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Implementing Electronic Forms for Prescription Screening during Pregnancy in Outpatient Obstetric Clinic

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Abstract

Background: *Prescription screening is an assessment of the suitability of a prescription performed by a pharmacist to minimize medication errors. Numerous drugs can cross the placenta; therefore, caution is required when using medications during pregnancy.* ***Objective:*** *This study aimed to determine the problems of prescribing based on administrative, pharmaceutical, and clinical requirements using electronic forms and to analyze drug safety during pregnancy using electronic prescription archives from the outpatient obstetric clinic.* ***Methods:*** *This research employed an observational study utilized quantitative methods and retrospective data collection. The analysis focused on descriptive statistics to summarize and interpret the data according to the Pharmaceutical Care Standard in hospitals.* ***Results:*** *Administrative problems included the absence of a digital signature from the prescriber, patient weight, and allergy history in 100 electronic prescriptions (100%). Pharmaceutical requirement problems included the absence of dosage strength (8.00%) and unclear usage rules (9.00%). Clinical considerations included indications for drug selection (8%), potential drug interactions (3.00%), dose appropriateness (3.00%), duplication (2.00%), and contraindications (6.00%). Based on drug safety in pregnant women, 40 types of drugs were identified as category A drugs (7.50%), category B (32.50%), category C (50.00%), off-label (2.50%), and unknown (7.50%).* ***Conclusion:*** *Electronic prescription screening, which uses digital forms to review prescriptions, is a tool developed to improve patient safety by efficiently identifying potential drug therapy problems. The system accommodates structured screening based on specific criteria, such as pregnancy category and potential drug interactions, which helps prevent errors and ensures appropriate medication use.*

Keywords: *electronic forms, pregnancy, prescription screening*

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INTRODUCTION

Pregnancy is a specific physiological process that requires preparation and safe passage. The mother and fetus are inseparable functional units during pregnancy. The health of the pregnant mother must be maintained to ensure the optimal function and development of both units. During pregnancy and breastfeeding, mothers may experience various ailments or health problems that require medication. The use of drugs during pregnancy requires careful monitoring. Numerous drugs can cross the placenta; therefore, the use of medicines in pregnant women needs to be precise. Drugs can undergo biotransformation in the placenta, which is a protective effort as well as the potential to form reactive intermediate compounds that are teratogenic/dysmorphogenic. Drugs can cause unintended effects on the fetus that are often unnoticed. During the first trimester, drugs can cause birth defects (teratogenesis), and the most prone risk is at 3-8 weeks of gestation. During the second and third trimesters, drugs may functionally affect the growth and development of the fetus or poison the placenta. If possible, medications should be avoided during the first trimester. Changes in physiology during pregnancy and breastfeeding can affect drug kinetics, potentially leading to changes in a pregnant woman's response to medications (Kepley et al., 2023).

Obstetric healthcare providers often inquire about the safety of medications recommended or prescribed to pregnant patients. Most women use at least one medication during their pregnancies. However, information on the safety and appropriate dosing of many drugs during pregnancy is limited. Some drugs are also used "off-label" during pregnancy, which means they are used in ways not mentioned in the FDA-approved drug label. Important off-label uses in pregnancy include antenatal glucocorticoids (betamethasone and dexamethasone) to improve fetal lung maturity and non-steroidal anti-inflammatory drugs (indomethacin) to prevent preterm labor. Prescription drug use during pregnancy includes drugs approved for pregnancy-related conditions, approved medical indications (on-label use), or unapproved uses (off-label use) (Wesley et al., 2021).

Pharmaceutical care is a patient-oriented service in which pharmacists are responsible for optimizing therapeutic outcomes. Pharmaceutical service activities initially focused on managing drugs as commodities and have become comprehensive services to improve patients' quality of life. One of the clinical pharmacy services performed by pharmacists is prescription assessment. Pharmacists must understand and be aware of the possibility of errors in this process. Notably, hospital pharmacists are required to expand the paradigm of pharmaceutical services that focus on patients. For this reason, the competence of pharmacists needs to be improved continuously so that this paradigm shift can be implemented (Kementrian Kesehatan RI, 2016).

