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Overview of Outpatient Medication Use for Patients at Simpang Tiga Pekanbaru Health Center Based on World Health Organization Prescription Indicators

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ABSTRACT

The use of prescription drugs is very important in providing health services. According to reports received by the World Health Organization (WHO), irrational drug use continues to occur. This is proven by more than 50% of inappropriate drug use when prescribing. This study aims to determine the description of drug prescribing at the Simpang Tiga Pekanbaru Health Center based on WHO prescribing indicators. The sampling method used purposive sampling with a population of all outpatient prescriptions in December 2022 and 320 prescriptions as samples according to the inclusion criteria. Analyzed based on WHO prescribing indicators including average drug items, generic drug prescribing, antibiotic prescribing, injection prescribing and drugs according to the National Formulary. The research results showed that the average number of drug items per prescription sheet was 3.06, the percentage of generic drug prescriptions was 98.57%, the percentage of antibiotic prescriptions was 25%, the percentage of injection prescriptions was 0%, and the percentage of prescriptions according to FORNAS was 89.49%. It is hoped that this research can be used as an illustration and information in controlling rational drug use.

Keywords : WHO Prescribing Indicators, Rational Use Of Drugs, Puskesmas

1. INTRODUCTION

The use of medication prescribed by doctors is a crucial aspect of providing healthcare for patient treatment therapy. The quality and effectiveness of treatment can be assessed through the rationality of medication prescribing. (Hendrawan, 2020). The use of medication can be considered rational if it meets several criteria, such as accurate diagnosis, correct dosage, proper administration, appropriate timing, awareness of side effects, and matching the patient's condition. Implementing irrational treatment can have negative consequences, such as antibiotic resistance, drug interactions that may decrease the quality of treatment and healthcare services. (Kemenkes RI, 2011).

According to reports received by the World Health Organization (WHO), irrational drug usage continues to persist. This is evidenced by more than 50% of drugs being used inappropriately during prescription, preparation, or sale, while the remaining 50% is attributed to patients' improper drug use. (WHO, 2002). The assessment of rational drug use can be determined using three indicators, namely prescription indicators, service indicators, and healthcare facility indicators. One of the three indicators that can be used is the prescription indicator. Parameters within the prescription indicator include the average number of drug items per prescription, the percentage of drugs prescribed by their generic name, the percentage of prescriptions containing antibiotics, the percentage of prescriptions containing injections, and the

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percentage of drugs prescribed in accordance with the National Formulary (WHO, 1993).

The study conducted by Rusdiana (2019) t Sako Palembang Community Health Center shows that drug usage is not in accordance with the parameter of the average number of drugs per prescription (3.3). As for the prescription parameters, the adherence to the National Formulary (FORNAS) is still somewhat inadequate (80.5%), although the prescription of generic drugs (94.8%) and antibiotics (14.1%) is already appropriate. Another study conducted by Saibaka dkk (2022) on drug usage at Teling Atas Community Health Center indicates that, according to the WHO prescription indicator, only the percentage of generic drug prescriptions (97.06%) and injection prescriptions (0%) are appropriate. However, the average number of drugs per prescription (2.49), the percentage of antibiotic prescriptions (24.80%), and the percentage of FORNAS drug usage prescriptions (81.97%) are still not in compliance.

A similar study conducted by Ihsan dkk (2017) n drug usage in all Kendari City Health Centers in 2016 indicates that only the percentage of injection usage (0.16%) is appropriate. However, the average number of drugs per prescription (3.23), the percentage of generic drug prescriptions (96.08%), the percentage of antibiotic prescriptions (36.85%), and the usage of FORNAS-listed drugs (75.07%) are not in compliance. Another study by Syarifuddin (2017) on the rationality of drug use at the Parsoburan Health Center in Pematangsiantar City shows that, based on WHO prescription indicators, only the percentage of injection prescriptions (0.09%) is already appropriate. However, the average number of drugs per prescription (3.8), the percentage of generic drug prescriptions (99%), the percentage of antibiotic prescriptions (46.22%), and the usage of FORNAS-listed drugs (91.61%) are still not in compliance.

