

# PROPER PRACTICE OF UNUSED MEDICINE : OPINIONS OF PATIENTS AT PUSKESMAS 1 UMBULHARJO YOGYAKARTA

*by Ana Hidayati*

---

**Submission date:** 07-Apr-2023 08:58AM (UTC+0700)

**Submission ID:** 2058044619

**File name:** 25679-67846-1-RV\_revisi\_-\_Copy.edited.edited.dot (189.5K)

**Word count:** 3853

**Character count:** 21642

**PROPER PRACTICE OF UNUSED MEDICINE : OPINIONS OF PATIENTS AT  
PUSKESMAS 1 UMBULHARJO YOGYAKARTA**

**Ana Hidayati<sup>a</sup>, Ela Fadilah Pramsa, Woro Supadmi**

*Faculty of Pharmacy, Ahmad Dahlan University*

*Correspondent: ana.hidayati@pharm.uad.ac.id*

*Submitted :..... Reviewed :..... Accepted:.....*

**ABSTRACT**

Properly managing unused medications is crucial to mitigate potential adverse effects on public health and the environment. This investigation aims to ascertain patients' perceptions and explore potential correlations between demographic variables and attitudes toward disposing of unused medications. The present study employed an analytical observational design utilizing a cross-sectional approach. A sample size of 96 patients was obtained using the Lameshow formula. The study employed a purposive sampling technique. The study population comprised individuals who fulfilled the eligibility criteria and sought medical attention at the Umbulharjo 1 public health center in March-June 2022. The research instrument was a data collection sheet. Data analysis was completed using the chi-square test. According to the respondents' views on new medication disposal practices, most patients (46.9%) returned unused medications to healthcare professionals. Gender and disposal practices are significantly correlated, such as keeping unused medication at home ( $p=0.002$ ) and providing it to the patient's family ( $p=0.049$ ). Additionally, there is a strong association ( $p = 0.000$ ) between educational background and the practice of keeping unused medications at home. According to this study's findings, up to 45 individuals (46.9%) returned unused medications to healthcare providers. There is a correlation between gender, socioeconomic factors, educational background, and attitudes toward discarding unneeded medications.

**Keywords:** Opinions, practice, handling, unused drugs.

---

**Corresponding author:**

Name,  
Affiliation of author,  
Address.

mail:  
No Hp:

## INTRODUCTION

Over 1,000,000 tons of medicine are consumed annually globally, and this number is increasing. It is estimated that 4.5 trillion medications<sup>13</sup> dosages were used up in 2020 for over-the-counter and doctor-prescribed drugs (Bungau et al., 2018). According to the World Health Organization (WHO), half of the patients do not properly ingest medication, and more than half of prescriptions are given, given, and sold incorrectly (Kemenkes RI, 2011).

Incorrect medicine disposal poses a direct impact on individual health as the drugs which should be thrown away are consumed by people. In addition, disposing of drugs can turn into environmental pollution<sup>12</sup> (Amster, 2016). The most typical method of coping with unused medications is tossing them in the trash or flushing them down the toilet (Tong A, et al., 2011). *Riset kesehatan dasar's* (Riskesdas') fundamental health study shows 35.2% of Indonesian households store drugs, including potent, over-the-counter, traditional, and unidentified medicines. Of these drugs, 47% are residual medications (Riskesdas, 2013). According to a study by Kristina et al. (2018), over 70% of Yogyakarta residents discard unused medications and household waste in the same location without first receiving appropriate treatment.

Different behaviors towards unused medicines are affected by one's knowledge, opinion, or attitude. By following the right and safe process when disposing of unused medications, higher quality in those areas can increase responsibility towards health and the environment (Gifford & Nilsson, 2014). In light of the aforementioned fact, a study was conducted to determine how patients at Puskesmas Umbulharjo 1 in Yogyakarta dispose of unused medications and the relationship between patient demographics and disposal methods.

## MATERIALS AND METHOD

### Materials

This study utilized a questionnaire to collect the data. The questionnaire was adopted from Bashar et al. (2017) in research entitled "Disposal Practices of Unused and Expired Pharmaceuticals among the General Public in Kabu" and from Insani et al. (2020) research entitled "Improper disposal practice of unused and expired pharmaceutical products in Indonesian households". The questionnaire was validated in Insani's study with an alpha Cronbach's value of 0.854 (> 0.7), so the questions in the questionnaire were deemed valid and reliable (Riwidikdo, 2008).

