Relationship Between Knowledge and Behaviour of Self-Medication in Cough Towards One Community in East Java

Shella Naradewi Netta, Lilla Prapdhani Agni Hajma*
Faculty of Pharmacy, Universitas Muhammadiyah Surakarta, Jl. A. Yani, Kartasura, Sukoharjo, Indonesia
*E-mail: lp580@ums.ac.id

Received: 17 January 2024; Accepted: 26 March 2024; Published: 31 March 2024

Abstract

Coughing is often considered a minor illness, but in reality it disrupts daily activities. In dealing with coughs, treatment can be done independently or known as self-medication. In Indonesia, the practice of self-medication tends to increase. However, improvement in self-medication practices is often not aligned with adequate knowledge. This research aims to determine the profile of self-medication in society, the level of self-medication knowledge, the level of self-medication behaviour, and analyze the relationship between knowledge and behaviour. Questionnaires that have been tested for validity and reliability on 30 respondents are used as instruments. The data collection method was carried out cross-sectionally using a purposive sampling technique in September-November 2023. Respondents in this study were community in one of the regions in East Java with the inclusion criteria. The total respondents in this study were 363 respondents. Univariate analysis was carried out on self-medication profile, level of knowledge, and level of behaviour. The relationship between level of knowledge and behaviour was analyzed using the Spearman Rank method. In this study, the average community knowledge score was 76.86% with a good level of knowledge (54.3%). In the behavioral variable, the average value is 77.39% with the good behaviour level category (59%). There is a relationship between the level of knowledge and cough self-medication behaviour in the community as evidenced by a sig. (2-tailed) 0.000. A positive correlation coefficient of 0.49 was obtained thus indicating that the strength of the relationship between knowledge level and behavior is moderate.

Keywords*: behaviour, cough, knowledge, self-medication*

INTRODUCTION

Self-medication is an action taken to deal with health problems and minor illnesses, one of which is coughing (Indonesian Ministry of Health, 2007). The practice of self-medication is increasingly massive. Based on data from the Indonesian Statistic Center (2022), the practice of self-medication in East Java province increases every year. The practice of self-medication in 2020 was 71.61%; in 2021 it was 83.80%; and in 2022 it was 84.41%. According to Pandya *et al.* (2013), the prevalence of self-medication in rural areas is much greater than in urban areas, 81.5% in rural areas and 32.5% in urban areas. The area under study is classified as a rural area, encouraging researchers to conduct research in the area.

Coughing occurs when the airway is blocked or irritated as a protective reflex (Blenkinsopp *et al.*, 2008). Coughing is often considered a minor illness, but according to the ACHOO (Attitude of Consumers Toward Health Cough and Cold) survey from the United States, showed that 52% of respondents admitted that their daily routine was disrupted, 26% experienced decreased productivity, and 45% lost at least one day of work or school. This is a driving factor for the need to evaluate people's knowledge of coughs that will affect their self-medication behavior. This survey is in line with research by Lorensia *et al.,* (2022), which states that coughing can cause significant morbidity, especially in carrying out daily activities.

Not all coughs are self-medicated. There are specific conditions for referral considering the duration of cough, specific symptoms present, sputum color, symptoms associated with infection, and hemoptysis. Coughs lasting more than 3 weeks are considered chronic, while acute coughs are self-limiting and usually resolve within 3 weeks (Rutter, 2013).

For self-medication, the drugs that can be used are classified into over-the-counter

drugs and limited over-the-counter drugs (Handayani and Jatmika, 2022). Self-medication drugs used depend on the type of cough. Based on the Minister of Health regulation, cough self-medication drugs as mucolytics include carbocisteine and acetylcysteine (Indonesian Ministry of Health, 1990). Over-the-counter and limited over-the-counter drugs for cough with sputum include glyceryl guaiacolate, bromhexine, a combination of glyceryl guaiacolate and bromhexine, and OBH. As for dry cough, dextromethorphan HBr and diphenhydramine HCl are included (Indonesian Ministry of Health, 2007). Based on research by Mufida *et al.,* (2022) one of the medication errors can be at risk of causing rare, but severe side effects. In previous studies, antitussives were found that should not be used in patients with cough with sputum because they can increase the incidence of bacterial and viral infections (Lorensia *et al.,* 2022). Therefore, adequate knowledge is needed in carrying out self-medication.