The Community Health Center (PUSKESMAS) is one of the facilities that provide healthcare services to the community, delivering both public health efforts and primary individual healthcare services while emphasizing community health improvement and prevention in its operational area (Kemenkes RI, 2019). When viewed within the healthcare system of Indonesia, the role and position of PUSKESMAS are highly significant because the government has developed PUSKESMAS with the goal of bringing healthcare services closer to the public. Researchers have chosen Puskesmas Simpang Tiga Pekanbaru because no similar study has been conducted at this particular Puskesmas, which serves as the main healthcare center in the Marpoyan Damai Subdistrict. It is crucial to assess the rationality of drug prescription to ensure the well-being of many patients. Based on the background presented by the researchers, they are interested in determining the appropriateness of drug prescriptions at Puskesmas Simpang Tiga Pekanbaru according to WHO prescription indicators. This research aims to provide an overview of drug prescriptions at Puskesmas Simpang Tiga Pekanbaru based on WHO prescription indicators, which include the average number of drug items, generic drug prescriptions, antibiotic prescriptions, injection prescriptions, and drugs in compliance with the National Formulary.

2. RESEARCH METHODS

This study is an observational research with a descriptive nature, utilizing a retrospective data collection technique. The sampling method employed in this research is purposive sampling, which is a technique for selecting samples not based on class, chance, or region, but rather on the research objectives. The entire outpatient prescriptions at Puskesmas Simpang Tiga Pekanbaru in December 2022, which meet the inclusion criteria (i.e., prescriptions that are legible and have complete patient identity data, including the patient's name, age, address, and prescription date), comprise the population in this study. The sampling method was carried out using a non-random technique known as purposive sampling. Sample size calculation for this research was determined using the formula proposed by Taro Yamane. (Ridwan, 2014).

$$n = \frac{N}{1 + N(d^2)}$$

$$n = \frac{1.532}{1+1.532\ (0{,}05^2)}$$

= 317 ~ 320 prescription sheets

Explanation :

N : Population Size

n : Sample Size

d : Defined Precision, which is 5%

Based on the formula calculation, the minimum sample size to be taken is 317 prescription sheets. However, the researcher has chosen to analyze 320 prescription sheets. Data analysis is conducted using univariate analysis, which aims to explain or describe the characteristics of each research variable. The data analysis technique employed is descriptive, involving the creation of data summaries based on their grouping according to the WHO prescription indicators, which include average drug items, generic drug prescriptions, antibiotic prescriptions, injection prescriptions, and drugs in accordance with the 2021 National Formulary. Once the prescription analysis data is collected, it is then calculated using the percentage formula as follows:

1. Average Number of Drug Items per Prescription Sheet

$$C = \frac{B}{A}$$

Explanation :

C = Average number of drug items per prescription sheet

B = Total number of drug items prescribed

A = Total number of prescription sheets examined

2. Quantity and Percentage of Generic Drug Prescriptions

$$E = \frac{D}{B} x\ 100\%$$

Explanation :

E = Percentage of generic drugs prescribed

D = Number of drug items prescribed with generic names

B = Total number of drug items prescribed

3. Quantity and Percentage of Antibiotic Prescriptions

$$G = \frac{F}{A} x\ 100\%$$

Explanation :

G = Percentage of antibiotics prescribed

F = Number of patient prescription sheets that received one or more antibiotics

A = Total number of prescription sheets examined

4. Quantity and Percentage of Injectable Medication Prescriptions

$$I = \frac{H}{A} x\ 100\%$$

Explanation :

I = Percentage of injection drugs prescribed

H = Number of patient prescription sheets that received one or more injection drugs

A = Total number of prescription sheets examined

5. Quantity and Percentage of Drug Items Prescribed in Accordance with the 2021 National Formulary

$$K = \frac{J}{B} x\ 100\%$$

Explanation :

K = Percentage of drugs prescribed based on the National Formulary

J = Number of drug items prescribed based on the National Formulary

B = Total number of drug items prescribed

This research has obtained an ethical clearance certificate with No. B/075/UN19.5.1.1.8/UEPKK/2023 issued by the Medical and Health Research Ethics Unit of the Faculty of Medicine, University of Riau.