There were two parts to the questionnaire. The first one dealt with the demographic information<sup>8</sup> of the respondents, including their age, gender, educational background, and employment situation. The second section sought information on managing medications by asking people a variety of questions, such as whether they had any unused medications at home, what types of medications they had, why they were<sup>5</sup> not using them, what they were, what they did with them when they were no longer effective, whether they had ever received information on proper drug disposal techniques, and whether they were aware of the effects of improper disposal techniques on the environment.

### Methods

This research took place in March-June 2022 at Puskesmas Umbulharjo 1 Yogyakarta. Primary data were obtained from the aforementioned questionnaire. Before collecting the data, a proposal was designed and followed by the completion<sup>22</sup> permission letters. The first agenda was proposing a permit for research and ethical clearance to the Dean of the Faculty of Pharmacy, Ahmad Dahlan University. After that, a permit for research was proposed to Puskesmas Umbulharjo 1 Yogyakarta. The next stage involved fulfilling the administrative requirement,

gathering data in accordance with the characteristics of the research that was included, and researchers outlining the purpose, methodology, and approach of the study. The questionnaire-filling procedure was then outlined. Informed consent was sent to the respondent candidates. The questionnaire that the respondents had completed was then gathered and double-checked by the researchers.

The participants in this research who responded met several requirements, including being at least 16 years old, having taken medication, and possessing drugs that had not been used. Respondents who did not complete the required fields were not included in the study. There were 45 respondents who were engaged in the purposive sampling technique used in data collection.

### Data Analysis

In this research, univariate and bivariate analyses were used for data analysis. A univariate analysis was used to explain the research data. Patients' characteristics, the causes of why drugs were left unutilized, and patients' perspectives on the handling of unused medications were all included in the univariate data at Puskesmas Umbulharjo 1. At Puskesmas Umbulharjo 1 Yogyakarta, bivariate analysis was used to examine the relationship between patients' sociodemographic traits, such as age, educational background, gender, and employment status, and their views on how to dispose of unused medications correctly. Chi-square was used to evaluate the data at a 95% significance level.

## RESULTS AND DISCUSSION

The current study was carried out in April–May 2022. With the letter identification number 012202008, an ethical permission request was sent to Ahmad Dahlan University's research ethics committee before the research was carried out. After receiving approval from the Health Office of *Daerah Istimewa Yogyakarta* and *Puskesmas Umbulharjo 1 Yogyakarta*, the study was able to begin.

This study used a cross sectional approach along with analytical observation. To select the sample based on inclusive and exclusive parameters, purposeful sampling was used. A questionnaire that had previously undergone reliability testing and validation was used to gather data.

### Patients' Characteristics

The participants in this study were 96 patients from Puskesmas Umbulharjo 1 Yogyakarta who were willing to participate in the study and who met the inclusion criteria. Table 1 presents the patients' characteristics.

Table 1. Characteristics of Patients at *Puskesmas Umbulharjo 1 Yogyakarta*

Characteristic	Number (n=96)	Percentage (%)
<b>Gender</b>		
Male	48	50
Female	48	50
<b>Age</b>		
18-30 years old	54	56.3
31-40 years old	13	13.5
41-49 years old	17	17.7
50-59 years old	9	9.4
≥ 60 years old	3	3.1
<b>Education</b>		
Primary School	2	2.1
Junior High School	6	6.3
Senior High School	46	47.9
Diploma	10	10.4
S1/S2/S3	32	33.3
<b>Working status</b>		
Employee	21	21.9
Businessman	11	11.5
None	6	6.3
Student	24	25.0
Entrepreneur	34	35.4
<b>Having unused medicine</b>		
Yes	70	72.9
No	26	27.1
<b>Ever receiving information about proper medicine disposal</b>		
Yes	25	26
No	71	74
<b>Knowing that incorrect medicine disposal poses a danger to the environment and residents' health.</b>		
Yes	76	79.2
No	20	20.8

Based on Table 1, 48 (50%) out of 96 patients are male and the other 48 are female. More than half of the respondents (53.3%) are between 18 – 30 years old. This finding agrees with previous research by Alshareef et al. (2016) in Riyadh, Saudi Arabia which identified 44.8% patients from the age group of 18 – 34 years old. The educational background of most respondents (46 patients, 47.9%) is senior high school. Four (0.9%) patients graduated primary school. This result is similar to a study conducted in Riyadh (Al-Shareef et al., 2016) and Serbia (Kusturica et al., 2012). Meanwhile, the working status is dominated by entrepreneur (34 respondents or 35.4%). This is in line with research carried out in Malta where most patients are workers (47.6%) (West et al., 2016).

