



The Survey of Availability of Cholesterol Medications in Pharmacies in Medan, North Sumatera, Indonesia Based on WHO, DOEN, and Fornas Standards

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Abstract

Introduction: Hypercholesterolemia is a major risk factor for cardiovascular diseases. Adequate availability of cholesterol-lowering medications in pharmacies is essential for prevention and treatment. This study aimed to evaluate the availability of cholesterol medications in pharmacies in Medan based on WHO, DOEN, and Fornas standards. **Methods:** A cross-sectional survey was conducted in 100 pharmacies across 21 sub-districts of Medan in 2023 using concurrent and retrospective methods. Availability was calculated as the percentage of pharmacies stocking each medication. **Results:** Overall availability was relatively low. Atorvastatin 20 mg showed high availability (~90%), while several others such as atorvastatin 5 mg and fluvastatin were very low (<10%). Similar patterns were observed under DOEN and Fornas. **Conclusion:** There are significant gaps in the availability of cholesterol medications. Strengthening supply chains and pharmacy inventory management is recommended.

Keywords:

Cholesterol medications
availability
pharmacies
WHO
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Fornas

Introduction

Hypercholesterolemia is one of the major modifiable risk factors for cardiovascular diseases, which remain the leading cause of morbidity and mortality in Indonesia. Elevated cholesterol levels contribute significantly to atherosclerosis and other cardiovascular complications. In recent years, the prevalence of hypercholesterolemia has been increasing rapidly in urban areas such as Medan due to lifestyle changes and dietary patterns (Paulina et al., 2023).

Medan, as the capital of North Sumatera Province, faces a growing burden of non-communicable diseases. Community pharmacies serve as the primary point of access for patients seeking cholesterol-lowering medications. However, the availability of these essential medicines in pharmacies is often inconsistent, influenced by various factors such as procurement policies, supply chain efficiency, and pharmacy management practices (Junaedi et al., 2020).

The World Health Organization (WHO), along with Indonesia's National Essential Medicines List (DOEN) and National Formulary (Fornas), provide important standards and guidelines for the selection and availability of essential medicines (World Health Organization, 2019). Despite the existence of these frameworks, gaps in medicine availability continue to exist in many regions, potentially hindering optimal patient care and increasing the risk of cardiovascular complications (Ginting et al., 2021).

This study aimed to assess the current availability of cholesterol medications in pharmacies in Medan City based on WHO, DOEN, and Fornas standards. The findings are expected to provide valuable insights for policymakers, health authorities, and pharmacy practitioners to improve medicine access and support better cardiovascular health outcomes in the community.

Materials and methods

Materials

This study was conducted in community pharmacies located in Medan City, North Sumatera Province, Indonesia. The research focused on cholesterol-lowering medications listed in the World Health Organization (WHO) Essential Medicines List, the Indonesian National Essential Medicines List (DOEN), and the National Formulary (Fornas). These standards were used as reference to determine the essential drugs that should be available in pharmacies.

Method

This study employed a cross-sectional design with both concurrent (prospective) and retrospective approaches. The concurrent method involved direct observation and interviews with pharmacy staff, while the retrospective method involved reviewing pharmacy inventory records and sales data from January to December 2023.

A total of 100 pharmacies were selected as the sample using proportional sampling across 21 sub-districts in Medan City. The sample size was determined using the Raosoft formula to ensure representativeness of the population of approximately 700 pharmacies in Medan.

Data collection was carried out using a structured observation checklist and survey form specifically designed based on WHO, DOEN, and Fornas lists of cholesterol medications. Availability was recorded as present or absent for each medication at the time of visit.

Availability percentage was calculated using the following formula: $\text{Availability (\%)} = (\text{Number of pharmacies stocking the medicine} / \text{Total number of pharmacies surveyed}) \times 100\%$

The data were analyzed descriptively and presented in tables according to each standard (WHO, DOEN, and Fornas). No ethical approval was required for this study as it was a non-interventional observational survey on medicine availability in pharmacies.