Research by Yani & Fardin (2021) evaluated the administrative and pharmaceutical requirements for outpatient BPJS prescriptions in Bantaeng Regency and found that the completeness of administrative requirements was 0% and 43.43% in pharmaceutics. Administrative requirements that are 100% unmet are related to gender and physicians' SIP. Administrative requirements related to treatment effectiveness and safety that were not met were related to the patient's age (41%) and weight (39%). Fortinguerra et al. (2021) related to monitoring drug prescriptions before, during, and after pregnancy in Italy showed that approximately 73.1% of pregnant women received at least one drug prescription during pregnancy, 57.1% before pregnancy, and 59.3% postpartum. The prevalence of prescription drug use increased with maternal age, particularly during the first trimester of pregnancy. The most prescribed drug was folic acid (34.6%), followed by progesterone (19%), both of which were concentrated in the first trimester of pregnancy (29.2% and 14.8%, respectively). Eight of the 30 most prescribed drugs were antibiotics, the prevalence of which was higher during the second trimester of pregnancy in women >40 years (21.6%).

Pharmacists are pharmaceutical personnel who ensure the effectiveness and safety of drugs. The management of pharmaceutical services for pregnant and lactating women includes screening and assessment of prescriptions, monitoring drug use, and providing information and education. This study used an electronic form to conduct the prescription screening process by reviewing the factors associated with drug prescriptions during pregnancy (Kementrian Kesehatan RI, 2016).

MATERIALS AND METHODS

Materials

This study used one of the elements of pharmaceutical service management under the Guidelines for Pharmaceutical Services for Pregnant and Breastfeeding Women (Kementrian Kesehatan RI, 2016), namely screening/assessment of prescriptions for patients with specific conditions, namely pregnant women at outpatient clinics. Prescription

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screening/assessment was performed based on administrative, pharmaceutical, and clinical requirements using electronic prescription archives at the obstetrics and gynecology clinic.

Tools

The tool used for the screening/prescribing assessment was an electronic form (Google form) to determine whether new problems were detected after the previous manual screening. The electronic form was designed specifically for pregnancy conditions. Clinical judgment assessment criteria were added from the Pharmaceutical Care Network Europe (PCNE) to facilitate the analysis of drug-related problems (MTOs).

Method

Study design

This study was based on observational research (non-experimental) using quantitative methods by screening/assessing prescriptions based on Permenkes No. 72/2016. The data obtained were analyzed descriptively using Microsoft Excel and presented in tables and percentages of findings.

Selection of the study population and sources of data

Retrospective data were collected using electronic prescription archive data from the obstetrics and gynecology outpatient clinic between January and December 2022. Electronic prescription archives were selected based on the following criteria

1. diagnosis: pregnant
2. patient data: same medical record number only taken 1 (one) time
3. visit history: the last visit at the time the data was taken

Electronic prescription records were printed according to the subject-selection criteria. The study sample size was the total number of prescription records of pregnant women who met the standards for data completeness for analysis.

Research variable

The variables used in this study included:

1. Drug prescription: paper or electronic prescription from the obstetrics and gynecology clinic.
2. Drug characteristics: Oral drugs prescribed to pregnant women.
3. Patient characteristics: based on age, comorbidities, and pregnancy conditions
4. Administrative requirements include the patient's name, age, sex, and weight; doctor's name, license to practice number, address, telephone number, doctor's initials, and date of prescription writing.
5. Pharmaceutical requirements include dosage form, dosage strength, stability, and incompatibility.
6. Clinical considerations include the appropriateness of the indication and dose of the drug, rules, mode, and duration of drug use, duplication and/or polypharmacy, adverse drug reactions, contraindications, and drug interactions.

