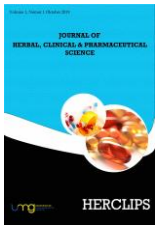

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Profile of the Accuracy of Simvastatin Drug Use in the Community at BP Kulon Housing Complex, RT 02, Gresik)

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Abstract
Simvastatin is a statin drug widely used to lower blood cholesterol levels and prevent cardiovascular disease. Proper use of this drug is crucial to achieve therapeutic effectiveness and minimize the risk of side effects. This study aimed to determine the profile of simvastatin use accuracy among residents of the BP Kulon Housing Complex, RT 02, Gresik. The study used a quantitative descriptive method with a survey approach involving 65 respondents selected using a purposive sampling technique. Data were collected through a questionnaire validated through face validity testing. The results showed that the accuracy of simvastatin use based on several indicators was as follows: correct indication (76.92%), correct dosage (57.96%), correct instructions for use (30.77%), correct duration of administration (38.46%), correct route of administration (53.08%), and awareness of side effects (72.31%). The average accuracy of answers regarding simvastatin use was 57.56%. This can be concluded that the majority of residents of the BP Kulon Housing Complex, RT 02, Gresik have not fully used simvastatin correctly, especially regarding instructions for use and duration of administration.
Keywords: *Cholesterol, Appropriate Use of Drugs, Community, Simvastatin*

Introduction

High cholesterol is one of the major health problems both in Indonesia and globally. Data shows that around 28% of the Indonesian population suffers from high cholesterol (Ministry of Health, 2022), while globally this condition contributes to 7.9% of total deaths. High cholesterol acts as an important risk factor for cardiovascular diseases, including heart disease and stroke, which are the leading causes of death worldwide. The prevalence of high total cholesterol in adults is even reported to reach 39%, with the risk of serious complications such as ischemic heart disease contributing to millions of deaths each year (WHO, 2023).

One of the pharmacological therapies widely used to lower cholesterol levels is simvastatin, a member of the statin group. This drug works by inhibiting the HMG-CoA reductase enzyme, which plays a role in cholesterol biosynthesis in the liver, thereby lowering LDL cholesterol levels while increasing HDL levels (Lee et al., 2021). The effectiveness of simvastatin in preventing cardiovascular complications has been widely proven, but its use must still consider the principles of rational drug use to ensure optimal therapeutic benefits and minimize the risk of side effects (Ministry of Health of the Republic of Indonesia, 2011).

Simvastatin is effective in lowering cholesterol, with an initial dose of 10 mg per day that can be increased up to 40 mg according to the patient's clinical needs (Tjay, 2007). Improper use of simvastatin, in terms of either dosage or regularity, can reduce effectiveness and increase the risk of side effects such as digestive disorders and myopathy (Juanedi, 2012). In addition, because simvastatin therapy is often administered long-term, periodic monitoring of cholesterol levels and liver function is necessary to ensure the safety of the therapy (Dipiro et al., 2020)

In addition to pharmacological therapy, patients with hypercholesterolemia are advised to undergo non-pharmacological interventions, such as healthy lifestyle changes through physical activity and nutritious diet. Exercise activities such as gymnastics have been shown to help reduce cholesterol levels and improve cardiovascular health. The combination of pharmacological therapy with lifestyle modifications is expected to provide a synergistic effect in controlling cholesterol levels (Handayani et al., 2020). However, initial survey results in the community indicate non-compliance in the consumption of simvastatin. In BP Kulon Housing RT 02, out of 10 respondents who consume simvastatin, 5 people do not take it regularly. This non-compliance has the potential to reduce the effectiveness of therapy and increase the risk of cardiovascular complications. Therefore, further research regarding the use of simvastatin in

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the community is very important to assess the level of patient compliance as well as the factors that influence it.

Methodology

This research employed a descriptive quantitative survey approach. The study was conducted from October 2024 to June 2025, with data collection carried out in May–June 2025 in Gresik. The study population consisted of 100 residents, with 65 respondents selected based on inclusion criteria: aged 19–59 years, diagnosed with high cholesterol, and using simvastatin.