3. RESULT AND DISCUSSION

The research findings regarding the Overview of Outpatient Medication Use for Patients at Simpang Tiga Pekanbaru Health Center Based on World Health Organization Prescription Indicators are as follows:

a. Average Number of Drug Items per Prescription Sheet

This parameter aims to measure how many drugs are used concurrently by patients to prevent polypharmacy. The average number of drug items per prescription sheet is obtained by dividing the total number of drug items prescribed by the total number of prescription sheets examined.

Tabel 1. Average Number of Drug Items Per Prescription Sheet

No	Number of Drug Items per Prescription Sheet	Number of Prescription Sheets (n=320)	Total Number of Drug Items
1.	1 drug item	34	34
2.	2 drug item	77	154
3.	3 drug item	94	282
4.	4 drug item	76	304
5.	5 drug item	28	140
6.	6 drug item	11	66
Total		320	980
Average Number of Drug Items per Prescription Sheet			3,06

Explanation : n = the total number of prescriptions

In this study, the total number of prescribed drug items is 980 items from a total of 320 prescription sheets, resulting in an average of 3.06 items per prescription sheet. This figure does not align with the values set by the WHO, which are between 1.3 to 2.2. The obtained value indicates that the research results exceed the WHO's established standard, potentially leading to a tendency for polypharmacy. This is because many prescriptions were found to have more than 5 drug items per prescription sheet. Excessive drug prescriptions can contribute to polypharmacy. The occurrence of polypharmacy at Simpang Tiga Pekanbaru Community Health Center can be attributed to doctors focusing too much on prescribing drugs to alleviate patients' symptoms rather than on their diagnoses. This is supported by Stiawati's research in 2020, which revealed that the cause of polypharmacy is an abundance of drugs prescribed on prescription sheets, aimed more at alleviating patient symptoms than treating the underlying disease. Additionally, patient pressure to quickly relieve their symptoms can push doctors to prescribe more drugs, as indicated by Herdaningsih et al.'s similar study in 2016. It should be noted that the more active ingredients a patient receives simultaneously, the higher the risk of adverse effects. Furthermore, the researcher believes that there is still a prevailing belief in society that receiving more drugs is more effective in curing diseases.

b. Total and Percentage of Generic Drug Prescriptions

This parameter aims to measure the use of generic drugs in healthcare services provided by community health centers (Puskesmas). The calculation of the total and percentage of generic drug prescriptions is obtained by dividing the number of generic drugs prescribed by the total number of drug items prescribed and then multiplying by 100.

Tabel 2. Total and Percentage (%) of Generic and Non-Generic Drug Prescriptions

No	Type of Drug	Number of Drugs (n=980)	Percentage (%)
1.	Generic Drugs	966	98,57%
2.	Non-Generic Drugs	14	1,43%
Total Drug Items		980	100%

Explanation : n = the total number of drugs

Based on the data obtained from the research conducted at Simpang Tiga Pekanbaru Community Health Center, the most prevalent prescriptions were for generic drugs, totaling 966 drug items, while the number of drugs prescribed under brand names or non-generic was 14 items. In this study, the total number of drug items used in 320 prescription sheets was 980 drugs. In total, there were 966 generic drugs and the remaining 14 were non-generic drugs, resulting in a percentage of 98.57%. The percentage of generic drug prescriptions at Simpang Tiga Pekanbaru Community Health Center exceeds the value set by the WHO, which is more than 82-94%.

