
			• Salbutamol-Metoclopramide	* Minor Pharmacodynamics	
			• Paracetamol-Salbutamol	* Minor Pharmacokinetics	

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18.	• Paracetamol+Dexamethasone-Vit C • Dexamethasone-Vit C+Cetirizin • Paracetamol+Cetirizin+Dexamethasone-Vit C	1 2 1	• Dexamethasone-Paracetamol	* Moderate Pharmacokinetics	1.68%
19.	• Co-trimoxazole + Zinc + Ambroxol-CTM-Vit C	1	• Co-trimoxazole-CTM	* Minor Pharmacodynamics	0.42%
20.	Total	176			74.26%