Data Analysis

This research data was obtained through direct surveys using questionnaires that were modified from Minanga's (2019) study and adjusted to the objectives and conditions of the community in RT 02 BP Kulon, Gresik. The instrument was designed to gather information regarding the appropriate use of simvastatin, which includes six indicators: accuracy of indication, dose, usage instructions, duration of administration, method of administration, and awareness of side effects. The questionnaire was validated through the face validity method.

Data analysis was carried out using a descriptive-quantitative approach. Respondents' answers were given a score of 1 for the “correct” category and a score of 0 for “incorrect”. Furthermore, the accuracy of drug use was calculated in the form of a percentage using the formula:

$$\text{Percentage} = \frac{Sum\ of\ right\ data}{Total\ Sampel} \times 100\%$$

Result and Discussion

Characteristic Responden

This study aims to determine the accuracy of simvastatin use among the community in BP Kulon Housing RT 02 Gresik. Samples were selected using purposive sampling, namely respondents aged ≥19 years who use simvastatin. Respondents were asked to fill out an identity sheet as well as a questionnaire related to the accuracy of drug use. Respondent characteristics include gender, age, education, and occupation.

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Table 1. Characteristic Responden

No	Characteristic	Category	n (sampel)	(%)
1.	Sex	Male	27	41,54
		Female	38	58,46
		Total	65	100
2.	Age	19-26 y.o	10	15,38
		27- 34 y.o	12	18,46
		35-42 y.o	19	29,23
		43-50 y.o	16	24,62
		51-59 y.o	8	12,31
		Total	65	100
3.	Education	SD	2	3,08
		SMP	6	9,23
		SMA	30	46,15
		D1	-	-
		D2	-	-
		D3	3	4,62
		S1	24	36,92
		S2	-	-
		S3	-	-
		Total	65	100
4.	Job	Employee	30	46,15
		Entrepreneur	5	7,69
		Teacher	4	6,15
		Lecturer	-	-
		Student	6	9,23
		Housewife	20	30,77
		Others	-	-
		Total	65	100

Based on the research results, there were 38 female respondents (58.46%), while males numbered 27 (41.54%). This indicates that the majority of respondents were female. According to Puspasari et al. (2018), women tend to be more active in social interactions and seeking information compared to men. Women's involvement in social activities provides broader access to health information, which aligns with the research finding that the accuracy of simvastatin use in the appropriate indication category reached 76.92%. This indicates that social roles can support a better understanding of medication use.

In terms of age, the majority of respondents were in the 35–42 years age group (29.23%) and the fewest were in the 51–59 years age group (12.31%). Productive-age individuals are considered to have higher awareness in maintaining health. Tarigan et al. (2019) stated that individuals aged 25–44 years have good adaptive ability to information, including health-related information, so this group tends to use simvastatin according to indications.

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The characteristics of education show that respondents with a high school education are the largest group, totaling 30 people (46.15%), while those with an elementary school education are only 2 people (3.08%). Education plays an important role in understanding the use of medication. Individuals with higher levels of education tend to have greater awareness to maintain health in order to live healthily (Pratiwi et al., 2020). This supports the respondents' understanding related to dosages, rules of consumption, and the side effects of simvastatin.

Based on the aspect of employment, the majority of respondents work as employees, totaling 30 people (46.15%), while the smallest number is teachers, which is 4 people (6.15%). Jobs as employees with high activity and limited time tend to affect unhealthy eating patterns, thus increasing the risk of high cholesterol and simvastatin consumption. However, limited time can also reduce compliance with usage rules. Therefore, employment becomes an important factor influencing the accuracy of drug use and emphasizes the need for ongoing education regarding adherence to simvastatin consumption.

