Analysis of Community Knowledge, Practices, and Perceptions Regarding the Management of Leftover, Damaged, and Expired Medicines in Tegal Sari Village

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Abstract

Medicines play an important role in maintaining and restoring public health. However, limited knowledge and improper management can cause various problems, such as the accumulation of leftover medicines, the use of expired medicines, and the disposal of medicines that does not comply with regulations. This study aims to evaluate the level of knowledge, actions, and perceptions of the community regarding the management of leftover, damaged, and expired medicines in Tegal Sari Village, Belitang II District, East Ogan Komering Ulu Regency in 2025. This study used a quantitative analytical design with a cross-sectional approach. A total of 86 respondents were selected using purposive sampling. The research instrument was a structured questionnaire that assessed the level of knowledge, actions, and perceptions of the community. Data analysis was performed descriptively and analytically using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the relationship between variables. The study showed a significant relationship between the variables of knowledge, actions, and perceptions of the community regarding the management of leftover, damaged, and expired medicines in Tegal Sari Village in 2025 with a p-value <0.05. Conclusion there is a significant relationship between knowledge, actions, and public perception and the management of leftover, damaged, and expired medicines in Tegal Sari Village. Although the respondents' knowledge and actions were in the good category, medicine management practices were still not fully in accordance with standards. Educational interventions and the provision of medicine disposal facilities are needed to improve safe medicine management behavior.

Keywords: Action, Drug management, Knowledge, Perception, Tegal Sari

INTRODUCTION

Drugs have an important role in maintaining and restoring public health. However, limited knowledge and inappropriate drug management practices in the household environment often cause problems, such as the accumulation of leftover drugs, the use of damaged or expired drugs, and the disposal of drugs that are not in accordance with the provisions. This condition not only reduces the effectiveness of therapy, but also has the potential to cause drug abuse and pollute the environment (Pramestutie et al., 2021) (Rahayu & Rindarwati, 2021).

The results of a number of studies show that people still often throw drugs in garbage cans and waterways without understanding the impact they cause, both on health and the environment (Yuliastika & Amirulah, 2022). The lack of understanding of the correct storage and disposal of medicines and low awareness of the dangers of pharmaceutical waste exacerbate the situation (Azzahra, 2025). In addition, public perceptions of the risks of improper use and disposal of drugs also

vary, thus influencing actions taken in daily life.

Tegal Sari Village, located in Belitang II District, Ogan Komering Ulu Timur Regency, is an area with a large population and access to relatively good health facilities. However, until now there is no data available that specifically describes the knowledge, actions, and perceptions of the local community regarding the management of leftover, damaged, and expired drugs. In fact, management that is not in accordance with procedures has the potential to pose health and environmental risks.

Based on these conditions, this study aims to identify the relationship between the level of knowledge, actions, and perceptions of the community and the management of leftover, damaged, and expired drugs in Tegal Sari Village. The findings of the research are expected to provide a comprehensive picture of the real conditions in the community and become the basis for the preparation of health education programs and more appropriate policies in drug management at the household level.

METHOD

This study uses a quantitative study with a cross-sectional design, as it not only describes the conditions of the respondents but also tests the relationship between variables using Partial Least Squares–Structural Equation Modeling (PLS-SEM) analysis.

The study was conducted in June 2025 in Tegal Sari Village, Belitang II Subdistrict, East Ogan Komering Ulu Regency. The population consisted of all 348 households in the village. The sample size of 86 respondents was determined using the Slovin formula (S = large S) with a 10% margin of error. The sampling technique used was purposive sampling, namely respondents who lived in Tegal Sari Village, managed medicines in their households, and were willing to participate.

The research instrument was a structured questionnaire consisting of four research variables, namely:

1. Knowledge (X1) – 8 indicators
2. Actions (X2) – 8 indicators
3. Perceptions (X3) – 6 indicators
4. Medication management (Y) – 4 indicators

Data collection was conducted by administering the questionnaire directly to respondents with the assistance of enumerators.