Community Health Centers (Puskesmas) as primary healthcare facilities are mandated by the Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2010) to use generic drugs. The results of this research show that the prescription of generic drugs exceeds the WHO standard values. The researcher assumes this is because nearly all the drugs available at Simpang Tiga Pekanbaru Community Health Center are in generic form, and as primary healthcare centers, they are obligated to use generic drugs to support government programs. As a result, doctors consistently prioritize the use of generic drugs for patients seeking treatment at the community health center, causing the prescription of generic drugs to surpass the WHO-established limits.

c. Total and percentage of antibiotic prescriptions

This parameter aims to measure the level of excessive antibiotic usage by patients. The calculation of the total and percentage of antibiotic prescriptions is obtained by dividing the number of patient prescription sheets receiving one or more antibiotics by the total number of prescription sheets examined and then multiplying by 100.

Tabel 3. Total and Percentage (%) of Prescriptions with Antibiotics and Without Antibiotics

No	Antibiotic Name	Number of Prescriptions (n=32)	Percentage (%)
1.	Amoxicillin	53	16,56%
2.	Ciprofloxacin	2	0,63%
3.	Cotrimoxazole (Sulfamethoxazole and Trimethoprim)	5	1,56%
4.	Gentamicin	7	2,19%
5.	Chloramphenicol	4	1,25%
6.	Metronidazole	5	1,56%
7.	Gentamicin and Metronidazole	4	1,25%
Total Prescriptions with Antibiotics		80	25%
Total Prescriptions without Antibiotics		240	75%
Total		320	100%

Explanation : n = the total number of prescriptions

In this research, a total of 320 prescription sheets were used, out of which 80 prescription sheets contained antibiotics, while the remaining 240 prescription sheets did not contain antibiotics. As a result, a percentage of 25% was obtained, indicating that it does not align with the WHO-established standard, which is ≤ 22.70%.

Excessive antibiotic prescribing can occur due to an excessive initial evaluation by doctors of the severity of the illness (Kemenkes RI, 2011). The excessive use of antibiotics is one of the hindrances to therapy implementation because it leads to antibiotic resistance. Resistance is the ability of bacteria to weaken and hinder the effectiveness of antibiotics (Kemenkes RI, 2013). Unnecessary

or excessive antibiotic use can lead to the emergence of resistance in certain bacteria. This resistance cannot be eliminated but can be prevented through the appropriate use of antibiotics (Dewi dkk, 2020). The researcher's assumption is that a significant portion of antibiotics prescribed at Simpang Tiga Pekanbaru Community Health Center is for patients with upper respiratory tract infections (URTIs). This results in a very high demand for antibiotics, even though URTIs can be caused not only by bacteria but also by viruses. If the cause is viral, the use of antibiotics is not the appropriate indication, and this can trigger the risk of resistance.

d. Total and Percentage of Injection Medication Prescriptions

This parameter aims to measure the excessive use of medications in injection form, which often results in wasteful spending due to the use of injectable medications. The calculation of the total and percentage of injection medication prescriptions is obtained by dividing the number of patient prescription sheets receiving one or more injectable medications by the total number of prescription sheets examined and then multiplying by 100.

Tabel 4. Total and Percentage (%) of Prescriptions Injectable and Non-Injectable Medications

No	Type of Medications	Number of Prescriptions (n=32)	Percentage (%)
1.	Injectable Medications	0	0%
2.	Non-Injectable Medications	320	100%
Total		320	100%

Explanation : n = the total number of prescriptions

In this research, the total number of prescription sheets used was 320. However, not a single prescription sheet contained injectable medications, resulting in a percentage of 0%. The percentage of prescription of injectable medications at Simpang Tiga Pekanbaru Community Health Center does not align with the values set by the WHO, which are 0.2 - 48%. However, in this study, no prescription of injectable medications was found, resulting in a percentage of 0%.