Ethical approval

This research was approved by the Ethics Committee of the University of Surabaya, Surabaya, Indonesia (number 40/KE/I/2023) for researcher Lisa Aditama with a study entitled "Prescription Review for Specific Conditions Geriatric and Pregnancy Using Electronic Forms at outpatient clinic" for December 26, 2022-January 14, 2023.

RESULTS AND DISCUSSION

Data collection began in December 2022, namely, electronic prescription archives originating from obstetrics and gynecology clinics. The sample obtained consisted of 101 prescription sheets according to the research criteria. The research instrument for prescription screening used an electronic form (Google Form), consisting of patient characteristics, prescription information, drug names in the prescription, screening administrative requirements, screening pharmaceutical requirements, and screening clinical requirements.

Patient characteristics and treatment

The characteristics of the participants are presented in Table 1. The majority were pregnant women in the 26–30 year age range (43.00%). There was 1 patient aged < 20 years (1.00%) and based on the table, the number of patients over the age of 35 exceeded 21.

Tabel 1. Age characteristics of research subjects

Age (Years)	Number of Patients	Percentage (%)
< 20	1	1.00
20 - 25	14	14.00
26 - 30	43	43.00
31 - 35	21	21.00
36 - 40	20	20.00
> 40	1	1.00
	100	100.00

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Table 4. Prescription profile of symptomatic medication

Pharmacology Group	Number of Prescriptions	Frequency (%)
Symptom relief : antihistamines		9.30
Cetirizine	2	
Desloratadine, cetirizine	1	
Mebhydrolin	1	
Symptomatic relief : anti-inflammatory and mucolytic		2.33
Dexamethasone, ambroxol	1	
Symptom relief : anti-inflammatory		9.30
Mefenamic acid	1	
Meloxicam	2	
Na Diclofenac	1	
Symptomatic relief : anti-inflammatory and hemostatic		4.65
Paracetamol, Na diclofenac, tranexamic acid	1	
Dexketoprofen, tranexamic acid	1	
Symptom relief : hemostatic		9.30
Tranexamic acid	4	
Symptom relief : antiemetic		46.51
Metoclopramide	1	
Ondansetron	17	
Pyridoxine, pyrathiazine	2	
Symptomatic relief : gastric acid lowering agents		18.60
Lansoprazole	3	
Ranitidine	5	
	43	100.00

Pregnant women <20 years of age experience many health risks that can trigger miscarriage, anemia, prematurity, low birth weight, and other pregnancy complications (Ratnaningtyas & Indrawati, 2023). Pregnancy in women aged >35 years has the potential to cause loss of pelvic elasticity, and complications are prone to occur both during pregnancy and childbirth, such as pre-eclampsia, diabetes mellitus, hypertension, and anemia, which cause premature birth or LBW (low birth weight) (Susanti et al., 2020).

The characteristics of drug prescriptions in pregnant women were mostly supplements, with 78 patients (78.00%). The majority of pregnant women in this study received supplements containing folic acid (64 patients, 69.57% of supplement prescriptions) and iron (42 patients, 45.65% of supplement prescriptions).

There were prescriptions for astaxanthin antioxidants in eight patients (8.70% of supplement prescriptions). Patients who received astaxanthin also received other drugs, including 2 patients who received furosemide, 2 patients who received misoprostol, and 1 patient who received oral albumin. Astaxanthin has antioxidant effects on the vascular endothelium and improves symptoms of pre-eclampsia; however, its safety during pregnancy requires further investigation (Xuan et al., 2016).

Table 2. Supplement prescription profile for pregnant women

Supplement Composition	Number of Prescriptions	Frequency (%)
Astaxanthin	8	8.70
Vitamin E	1	1.09
B1 B6 B12	1	1.09
Folate, B12, DHA	22	23.91
Folate and Fe	7	7.61
Multivitamins, folate, Fe	35	38.04
Calcium lactate	3	3.26
Calcium D3	6	6.52
Calcium D3 and mineral	9	9.78
	92	100.00

The prescribing profiles of gynecologic enhancers are presented in Table 3. The most common age groups receiving gynecological boosters were 31-35 years (47.62%) and >40 years (100%). The most common antenatal boosters in pregnant women were micronized progesterone (33 patients, 91.67%), dydrogesterone (1 patient, 2.78%), and isoxsuprine (2 patients, 5.56%).