The data were analyzed in two stages:

1. Descriptive analysis (frequency and percentage of respondent characteristics).
2. PLS-SEM structural analysis, including:
a. validity test (outer loading, AVE),
b. reliability test (Cronbach's alpha and Composite Reliability),
c. discriminant validity test,
d. hypothesis testing through t-statistic and p-value.

RESULTS AND DISCUSSION

Table 1. Respondent characteristics

Respondent Characteristics	Sum	Percent
Age		
17-25 Years	10	11.63%
26-35 Years	22	25.58%
36-45 Years	30	34.88%
46-55 Years	15	17.44%
56-65 Years	7	8.14%
>66 years old	2	2.33%
Total	**86**	**100.0%**
Gender		
Man	32	37.21%
Woman	54	62.79%
Total	**86**	**100.0%**
Education		
Higher Education	16	18.60%
High School/Vocational School	43	50.00%
SMP	22	25.58%
Elementary/Equivalent	5	5.81%
Total	**86**	**100.0%**
Work		
Self employed	21	24.42%
Farmer	29	33.72%
IRT	34	39.53%
Student	2	2.33%
Total	**86**	**100.0%**

Based on Table 1, it is known that the respondents in this study were predominantly Respondents were predominantly of productive age (36–45 years). The majority of respondents were female (62.79%). The most common level of education was secondary education (high school/vocational high school). Housewives constituted the largest group, which is relevant because they most often manage medicines in the household.

Table 2. Results of the questionnaire validity test with the Smart PLS 4 application

Question	Nilai Outer Loading	Information
X1.1	0.471	Invalid
X1.2	0.429	Invalid
X1.3	0.951	Valid
X1.4	0.469	Invalid
X1.5	0.803	Valid
X1.6	0.923	Valid
X1.7	0.951	Valid
X1.8	0.411	Invalid
X2.1	0.746	Valid
X2.2	0.903	Valid
X2.3	0.939	Valid
X2.4	0.765	Valid
X2.5	0.872	Valid
X2.6	-0.183	Invalid
X2.7	-0.326	Invalid
X2.8	0.793	Valid
X3.1	0.794	Valid
X3.2	0.865	Valid
X3.3	0.804	Valid
X3.4	0.181	Invalid
X3.5	0.819	Valid
X3.6	-0.587	Invalid
Y1	0.697	Invalid
Y2	0.901	Valid
Y3	0.579	Invalid
Y4	0.762	Valid

Illumination: X1: Knowledge, X2: Action, X3: Public Perception, Y: Management of leftover, damaged and expired drugs According to (Hair *et al*., 2017)

Valid indicators (outer loading >0.7):

a. Knowledge (X1): X1.3, X1.5, X1.6, X1.7

b. Action (X2): X2.1, X2.2, X2.3, X2.4, X2.5, X2.8

c. Perception (X3): X3.1, X3.2, X3.3, X3.5

d. Medication management (Y): Y2, Y4

e. Invalid indicators (<0.7):

f. Knowledge: X1.1, X1.2, X1.4, X1.8

g. Action: X2.6, X2.7

h. Perception: X3.4, X3.6

i. Medication management: Y1, Y3

Interpretation: Indicators with an outer loading value < 0.7 do not meet measurement validity and must be excluded to make the model stronger and bias-free..

Tabel 3. Construct reliability and validity

Variabel	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
X1.	0.864	0.882	0.513
X2.	0.771	0.848	0.546
X3.	0.715	0.739	0.512

Variabel	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Y	0.721	0.829	0.553

According to (Hair *et al.*, 2017) Cronbach's good harp *value* is above 0.7. Based on the data in table 3 it is known that *Cronbach's alpa* value for the knowledge variable (X1) is 0.864, community action (X2) is 0.771, community perception (X3) is 0.715, and Management of left, damaged and expired drugs (Y) is 0.721, so all variables have *a good Cronbach's alpa* value .