Typically, injectable medications are commonly used in Community Health Centers (Puskesmas) for inpatients and patients in the Emergency Department (IGD). However, in this study, the researcher only examined outpatient prescriptions, and as a result, no injectable medications were prescribed to outpatient patients at this Puskesmas. According to a study by Nasif dkk (2013) medications prescribed for injection are usually done when clinical examination results indicate that the patient requires a fast-acting medication. Injections are also administered for medications that are ineffective when taken orally, for patients who are unconscious or unable to take oral medication and need inpatient care. According to the researcher, the percentage of injectable medication prescriptions is 0% at Simpang Tiga Pekanbaru Community Health Center because its patients are not emergency cases that require rapid treatment.

e. Total and Percentage (%) of Medications in Accordance with the National Formulary and Non-National Formulary

This parameter aims to measure the level of compliance in applying the national drug policy that refers to the National Formulary. The total and percentage of medications prescribed in accordance with the National Formulary (FORNAS) are obtained by dividing the number of medication items prescribed according to the National Formulary by the total number of medication items prescribed and then multiplying by 100.

Tabel 5. Total and Percentage (%) of Medications in Accordance with the National Formulary and Non-National Formulary

No	Type of Medication Prescription	Number of Medications (n=980)	Percentage (%)
1.	In Accordance with the National Formulary	877	89,49%
2.	Not in Accordance with the National Formulary	103	10,51%
Total		980	100%

Explanation : n = the total number of medications

In this research, the total number of medication items used in 320 prescription sheets is 980 medication items, with 877 medication items in accordance with the National Formulary (FORNAS) and the remaining 103 medication items not listed in the National Formulary. The percentage of medication prescriptions in accordance with FORNAS at Simpang Tiga Pekanbaru Community Health Center is 89.49%.

The compilation of medications in the National Formulary aims to improve the quality of healthcare services, ensure the quality of medications, control treatment costs, serve as a guide in medication administration, and facilitate planning and procurement of medications in healthcare facilities. With the existence of the National Formulary, patients will receive appropriate, effective, high-quality, safe, and affordable medications, thereby achieving optimal public health. Therefore, medications listed in the National Formulary must be ensured to be available and affordable (Kemenkes RI, 2019). The results of this research have not reached the value set by the WHO, which is 100%. According to the researcher, this may be due to the Republic of Indonesia's Ministry of Health setting a standard that all medications in Community Health Centers must be listed in the National Formulary. However, some medications not included in FORNAS are still prescribed at Simpang Tiga Pekanbaru Community Health Center, while these medications are effective in treating patients' illnesses, leading doctors to choose to prescribe medications outside of FORNAS for patient treatment.

CONCLUSION

Based on the research results obtained, it can be observed that the overview of medication use based on the 5 World Health Organization (WHO) prescribing indicators in outpatient patients at Simpang Tiga Pekanbaru Community Health Center for the period of December 2022 is as follows: the average number of medication items per prescription sheet is 3.06, the percentage of generic drugs is 98.57%, the percentage of antibiotics is 25%, the percentage of injectable medications is 0%, and the percentage of medications prescribed in accordance with the National Formulary is 89.49%. It can be concluded that medication use in outpatient patients at Simpang Tiga Pekanbaru Community Health Center for the period of December 2022 does not fully comply with the prescribing indicators set by WHO.

RECOMMENDATION

It is recommended that Simpang Tiga Pekanbaru Community Health Center improve the clarity and systematic nature of prescription sheet writing and conduct evaluations related to medication prescription to ensure compliance with the World Health Organization (WHO) prescribing indicators or regulations set by the Ministry of Health. For future researchers, it is advisable to continue further research on the overview of medication use based on other WHO indicators, such as Patient Care Indicators, Facility Indicators, and Complementary Drug Use Indicators in outpatient patients at Simpang Tiga Pekanbaru Community Health Center for the year 2022.

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