The characteristics of respondents seen from the ownership of unused medicines in their houses, 70 patients (72.9%) save or dispose of unused drugs in their houses. This fact echoes the finding of the research conducted in Yogyakarta mentioning that out of 324 households surveyed, the majority of respondents (85%) keep unused medicines in their houses (Kristina et al., 2018). Furthermore, 71 patients (74%) admit that they have never received information on how to practice drug disposal properly. This result turns out to be lower than other studies among which are studies done in Riyadh (Al Azmi et al., 2017) for 83% of patients, in Tanzania for 85% of patients (Baltazary, 2013) and in Washington for 80.3% of patients have never received information on proper drug disposal (Seehusen & Edwards, 2006).

#### Classification of Unused Medicines

This study reveals that some patients owned more than one unused medicine. The classification of those unused medicines they possessed can be seen in Table II.

**Table II. Classification of Unused Medicines Owned by Patients at Puskesmas Umbulharjo 1 Yogyakarta within the Period of April-June 2022**

Classification of Unused Medicines	Number (n=149)	Percentage (%)
NSAID (Paracetamol, Ibuprofen)	36	37.5
Vitamin and nutrition supplement	28	29.2
Antibiotics	17	17.7
Cough medicine	14	14.6
Antihistamine	12	12.5
Anti-hypertension medicine	9	9.4
Anti-ulcer medicine	8	8.3
Anti-diabetes medicine	4	4.2
Herbal medicine	4	4.2
Others	17	17.7

Referring to the above table, it can be seen that the most unused medicine classification owned by patients is NSAID (anti-inflammation nonsteroid) with a percentage of 37.5%, followed by vitamin and nutrition complement at 29.2% and antibiotics at 17.7%. This study shares similar findings with some studies showing that analgesia is the most commonly used for self-medication, mainly for treating toothache, headache, joint pain, and dysmenorrhea. Vitamins and supplements are the second highest after NSAID with 29.2%. Khusna et al. (2021) in their research identify an increase in vitamin and supplement sales before and after the pandemic. Since NSAIDs are believed to be medications that can lessen the signs and symptoms of inflammation in any disease state, many people keep NSAIDs on hand. The reason why NSAIDs are medications that the general population stores them so widely is unknown with certainty and has not been thoroughly investigated. Thus, it is essential to investigate and study this condition further.

Antibiotics are the third highest medicine type owned by patients in their houses. Wondimiu et al. (2015) affirm the phenomenon above and add that the high amount of unused antibiotics may indicate bacterial resistance towards antibiotics. Antibiotics, hypertension medicine, and diabetes medicine are prescription drugs. The fact that there are remaining medicines of these types indicates misunderstanding and low obedience towards medicine consumption. Doctors and pharmacists as health practitioners who play roles in medicine prescription and

*Judul manuskrip (Penulis pertama)*

administration to patients should consider educating patients to properly complete the medication and consume medicines as prescribed. Thus, unused medicines from chronic and infectious diseases can be prevented.

#### Reasons for Unused Medicines

Unused medicines can be caused by patients' low obedience, irrational medicine excess or prescription, or lack of monitoring towards potent drug purchase with no doctor's prescription. Among those factors causing medicines to not be consumed anymore are medication change, patients' death, patients' recovery, or medicine expiration. This study discloses that some patients have more than one reason why they stop consuming drugs. Those reasons are written in the following table.

**Table III. Reasons for Unused Medicines of Patients at Puskesmas Umbulharjo 1 Yogyakarta**

Reasons for Unused Medicines	Number (n=133)	Percentage (%)
Improved health condition	49	51
Expiration	26	27.1
Medication change	19	19.8
Excessive medicine amount	15	15.8
Side effects or allergy	7	7.3
Damaged or unclear medicine label	4	4.2
Not knowing the medicine function	2	2.1
Difficulty in understanding the drug use instruction	0	0
Others	11	11.5

The primary reasons for those unused medicines are improved health conditions 51% and drug expiration 27.1%. Another study carried out in Thailand derived a similar finding in which the majority of patients (73.5%) experience betterment and recovery so that they do not feel the need to continue the medication (Wongpoowarak et al., 2004). In addition, an empirical investigation in Barcelona shows that better health condition is the second highest reason after drug expiration for 24.91% (Coma et al., 2008). Socialization towards patients regarding their medications and diseases during communication, information, and education about the drug- help to increase patients' obedience to consuming their medicines. Besides, rational drug prescription (adequate for patients' needs) reduces residual drugs.