According to (Rahadi, 2023) the *composite reliability value (rho_c) > 0.7* means that the variable item is reliable, based on Table 3 data, it is known that the *composite reliability value (rho_c)* for the knowledge variable (X1) is 0.882, community action (X2) is 0.848, public perception (X3) is 0.739 and Management of leftover, damaged and expired drugs (Y) is 0.829, thus all the variable items used have reliability because the *composite reliability value (rho_c)* value is more than 0.7.

According to (Hair et al., 2017) the *Average Variance Extracted* (AVE) value > 0.5 means that the condition *of good convergent validity* has been met or shows that the construct can explain 50% or more of the variation of the item. From the data in Table 3, it is known that all variables are valid because each variable has an AVE value of more than 0.5 where the AVE value of each variable, namely knowledge (X1) is 0.513, community action (X2) is 0.546, community perception (X3) is 0.512,

and the management of leftover, damaged and expired drugs (Y) is 0.553.

Tabel 4. Discriminant validity-vornell larcker

Variabel	X1.	X2.	X3.	Y
X1.	0.716			
X2.	0.948	0.739		
X3.	0.775	0.698	0.716	
Y	-0.535	-0.549	-0.600	0.744

Based on the results of the discriminant validity *test* with the criteria (Larcker Fornell, 2016), it was found that the AVE square root value in the results showed that the AVE square root value in variables X1 and X2 was lower than the inter-construct correlation, especially X1–X2 (0.948).

This means that the knowledge and action variables have a very high correlation, potentially causing construct overlap, so that both indicators need to be reevaluated in subsequent studies. Variable Y meets discriminant validity.

Table 5. Hypothesis testing results with smart PLZ 4 application

	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values
(X1) ➔ (Y)	0.313	0.351	0.094	3.337	0.001
(X2) ➔ (Y)	1.040	0.817	0.276	3.771	0.000
(X3) ➔ (Y)	-0.581	0.355	0.279	2.084	.037

Condition: p value < 0.05 means related (h accepted), p value > 0.05 means unrelated (h is rejected), According to Ghozali (2016) t Statistics > 1.96 means significant. Original sample with a Positive value means that the relationship between X and Y is Positive. Original sample has a value of Negative, meaning that the relationship of X to Y is Negative
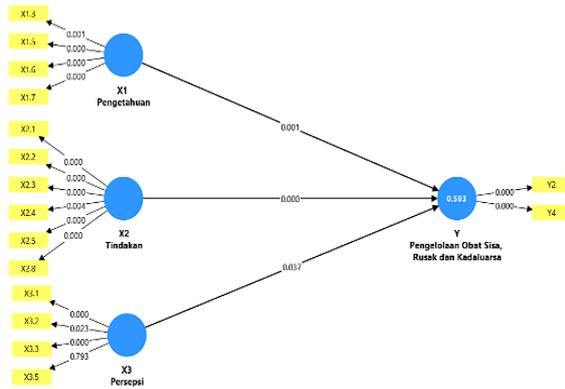
Figure 1. Graphical output–hypothesis testing

Based on table 5 and figure 1 above, it is known that:

1. The Relationship of Knowledge to the Management of Waste, Damaged and Expired Drugs

The results of the analysis were obtained that knowledge had a positive and significant influence on the management of leftover, damaged and expired drugs, with *an original sample* value of 0.313*, t-statistic* of 3.337 (>1.96) and *a p-value* of 0.001 <0.05. This indicates that the increase in the level of public knowledge was followed by an improvement in drug management practices carried out.

These results are consistent with the opinion of Notoatmodjo (2021) in (Wijayanti *et al.*, 2024) who explains that knowledge is a key factor in shaping a person's behavior related to health maintenance efforts. A good understanding of the risks of using expired drugs, proper storage procedures, and safe disposal methods can encourage individuals to take appropriate action.