One patient (out of 35) received a combination of micronized progesterone and isoxsuprine. Dydrogesterone is a synthetic form of progesterone with better bioavailability and tolerability than micronized progesterone. Micronized progesterone is more effective in preventing preterm birth and LBW than is

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dydrogesterone (Ansari et al., 2023). Isoxsuprine is a class of β_2 adrenoreceptor agonists that directly induces uterine relaxation and improves blood circulation by selectively vasodilating the blood vessels supplying the uterine smooth muscle (Coelho & Gupta, 2024).

Table 3. Prescription profile of progesterone supplement

Progesterone Supplement	Number of Prescriptions	Frequency (%)
Micronized progesterone	33	91.67
Dydrogesterone	1	2.78
Isoxsuprine	2	5.56
	36	100.00

The prescription profile of symptomatic relief drugs in pregnant women is presented in Table 4, consisting of antiemetics (46.51%), gastric acid-lowering agents (18.60%), anti-inflammatory agents (9.30%), antihistamines (9.30%), hemostatic agents (9.30%), anti-inflammatory and hemostatic agents (4.65%), and anti-inflammatory and mucolytic agents (2.33%). In the antiemetic group, ondansetron was the most prescribed drug. The most prescribed gastric acid-lowering agent was ranitidine.

Pyridoxine is the first-line medication for nausea and vomiting during pregnancy. Metoclopramide is the second choice for nausea and vomiting and should be used for no more than 5 days. Another factor to consider when using metoclopramide is the occurrence of extrapyramidal symptoms (EPS). Ondansetron is the most widely prescribed nausea and vomiting reliever but should not be used in the first trimester. In pregnancy-related nausea and vomiting and hyperemesis gravidarum, single pyridoxine is often less effective, and its combination with H1 antihistamines, such as doxylamine or pyrathiazine, is recommended (Nelson-Piercy et al., 2024).

The prescribing profile of condition-specific drugs in pregnant women is presented in Table 5, including medications for cervical ripening (6.00%), pre-eclampsia prevention (4.00%), antihypertensives (3.00%), and gestational diabetes (1.00%). The most common age groups that received misoprostol were < 20 years (100.00%), 31-35 years (9.52%), and 36-40 years (5.00%). The use of misoprostol in obstetrics and gynecology has expanded with the ability to diagnose fetal abnormalities in the prenatal period for indications of pregnancy termination in the second trimester and cervical ripening in preparation for parturition at a dose of 400 mg intravaginally every 3-6 hours.

The largest age groups who received acetylsalicylic acid (ASA) were 31-35 years (14.29%) and 26-30 years (2.33%). In this study, some patients received antihypertensive and antidiabetic medications, namely furosemide (two patients), methyldopa (one patient), and metformin (one patient). Prevention of pre-eclampsia has been considered to improve pregnancy safety for both the mother and child, given at a dose of 80 mg ASA during weeks 12-28 (optimally before week 16). The mechanism of pre-eclampsia prevention with ASA is based mainly on in vitro studies and may work by improving placentation. The functional systems modulated by ASA involve cytokine release through antiapoptotic and vasoprotective mechanisms. The thromboxane/prostacyclin ratio, which is altered in pre-eclampsia, can be normalized by ASA-induced thromboxane synthesis inhibition. Dysregulation of angiogenic growth factors also plays a role in the pathogenesis of preeclampsia and can be positively affected by ASA (Stubert et al., 2023).