Results and discussion

total of 100 pharmacies across 21 sub-districts in Medan City were surveyed. The overall availability of cholesterol-lowering medications was relatively low to moderate, with notable variations across the three standards

availability According to WHO Standards From the WHO-recommended cholesterol medications, only about half showed reasonable availability. Atorvastatin 20 mg tablet had the highest availability at 90% (high category). Simvastatin 20 mg and 10 mg were also relatively well available at 71% and 70%, respectively. In contrast, several drugs had very low availability, including Atorvastatin 5 mg (1%), Atorvastatin 40 mg (7%), Fluvastatin 40 mg (3%), Pravastatin 20 mg (3%), and Lovastatin 20 mg (21%).

Table 1. Availability of Cholesterol Medications According to WHO Standards (Selected Drugs)

No	Drug Name	Availability (%)	Category
1	Simvastatin 5 mg tablet	3	Low
2	Simvastatin 10 mg tablet	70	Relatively High
3	Simvastatin 20 mg tablet	71	Relatively High
4	Atorvastatin 5 mg tablet	1	Low
5	Atorvastatin 10 mg tablet	63	Relatively High
6	Atorvastatin 20 mg tablet	90	High
7	Atorvastatin 40 mg tablet	7	Low
8	Lovastatin 20 mg tablet	21	Low
9	Fluvastatin 40 mg capsule	3	Low

10	Pravastatin 20 mg tablet	3	Low
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Availability According to DOEN Standards According to the Daftar Obat Esensial Nasional (DOEN), there were 5 recommended cholesterol drugs. All were available in the surveyed pharmacies, but with varying levels. Simvastatin 20 mg and Atorvastatin 20 mg dominated, while Fenofibrate showed very low availability.

Table 2. Availability of Cholesterol Medications According to DOEN Standards

No .	Drug Name	Availability (%)	Category
1	Simvastatin 10 mg tablet	70	Relatively High
2	Simvastatin 20 mg tablet	71	Relatively High
3	Simvastatin 40 mg tablet	3	Low
4	Atorvastatin 20 mg tablet	90	High
5	Fenofibrate 100 mg tablet	3	Low

According to the National Formulary (FORNAS), there are 12 recommended cholesterol-lowering medications. In this study, 10 of them were identified in the pharmacies. Atorvastatin 20 mg tablet demonstrated the highest availability at 90%, reflecting its status as a first-line therapy with high prescription rates. Simvastatin 20 mg (71%) and Atorvastatin 10 mg (63%) also showed relatively good availability. However, several important alternatives had very low availability, such as Rosuvastatin 20 mg (27%), Fenofibrate 100 mg (3%), Fenofibrate 300 mg (13%), Pravastatin 20 mg (3%), and both doses of Gemfibrozil (3%). This indicates that while commonly used statins are well-stocked, many alternative agents recommended by FORNAS for specific patient needs remain scarce in Medan pharmacies.

Table 3. Availability of Cholesterol Medications According to FORNAS Standards

No	Drug Name	Availability (%)	Category
1	Simvastatin 10 mg tablet	70	Relatively High
2	Simvastatin 20 mg tablet	71	Relatively High
3	Atorvastatin 10 mg tablet	63	Relatively High
4	Atorvastatin 20 mg tablet	90	High
5	Rosuvastatin 20 mg tablet	27	Low
6	Pravastatin 20 mg tablet	3	Low
7	Fenofibrate 100 mg tablet	3	Low
8	Fenofibrate 300 mg tablet	13	Low
9	Gemfibrozil 300 mg capsule	3	Low
10	Gemfibrozil 600 mg capsule	3	Low

Conclusion

There are significant gaps in the availability of cholesterol medications in Medan pharmacies compared to WHO, DOEN, and FORNAS standards. Collaborative efforts to improve procurement, distribution, and pharmacy regulations are urgently needed.

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