In line with these results, research conducted by (Yuliastika & Amirulah,

2022) also shows a significant relationship between community knowledge level and drug management behavior in households. Meanwhile, a study (Kurniawati & Yulianto, 2024) in Tegalrejo Hamlet, Sleman, found that 44% of the community has good knowledge about drug storage, although the action aspect has not been described in detail. These findings reinforce the results of this study that good knowledge is indeed important, but must be balanced with the implementation of real implementation in the form of actions so that management can be carried out optimally.

Thus, increasing knowledge through health education activities, socialization activities and the dissemination of easily accessible information can be an effective strategy to reduce the risk of using and disposing of drugs that are not in accordance with procedures.

2. Relationship of Actions to the management of left, damaged and expired drugs

The results of the analysis showed that Community Action had a positive and significant influence on the management of leftover, damaged and expired drugs, with an original sample value of 1,040, *t-statistic* of 3,771 (> 1.96) and *p-value* of 0.000 (< 0.05). These results indicate that the more appropriate the actions taken, the better the quality of drug management in the household.

These results are in line with Green's Health behavioral theory which emphasizes that real behavior is a direct factor that

determines Health status. People who are used to storing drugs according to the provisions, separating expired drugs and disposing of drugs according to procedures will be better able to prevent environmental health risks.

These findings are in line with research (Yuliastika & Amirulah, 2022) which shows that although 31.9% of respondents have a good level of knowledge, only 71.4% actually take positive action in the management of damaged and expired drugs. This confirms that the success of drug management is determined more by real practice than relying solely on knowledge. These results are also in line with research (Rahayu & Rindarwati, 2021) which shows that correct drug storage and disposal behavior contributes to a reduced risk of environmental pollution and drug abuse.

Thus, interventions that encourage the formation of positive habits such as training, educational campaigns and the provision of drug disposal facilities, are strategic steps in improving the drug management system in the community.

3. Perception Relationship to the Management of Leftover, Damaged and Expired Drugs

Based on the results of the analysis, perception has a negative but significant influence on the management of leftover, damaged and expired drugs, with an original sample value of -0.581, T-Statistic of 2.084 (>1.96), and P-value of 0.037 (<0.05). This means that even though the public has a certain view or assessment of the importance of drug management, this view is not always followed by appropriate actions, even in some cases pointing in the opposite direction.

This phenomenon reflects the existence of an attitude-behavior gap, where knowledge or awareness has not been completely eliminated in real action. Factors such as limited means of disposal, the influence of old habits or low risk perception can affect such incompatibility. These findings are in line with research (Kurniawati & Yulianto, 2024) which found that even though respondents had positive values, their medication management behavior still did not meet the recommended standards.

This result is different from a study (Rahayu & Rindarwati, 2021) which states that low public perception of drug risks is a factor causing inaccurate drug management practices. On the contrary, the results of this study show different conditions, where the public has a relatively good perception, but this perception has not been fully reflected in positive behavior in drug management.

Therefore, efforts are needed to align perception with action through *experiential learning*, simulations, and examples of best practices that can be adopted by society.

CONCLUSION

1. Knowledge has a positive and significant effect on the management of leftover, damaged, and expired medicines in Tegal Sari Village in 2025 with a p-value of < 0.001. 1. The better the community's knowledge of medicine

storage, use, and disposal, the more appropriate the medicine management practices will be.

2. Community actions also have a positive and significant influence on drug management in Tegal Sari Village in 2025 with a p-value < 0.000. Concrete actions such as separating expired drugs, reading storage instructions, and not disposing of drugs carelessly contribute directly to safer drug management.

3. Perception has a negative but significant influence on drug management in Tegal Sari Village in 2025 with a p-value < 0.037. This means that even though some people have a good perception of the importance of drug management, this perception is not always translated into appropriate behavior—influenced by limited disposal facilities, old habits, and a lack of socialization regarding drug risks.

To improve medicine management practices in the community, strategic measures are needed, such as:

1. Continuing health education through counseling, information campaigns, and regular socialization.

2. Provision of drug return boxes at health facilities, village halls, or integrated health service posts

3. Improvement of information facilities, including instructions on medicine disposal, educational posters, and digital access to information from health workers.

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