Table 5. Prescription profile for specific-condition drugs

Pharmacology Group	Number of Prescriptions	Proportion (%) (n=100)
Cervical ripening		6.00
Misoprostol	2	
Misoprostol and tranexamic acid	4	
Pre-eclampsia prevention		4.00
Acetylsalicylic 100 mg	4	
Antihypertensive		3.00
Furosemide 40 mg	2	
Methyldopa 250 mg	1	
Antidiabetic		1.00
Metformin 500 mg	1	

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Table 6. Antibiotic prescription profile in pregnancy conditions

Pharmacology Group	AB Combination or Specific Drugs	Number of Prescriptions	Frequency (%)
Cephalosporins		11	91.67
Cefadroxil 500 mg		1	
Cefadroxil 500 mg	Na diclofenac, paracetamol, tranexamic acid,	1	
Cefadroxil 500 mg	Misoprostol, tranexamic acid	4	
Cefixime 100 mg		3	
Cefixime 200 mg	Metronidazole 500 mg	2	
Azole			8.33
Metronidazole 500 mg		1	
		12	100.00

Table 7. Profile of drug category for pregnancy

Drug Categories in Pregnancy	Type of Medicine	Percentage
A	3	7.50
B	13	32.50
C	20	50.00
D	0	0.00
Off-label	1	2.50
NA	3	7.50
	40	100000

Description
Category A: Adequate research studies using control groups that failed to demonstrate any risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).
Category B: Animal reproduction studies failed to demonstrate any risk to the fetus, and there are no adequate studies using control groups in pregnant women.
Category C: Animal reproduction studies suggest adverse effects on the fetus, and there have been no adequate studies using control groups in humans, but the potential benefits warrant the use of the drug in pregnant women despite the potential risks.
Category D: There is positive evidence of risk to the human fetus based on adverse reaction data from investigational or marketing experience or human studies, but the potential benefit may warrant the use of the drug in pregnant women despite the potential risk.
Off-label: the prescription or use of a drug for a purpose, dose, or patient population not specifically approved or labeled by the FDA.

Based on the review of drug data input in electronic forms, antibiotic prescriptions were obtained, as shown in Table 6. Antibiotic prescriptions were received by 12 patients (12.00%), the majority of which were from the cephalosporin group (11 prescriptions, 91.67%), and one from the azole group as many as 1 prescription (8.33%).

During pregnancy, there is a potential risk of infection of the genitourinary system, and if untreated, it increases morbidity, including low birth weight, premature birth, and spontaneous abortion. However, it is estimated that only 10% of drugs have sufficient data related to their safe and effective use during pregnancy. Antibiotics such as beta-lactams, vancomycin, nitrofurantoin, metronidazole, clindamycin, and fosfomycin are considered safe and effective in pregnancy.

Physiological changes during pregnancy lead to an increased glomerular filtration rate, total body volume, and cardiac output. These changes can lead to pharmacokinetic changes in antibiotics that require dose adjustments or careful monitoring and assessment (Bookstaver et al., 2015).

In this study, data on drug prescriptions during pregnancy were obtained for 40 types of drugs. The profile of drug categories during pregnancy is presented in Table 7, with category C accounting for 50.00% of the cases. Category C drugs can be administered if the benefits of the drug outweigh the risks to pregnant women and fetuses. There was one type of drug with six prescriptions (6.00%), including the off-label category, namely misoprostol. In this study, three types of drugs were found that were not yet known for their safety category in pregnancy: astaxanthin, coral calcium, and mebhydroline napadisylate.

Administrative requirements screening

The prescription review in this study used electronic forms with the selection of administrative

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requirements based on the Technical Guidelines for Pharmaceutical Service Standards in Hospitals (PMK No 72 of 2016) and Permenkes No 24 of 2022 concerning Medical Records. Health Service Facilities (Fasyankes) are required to process electronic medical record information by coding, reporting, and reviewing; therefore, administrative requirements are needed, especially in the review of electronic prescriptions. Administrative screening using electronic forms can identify gaps in electronic prescribing, based on regulatory requirements. Table 8 presents issues related to administrative requirements.