#### Distribution of Opinions Related to Unused Medicine Disposal Practice of Patients at Puskesmas Umbulharjo 1 Yogyakarta

The following table presents information on patients' opinions at Puskesmas Umbulharjo 1 Yogyakarta regarding the practice of medicine disposal.

**Table IV. Opinions of Patients at Puskesmas Umbulharjo 1 Yogyakarta Regarding Unused Medicine Disposal Practice**

Opinions Regarding Unused Medicine Disposal Practice	Response	Number (n= 96)	Percentage (%)
Returning to the health workers	Yes	45	46.9
	No	51	53.1
Returning to the pharmacy	Yes	42	43.8
	No	54	56.3
Flushing in the sink	Yes	36	37.5
	No	60	62.5
Storing at home	Yes	30	31.3
	No	66	68.8
Flushing in the toilet	Yes	27	28.1
	No	69	71.9
Giving to patients' relatives or family	Yes	15	15.6
	No	81	84.4

Based on the above Table VI, regarding patients' behaviors on unused medicine disposal, 46.9% of total patients perceive that returning the drugs to the health officials is the proper practice. 43.8% of patients confirm that the correct procedure is returning the pharmaceuticals to the pharmacy. Those facts are in line with the research finding conducted in Kuwait (Abahussain et al., 2006) stating that 54% of patients consider safe medicine disposal by returning it to the pharmacy.

Giving unused medicines back to pharmacies or health workers is the most proper procedure of medicine disposal, or in some countries, it is called a take-back program (Bashaar et al., 2017). The pharmacy will collect and perform drug disposal according to the legal system and law.

Drug disposal can be done by referring to the guide from WHO, health office, and campaigns such as *Gema Cermat*- a movement of intelligent drug disposal- or *Dagusibu* – get, use, store, and dispose of drugs- by destroying solid drugs first before throwing it away to the trash bin, and for liquid medicine, by dispensing and diluting it first before throwing the bottles to the container (Depkes RI, 2008; Bashaar, 2017).

#### Reasons of Patients' at Puskesmas Umbulharjo 1 Yogyakarta in Selecting Unused Medicine Disposal Methods

The respondents' reasons for choosing the medicine disposal method are presented in Table VIII.

**Table VIII. Reasons in Choosing Unused Medicine Disposal Methods of Patients at Puskesmas Umbulharjo 1 Yogyakarta**

Reason in Choosing Unused Medicine Disposal Method	Number (n= 140)	Percentage (%)
Preventing drug abuse	76	79.2

*Judul manuskrip (Penulis pertama)*



Preventing environmental pollution	41	42.7
Preventing side effect	23	24

When given question of the reason in choosing the safe drug disposal, 76 patients (79.2%) mention to avoid drug misuse, 41 patients (42.7%) respond to prevent environmental pollution, and 23 patients (24%) state to preclude undesired side effects. This result difference from a study carried out in India by Gupta et al. (2013) who report that more than half of their respondents (55%) believe that medicine is used to cure patients, so that it does not generate negative impact for the surrounding environment.

How to dispose of unused medicines properly can be a part of socialization materials to improve the community's understanding of the related matter. With this effort, the citizens are aware that incorrect medicine disposal poses undesired effects for individuals and the public. By doing so, the citizens will need to know how to properly dispose of their unused remaining drugs. This goes along with what Angi'enda and Bukachi (2016) mention that a systematic and coordinated movement is necessary to campaign the existing risks, negative impacts, and management of unused medicines. The training can be done by the government and related institutions responsible for drug management, such as the pharmacy community or pharmacy industry.