Table 2. Simvastatin Tablet Strength Profile

Simvastatin tablet strength	Percentage (%)
10 mg	61,53%
20 mg	38,47%
40 mg	0

Based on Table 2, the majority of respondents (61.53%) used a 10 mg dose of simvastatin, while 38.47% used a 20 mg dose. The 10 mg dose is the primary choice because it aligns with the recommended initial therapy for low to moderate-risk patients, while still requiring regular monitoring to ensure effectiveness and safety (Stone et al., 2014; Grundy et al., 2018). Pharmacologically, 10 mg of simvastatin can reduce LDL levels by ≥30% in patients with mild to moderate dyslipidemia. Raising et al. (2024) reported that 33.82% of patients achieved the target LDL reduction of ≥50%. However, research by Putri et al. (2025) showed that the 20 mg dose is significantly more effective compared to high-intensity atorvastatin ($p = 0.019$), so choosing a higher dose can be considered in patients with high LDL levels or significant cardiovascular risk. Thus, the use of simvastatin should be adjusted according to lipid profile, clinical condition, and patient compliance, although a 10 mg dose remains the first-line therapy due to better tolerability and milder side effects (Raising et al., 2024).

Table 3. Respondent's Cholesterol Level Profile

Total cholesterol level	Percentage (%)
Under 200 mg/dL	56,92%

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High limit 200 – 239 mg/dL	43,08%
High > 240 mg/Dl	0

Based on Table 3, the majority of respondents had a normal total cholesterol level (<200 mg/dL), totaling 37 people (56.92%), consistent with the use of 10 mg simvastatin as low-level therapy (Stone et al., 2014). Dyslipidemia management guidelines also recommend this dose in patients with normal cholesterol levels to prevent an increase in LDL as a major risk factor for cardiovascular disease. This finding indicates that 10 mg simvastatin is effective in maintaining cholesterol levels within a safe range (Raising et al., 2024). However, for patients with cholesterol levels >200 mg/dL, higher doses or combination therapy are required to achieve optimal LDL reduction targets (Perkeni, 2021).

Table 3. Profile of Simvastatin Dose Consumption

Recommended dose	Persentase (%)
Once a day	41,54%
Twice a day	46,15%
3 times a day	12,31%

Based on Table 4, the majority of respondents used simvastatin with a frequency of twice a day, totaling 30 people (46.15%), although the difference compared to once-a-day use was not very significant. The high accuracy in the use of this drug is likely influenced by the respondents' educational background, most of whom had a high school or bachelor's degree, making it easier to understand health information (Lestari, 2020). Simvastatin works by inhibiting the HMG-CoA reductase enzyme in the liver, reducing cholesterol production, and increasing LDL receptors, which play an important role in lowering LDL and triglycerides to reduce cardiovascular risk (Perkeni, 2021). The 10 mg per day dose was the most commonly used, in accordance with hypercholesterolemia therapy standards, as it has been proven effective in lowering cholesterol with minimal side effects compared to higher doses (Raising et al., 2024). However, the potential side effects such as myopathy and liver disorders still need to be monitored, so proper medication use education is very important to maximize the benefits of therapy (Perkeni, 2021).

Table 4. Simvastatin Usage Rule Profile

Rules for using simvastatin	Perccentage (%)
Morning	36,92%
Afternoon	32,31%
Night	30,77%

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Based on Table 5, 24 respondents (36.92%) consumed simvastatin in the morning, possibly influenced by the work routines of the majority of respondents who are employees with busy activities, making the morning a more practical and easily remembered time. However, pharmacologically, simvastatin should be taken at night, because that is when the process of cholesterol synthesis in the liver reaches its peak, so the cholesterol-lowering effect can be more optimal (Pebiansyah et al., 2023).

Accuracy Results of Simvastatin Drug Use

The results of the questionnaire on the appropriateness of simvastatin use conducted in BP Kulon Housing among the residents of RT 02 Gresik can be seen in Table 6.