Three administrative requirements were not met: the doctor's signature, patient's weight, and allergy history. This needs to be considered in terms of legal aspects, professional responsibilities, and the safety of drug selection for patients. Utami et al. (2024) evaluated the implementation of electronic prescribing and identified the level of conformity of electronic prescribing features at Roemani Muhammadiyah Semarang hospital at 87.50%, where there was still no data on body surface area in pediatric patients, drug ID based on the national formulary, and prescription progress status.

Pharmaceutics requirements screening

The screening of pharmaceutical requirements in this study used an electronic form based on the Technical Guidelines for Pharmaceutical Service Standards in Hospitals (PMK No. 72 of 2016). The problems related to pharmaceutical requirements are presented in Table 9.

Two pharmaceutical requirements were not met, namely, writing the dosage strength and the administration rules. There were prescriptions for ondansetron without dosage strength (2 out of 17 prescriptions), paracetamol (1 out of 1 prescription), and dexamethasone (1 out of 1 prescription), which could potentially provide dosage strengths that do not follow the expected effects. Ondansetron is available in 4 and 8 mg doses, dexamethasone in 0.5 and 0.75 mg doses, and paracetamol in 500 and 625 mg doses. The recommended dose of ondansetron for hyperemesis gravidarum is 8 mg at intervals of every 8 hours. Dexamethasone is used in a wide dose range, depending on the expected indication. Paracetamol, a pain reliever and antipyretic, also depends on the level of pain and severity of the condition (American Pharmacists Association, 2022).

Table 8. Administrative requirements screening

Administrative aspects (n=100 prescriptions)	No problem		Problem found	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Completeness of Prescriber Data				
Doctor Name	100	100.00	-	-
SIP	100	100.00	-	-
Prescription Date	100	100.00	-	-
Signature	-	-	100	100.00
Completeness of Patient Data				
Patient Name	100	100.00	-	-
RM Number	100	100.00	-	-
Patient Address	100	100.00	-	-
Patient Age	100	100.00	-	-
Patient Weight	-	-	100	100.00
Allergy History	-	-	100	100.00
Completeness of Drug Data				
Medicine Name	100	100.00	-	-
Drug Instruction Writing	100	100.00	-	-
Quantity Requested	100	100.00	-	-
Usage Instruction	100	100.00	-	-

Table 9. Pharmaceutics requirements screening

Pharmaceutical Aspects (n=100 prescriptions)	No problem		Problem found	
	Prescription Frequency	Percentage (%)	Prescription Frequency	Percentage (%)
Dosage Forms	100	100.00	-	-
Dosage Strength	92	92.00	8	8.00
Stability	100	100.00	-	-
Medication Instruction	91	91.00	9	9.00
Duration of Administration	100	100.00	-	-

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Table 10. Clinical considerations screening

Clinical Aspects (n=100 prescriptions)	No problem		Problem found	
	Prescription Frequency	Percentage (%)	Prescription Frequency	Percentage (%)
Presence of Allergies	NA	NA	NA	NA
Indication	92	92.00	8	8.00
Side Effects	100	100.00	-	-
Interaction	97	97.00	3	3.00
Dosage Accuracy	97	97.00	3	3.00
Duration Accuracy	100	100.00	-	-
Duplication/Polypharmacy	98	98.00	2	2.00
Contraindications	94	94.00	6	6.00

Table 11. Causes of DRPs in drug selection and prescribing

1. Drug Selection	DRP	Drug Name
1.1 Not following guidelines/Fornas		
1.2 No indications	√	Astaxanthin
1.3 Unsuitable combination	√	Ca lactate and Blood Supplement Tablets
1.4 Duplication of therapy class	√	Desloratadine and cetirizine
1.5 Incomplete prescription of medication		
1.6 Overuse of drugs for one indication	√	Isoxsuprine and micronized progesterone
2. Dosage Form Selection		
2.1 Incompatible dosage form		
3. Dose Selection		
3.1 Insufficient dose	√	Metoclopramide 5 mg
3.2 Excessive dose		
3.3 Under-dosing instruction		
3.4 Over-dosing instruction	√	Meloxicam and Na diclofenac
3.5 Insufficient/incorrect instructions	√	Misoprostol
4. Determination of Treatment Duration		
4.1 The treatment duration is too short		
4.2 The treatment duration is too long		