#### **Correlation Between Patients' Characteristics and Proper Unused Medicine Disposal at Puskesmas 1 Umbulharjo Yogyakarta**

The data which had been analyzed using univariate analysis with descriptive method at Puskesmas Umbulharjo 1 Yogyakarta were analyzed using chi square method with SPSS software to figure out the correlation between respondents' characteristics with the existing variables. The analysis result showed that there was a significant correlation between gender and handling unused medicine by storing it at home ( $p=0.002$ ) and returning it to the patients' family or relative ( $p=0.049$ ) with a confidence level of 95% or  $\alpha = 0.05$ . In addition, a relationship was found between education background with unused medicine disposal practice.

The patients' education background was categorized into lower and higher education. Lower education categories included non-school-graduates, primary school graduates, and high school graduates, while the higher education category covers diploma, undergraduate, and graduate school. This study revealed a significant correlation between education background and drug disposal practice of storing it at home with a value of  $p=0.000$  with a confidence level of 95% or  $\alpha = 0.05$ . In contrast, no significant relationship was found between age, working status, and unused medicine disposal practice.

The correlation between patients' characteristics and unused medicine disposal practice can be seen on the following Table VIII.

**Table VIII. Correlation Between Patients' Characteristics and Opinions on Safe Disposal Practice of Unused Medicine at Puskesmas Umbulharjo 1 Yogyakarta**

Characteristic	Opinions on Safe Disposal Practice of Unused Medicine ( <i>p-value</i> )												
	Flushing to the sink		Storing at home		Returning to the pharmacy		Flushing to the toilet		Giving to relatives		Returning to health workers		
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
<b>Gender</b>													
Male	16	32	22	26	24	24	37	11	37	11	37	27	21
Female	20	28	8	40	18	30	32	16	44	4	44	18	30
		<i>p</i>		<i>p</i>		<i>p</i>		<i>p</i>		<i>p</i>		<i>p</i>	
		0.399		0.002		0.217		0.256		0.049		0.066	
<b>Age</b>													
<45	25	51	25	51	34	42	56	20	66	10	66	35	41
>45	11	9	5	15	8	12	13	7	15	5	15	10	10
		<i>p</i>		0.498		0.704		0.442		0.194		0.753	
<b>Education Background</b>													
(Lower Education)	23	31	26	28	25	29	38	16	43	11	43	27	27
(Higher Education)	13	29	4	38	17	25	31	11	38	4	38	18	24
		<i>p</i>		0.000		0.569		0.710		0.147		0.487	
<b>Working Status</b>													
Employed	9	23	10	22	11	21	26	6	27	10	27	13	19
Unemployed	27	37	20	44	31	33	43	21	54	5	54	32	32
		<i>p</i>		1.000		0.190		0.149		1.000		0.386	

Age, gender, and socioeconomic level have a role in determining individual attitudes and behavior. Age determines the maturity of thinking, Education is one of the things that affect the mindset, so personal characteristics indeed have a significant influence on behavior, in this case, is the behavior of handling unused drugs. This aligns with Notoatmojo's opinion (2012) that maintenance behavior depends entirely on knowledge, education, understanding, awareness, and willingness in decision-making. Increasing age also affects behavior change. Adult education is generally more varied, because adults already have knowledge, attitudes, and skills that have been possessed for years.

This condition requires the role of pharmacists as agents of change in providing education to the public about how to manage well. This effort can also be carried out as a suggestion for more in-depth research on the impact and role of pharmacists in increasing public awareness related to the management of unused medicine.

## CONCLUSION

Opinions on patients' practice of unused medicine reveal that the majority of patients return unused medicine to health workers for as many as 45 patients (46.9%). There is a correlation between gender and opinion on drug disposal practice of storing the drug at home with a value of  $p=0.002$  and returning the drug to patients' relatives with a value of  $p=0.049$ . In addition, there is a significant relationship between patients' education background and medicine disposal practice of storing it at home with a value of  $p=0.000$  with a confidence level of 95% or  $\alpha = 0.05$ .

## ACKNOWLEDGEMENT

We would like to express our gratitude to everyone who contributed to the completion of this study, particularly the Umbulharjo Health Center