Table 5. Answer Accuracy Of Indicator Accurate Indication

Question	Perecntage (%)
1. Do you take simvastatin medication to lower your cholesterol levels?	76,92%

Based on Table 6, a total of 50 respondents (79.92%) used simvastatin to lower cholesterol levels, indicating that the majority of residents in RT 02 have used it according to medical indications. This reflects a good understanding of the therapy's purpose, in line with the mechanism of action of simvastatin as a statin that inhibits the HMG-CoA reductase enzyme, thereby reducing cholesterol production and improving LDL level control (Ward et al., 2019).

Table 6. Accuracy of Answers for Correct Dosage Indicator

Question	Jumlah Jawaban Tepat	Persentase (%)
2. Are you taking simvastatin medication according to the dose recommended by your doctor/pharmacist?	48	73,85%

Based on Table 7, as many as 48 respondents (73.85%) used simvastatin according to the dosage recommended by healthcare providers, indicating a good level of adherence. The majority had a high school or bachelor's degree education and were employed as office workers, which is suspected to play a role in increasing understanding and discipline in following dosage rules. Education level and employment status have been proven to affect health literacy and patient adherence (Wulandari et al., 2020).

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Table 7. Answer Accuracy Indicator Correct Usage Rules

Question	Percentage (%)
3. When do you use it?	30,77%

Based on Table 8, as many as 20 respondents (30.77%) used simvastatin at night, in accordance with the best time when cholesterol synthesis occurs maximally, making the therapy more effective (Pebiansyah et al., 2023).

Table 8. Accuracy of Answer Indicator Exact Duration of Administration

Question	Percentage (%)
4. Have you ever stopped using simvastatin because you already felt healthy without needing to see the doctor again?	38,46%

Based on Table 9, as many as 25 respondents (38.46%) did not stop using simvastatin even though they felt healthy, reflecting awareness of the importance of long-term therapy and routine monitoring to prevent cardiovascular risks.

Table 9. Accuracy of Answers Indicator Correct Way of Delivery

Question	Percentage (%)
5. Have you ever used simvastatin together with other cholesterol-lowering drugs?	53,85%
6. Do you take simvastatin with plain water?	52,31%
Rata-rata	53,08%

Based on Table 10, 35 respondents (53.85%) did not consume simvastatin together with other drugs, and 34 respondents (52.31%) used plain water as a solvent, indicating a good understanding regarding drug interactions and the correct method of administration (Baigent et al., 2010).

Table 10. Answer Accuracy of Side Effect Awareness Indicator

Question	Percentage(%)
7. Do you inform your doctor/pharmacist if you experience side effects such as muscle pain in your hands/feet while using simvastatin?	72,31%

Based on Table 11, as many as 47 respondents (72.31%) stated that they would report side effects such as muscle pain to healthcare workers, indicating good awareness in anticipating the potential for rhabdomyolysis (Rosita et al., 2014).

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Table 11. Calculation Results of Drug Use Accuracy

No.	Indicator	Result (%)
1.	Right Indication	76,92%
2.	Exact dose	73,85%
3.	Follow the usage instructions exactly	30,77%
4.	Exact duration of administration	38,46%
5.	The correct way of administration	53,08%
6.	Beware of side effects	72,31%
	Average	**57,56%**

The average accuracy of simvastatin use was 57.56%, with the highest indicator being correct indication (76.92%) and the lowest being correct usage rules (30.77%). The low adherence to usage rules and duration of administration is suspected to be due to minimal education, so continuous counseling is needed to ensure more appropriate and rational drug use.

Conclusion

Based on research on the profile of the accuracy of simvastatin use among the community in Perumahan BP Kulon RT 02 Gresik, it can be concluded that the majority of respondents were female (58.46%), aged 35–42 years (29.23%), last educated at senior high school level (46.15%), and employed as employees (46.15%). The use of simvastatin based on the appropriate indication criteria was 76.92%, based on the appropriate dosage criteria was 73.85%, based on the appropriate usage rules criteria was 30.77%, based on the appropriate duration of administration criteria was 38.46%, based on the appropriate method of administration criteria was 53.08%, and based on the criteria for caution regarding side effects was 72.31%. The average accuracy of answers regarding simvastatin use was 57.56%.

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