There were unclear rules for misoprostol administration (6 out of 6 prescriptions), that is, the method of administration was not written. This is related to the off-label use of the drug and should be closely monitored by health workers, as it can lead to termination of pregnancy. There was an error in writing the rules of administration of meloxicam and Na diclofenac which were given with the rule of 3 times a day when they should have been 2 times a day. The administration of NSAIDs is often associated with cardiovascular events, which are vital during pregnancy.

Clinical considerations screening

Screening of clinical considerations in this study used an electronic form based on the Technical Guidelines for Pharmaceutical Service Standards in Hospitals (PMK No. 72 of 2016) and PCNE Classification for Drug-Related Problems (DRP) V9.1. Problems related to clinical considerations are presented in Table 10. Five clinical considerations were identified in this study: the presence of a consideration of indications for drug selection, potential drug interactions, dose appropriateness, duplication, and contraindications.

The causes of DRP in drug selection and prescription are presented in Table 11. Drug selection requires clinical consideration, namely, there is insufficient evidence for the indication of astaxanthin antioxidants for pregnant women (8 out of 100 prescriptions). The prescription of a combination of calcium lactate and blood supplement tablets has a potential interaction, as calcium can inhibit the absorption of ferrous fumarate if taken together (3 out of 100 prescriptions).

A prescription request was made for metoclopramide 5 mg (1 out of 100 prescriptions), where the dosage strength of the available tablet preparation was 10 mg. In this case, drug delivery could not be confirmed. In this study, there was a duplication of therapeutic classes, namely desloratadine and cetirizine in one prescription, and one indication treated with two drugs with the same pharmacology as a gynecological booster, namely isoxsuprine and micronized progesterone. There was off-label treatment of misoprostol for cervical ripening, which is contraindicated in pregnancy (6 out of 100 prescriptions).

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CONCLUSION

Prescription screening using electronic forms to conduct prescription reviews in pregnant women can improve patient safety by identifying and addressing potential problems based on specific criteria.

By considering the regulatory provisions in electronic prescription services, standard elements of pharmaceutical services, and clinical review classifications elaborated in electronic forms developed by pharmacists, pharmaceutical practice is expected to be optimized.

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AUTHOR CONTRIBUTIONS

Conceptualization, L.A.; Methodology, L.A.; Software, L.A.; Validation, L.A.; Formal Analysis, L.A.; Investigation, N.K.; Resources, L.A., N.K.; Data Curation, L.A., N.K.; Writing - Original Draft, L.A.; Writing - Review & Editing, L.A.; Visualization, L.A.; Supervision, L.A.; Project Administration, L.A.; Funding Acquisition, N.K.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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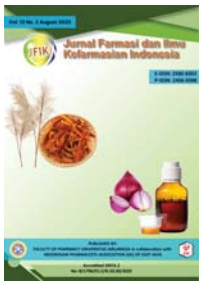

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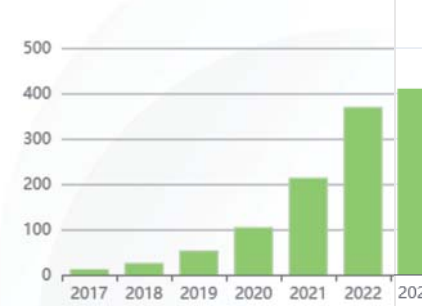

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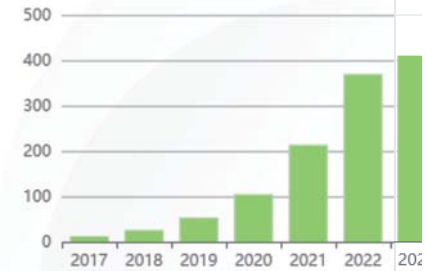

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