## REFERENCES

- AlAzmi, A., AlHamdan, H., Abualezz, R., Bahadig, F., Abonofal, N., & Osman, M. (2017). Patients' Knowledge and Attitude toward the Disposal of Medications. *Journal of Pharmaceutics*, 2017(2010), 1–9.
- Al-Shareef, F., El-Asrar, S.A., Al-Bakr, L., Al-Amro, M., Alqahtani, F., Aleanizy, F., & Al-Rashood, S. (2016). Investigating the disposal of expired and unused medication in Riyadh, Saudi Arabia: a cross-sectional study. *International journal of clinical pharmacy*, 38(4), 822-828.
- Amster, E. D. (2016). Mitigating Pharmaceutical Waste Exposures: Policy and Program Considerations. *Israel Journal of Health Policy Research*; 5; 1–4.
- Bashaar, M., Thawani, V., Hassali, M. A., & Saleem, F. (2017). Disposal practices of unused and expired pharmaceuticals among the general public in Kabul. *BMC publichealth*, 17(1), 1-8.
- Bungau, S., Tit, D. M., Fodor, K., Cioca, G., Agop, M., Iovan, C., Cseppento, D. C. N., Bumbu, A., & Bustea, C. (2018). Aspects regarding the pharmaceutical waste management in Romania. *Sustainability (Switzerland)*, 10(8),
- Coma, A. P. Modamio, C.F. Lastra, M.L. Bouvy and E.L. Marino. 2008. Returned medicines in community pharmacies of Barcelona, Spain. *Pharm World Sci*. 30: 272–277.
- Depkes RI, 2008. *Materi Pelatihan Peningkatan Pengetahuan dan Keterampilan Memilih Obat bagi Tenaga Kesehatan*. Jakarta: Direktorat Bina Penggunaan Obat Rasional. Direktorat Jenderal Bina Kefarmasian Dan Alat Kesehatan Departemen Kesehatan Republik Indonesia

- Gifford, R. & Nilsson, A., 2014. Personal and Social Factors that Influence Pro- environmental Concern and Behavior: A Review. *Int J Psychol*, 49(3), pp. 141- 157.
- Kementrian kesehatan Republik Indonesia, 2011, *Modul Penggunaan Obat Rasional*. Jakarta: Dirjen Bina Kefarmasian dan Alat Kesehatan, Departemen Kesehatan Republik Indonesia.
- Kristina, S. A., Wiedyaningsih, C., Cahyadi, A., Ridwan. B. A., 2018. A Survey on Medicine Disposal Practice among Household in Yogyakarta. *Asian Journal of Pharmaceutics*, 12(3). 955-958
- Kusturica, M. P., A. Sabo, Z. Tomic, O. Horvat and S. Zdravko. 2012. Storage and disposal of unused medications: knowledge behavior, and attitud among Serbian people'. *International Journal of Clinical Pharmacy*, 34(4), pp. 604-610
- Notoatmodjo, 2010, *Health Promotion Theory and Application*, Revised Edition, Rineka Cipta, Jakarta
- Riskesdas, 2013. *Riset Kesehatan Dasar Tahun 2013*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Tong, A., Peake, B. & R, B., 2011. Disposal Practices of Unused Medications Around The World. *Environ Int*, 37(1):292-8
- West, L. M., 2015. Medication Wastage: The Current Situation. *Journal of the Malta College of Pharmacy Practice*, Issue 2. 25-28
- Wondimu, A. Molla, F., Demeke, B., Eticha, T., Assen, A., Abrha, S. & Melkam, W. (2015). Household Storage of Medicines and Associated Factors in Tigray Region, Northern. *PLoS ONE*; 10; 1–9
- Wongpoowarak, P., U. Wanakamane, K. Panpongtham, P. Trisdikoon, W. Wongpoowarak and S. Ngorsuraches. 2004. Unused medications at home - reasons and costs. *International Journal of Pharmacy Practice*. 12:141–148



**Pharmaciana**

Vol.x, No.x, Bulan 201x, Hal. xx-xx

ISSN: 2088 4559; e-ISSN: 2477 0256

DOI: 10.12928/pharmaciana.xxxx.xxxx

31

---

# PROPER PRACTICE OF UNUSED MEDICINE : OPINIONS OF PATIENTS AT PUSKESMAS 1 UMBULHARJO YOGYAKARTA

## ORIGINALITY REPORT

12%

SIMILARITY INDEX

9%

INTERNET SOURCES

5%

PUBLICATIONS

6%

STUDENT PAPERS

## PRIMARY SOURCES

1	<a href="http://eprints.uad.ac.id">eprints.uad.ac.id</a> Internet Source	4%
2	Submitted to Universitas Sanata Dharma Student Paper	1%
3	D.R. Harkness, L. Tsai, E.R. Stadtman. "Bacterial degradation of riboflavin", Archives of Biochemistry and Biophysics, 1964 Publication	1%
4	Pooja Maharaj, Sooraj Baijnath, Panjasaram Naidoo. ""Knowledge and practices of HIV infected patients regarding medicine disposal among patients attending public ARV clinics in KwaZulu Natal, South Africa"" , BMC Public Health, 2020 Publication	<1%
5	<a href="http://www.cell.com">www.cell.com</a> Internet Source	<1%
6	Cliford Ebontane Ebong, Innocent Mbulli Ali, Hortence Jeanne Fouedjio, Estelle Essangui et	<1%

al. "Diagnosis of malaria in pregnancy: accuracy of CareStart™ malaria Pf/PAN against light microscopy among symptomatic pregnant women at the Central Hospital in Yaoundé, Cameroon", Malaria Journal, 2022

Publication

7

Theodore S. Theodore, Gary B. Calandra. "STREPTOLYSIN S CARRIER ACTIVITY OF LIPOTEICHOIC ACID", Elsevier BV, 1981

Publication

<1 %

8

[osuva.uwasa.fi](http://osuva.uwasa.fi)

Internet Source

<1 %

9

Ika Sari Wahyuni-TD, Hasnah Haron, Yudi Fernando. "The effects of good governance and fraud prevention on performance of the zakat institutions in Indonesia: a Sharīah forensic accounting perspective", International Journal of Islamic and Middle Eastern Finance and Management, 2021

Publication

<1 %

10

[ojs.unimal.ac.id](http://ojs.unimal.ac.id)

Internet Source

<1 %

11

Meles Tekie Gidey, Alem Habtu Birhanu, Afewerki Gebremeskel Tsadik, Abraham Gebrezgabiher Welie, Brhane Teklebrhan Assefa. "Knowledge, Attitude, and Practice of Unused and Expired Medication Disposal among Patients Visiting Ayder

<1 %



Comprehensive Specialized Hospital", BioMed  
Research International, 2020

Publication

12

Ambrocio Teodoro Esteves Pairazaman, Juan Manuel Parreño Tipian, Antonio Guillermo Ramos Jaco, Taylor Anthony Luján Orbegón et al. "Knowledge and attitude of the people in San Juan de Miraflores towards the disposal of medicines", F1000Research, 2022

Publication

<1 %

13

EL Walid EL Hassan, Alanoud Ahmed Al Taisan, Amal Khaleel Abualhommos. "Knowledge and practices concerning the storage and disposal of home medications among people in the eastern region of Saudi Arabia: A cross-sectional study", Saudi Pharmaceutical Journal, 2022

Publication

<1 %

14

[japsonline.com](http://japsonline.com)

Internet Source

<1 %

15

[mafiadoc.com](http://mafiadoc.com)

Internet Source

<1 %

16

[pdfcoffee.com](http://pdfcoffee.com)

Internet Source

<1 %

17

[storage.googleapis.com](http://storage.googleapis.com)

Internet Source

<1 %

[www.tandfonline.com](http://www.tandfonline.com)

18

Internet Source

&lt;1 %

19

Tatang Tajudin, Ikhwan Dwi Wahyu Nugroho, Velya Faradiba. "ANALISIS KOMBINASI PENGGUNAAN OBAT PADA PASIEN JANTUNG KORONER (Coronary Heart Disease) DENGAN PENYAKIT PENYERTA DI RUMAH SAKIT X CILACAP TAHUN 2019", Pharmaqueous : Jurnal Ilmiah Kefarmasian, 2020

Publication

&lt;1 %

20

[pascalsimeon.free.fr](http://pascalsimeon.free.fr)

Internet Source

&lt;1 %

21

[link.springer.com](http://link.springer.com)

Internet Source

&lt;1 %

22

[www.researchgate.net](http://www.researchgate.net)

Internet Source

&lt;1 %

23

Alem Endeshaw Woldeyohanins, Meaza Adugna, Tigabu Mihret, Zemene Demelash Kifle. "Knowledge, Attitude, and Practices of Unused Medications Disposal among Patients Visiting Public Health Centers in Gondar Town, Ethiopia: A Cross-Sectional Study", Journal of Environmental and Public Health, 2021

Publication

&lt;1 %

24

[www.frontiersin.org](http://www.frontiersin.org)

Internet Source

&lt;1 %

---

Exclude quotes      On

Exclude matches      Off

Exclude bibliography      On