Knowledge is the basis for a person's behavior. With a foundation of knowledge and awareness, the behavior carried out tends to last longer than one that is not based on knowledge and awareness (Retnaningsih, 2016). The ease of receiving information, especially related to health, will be better aligned with a person's higher level of knowledge (Cahyaningsih and Ambar, 2010). Research from Triani *et al.,* (2022) related to cough self-medication in the community in Rasau Jaya showed that the level of knowledge of respondents was 94.7% good; 5.3% sufficient; and no respondents had a lack of knowledge. In the behavior variable, 97.3% of respondents had positive behavior and 2.7% had negative behavior. There is a relationship between knowledge level and cough self-medication behavior in the community.

RESEARCH METHODOLOGY

Type of Research

This research is based on Ethical Clearance No.1.542/VIII/HREC/2023. The type of research is nonexperimental with a descriptive-analytic study research and design using a cross sectional approach. Data collection was carried out in September-November 2023 in one of the regions in East Java.

Population and Sample

The population in this study is the community in one of the areas in East Java with an age of more than 18 years. Respondents who became samples were people who met the inclusion criteria, including adults (over 18 years old), had or were experiencing cough with phlegm and/or dry cough, and used self-purchased drugs for themselves and/or others a maximum of 6 months ago, and filled out informed consent. Samples were taken using a non-probability method with the sampling category being purposive sampling. The calculation of the number of respondents required followed the Slovin formula:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{3877}{1 + (3877x0{,}05^2)}$$

$$= 362{,}59 \; = 363 \; responden$$

Description:
n = sample size (respondents)
N = size of population over 18 y.o
e = error tolerance limit (5%=0.05)

Research Variables

In this research, the independent variable was the level of knowledge about cough self-medication and the dependent variable was the level of cough self-medication behavior.

Instrument

In this study, a questionnaire instrument was used, most of which were adapted from previous researchers (Putera, 2017). This questionnaire consists of five sections. The first, contains a request to become a respondent. The second, contains informed consent. The third contains demographic data of the respondents. The fourth contains a level of knowledge consisting of 8 statement domains including the definition of cough,

types of cough, causes and ways to prevent cough, other diseases related to cough, rules for taking cough medicine, pharmacological and non-pharmacological therapies, drug stability, and side effects of cough medicine. The last contains a level of behavior consisting of 2 statement domains including the selection of cough medicine and the use of cough medicine.

Validity and Reliability

The questionnaire was first tested for validity and reliability before being distributed. Validity testing uses Pearson's bivariate correlation analysis. The instrument is valid, if r value is greater than the significance level (r table) 5% (0.361). Reliability test using Cronbach's Alpha method. The questionnaire is reliable, if the Cronbach Alpha value is> 0.6. Validity and reliability tests were conducted on 30 respondents with the same characteristics as the inclusion criteria.

Univariate Analysis

Variables that analyzed univariate include demographic data of respondents, level of knowledge, and level of behavior. Calculation of the percentage score of knowledge level and behavior level with the formula:

$P = \frac{F}{N} \; x \; 100 \; \%$

Description:

P = percentage

F = number of correct answer scores (knowledge 1; behavior 5)

N = number of question scores (knowledge 20; behavior 65)

Score categorization from Arikunto (2002) including, good with a percentage of 76-100%; sufficient 60-75%; and less <60%.

Bivariate Analysis

Normality test using the Kolmogorof-Smirnov method because the sample was more than 50 (Dahlan, 2009). In this study, the normality test results were sig. 0.000. To determine the relationship between the level of knowledge and the level of cough self-medication behavior, the Rank Spearman test was used.

RESULT AND DISCUSSION

Overview of Self-Medication Profile

In the research, the dominating gender was male. This is in line with the research of Triani *et al.*, (2022) showing that the majority of people who do self-medication are male.

The dominant age for self-medication was 46-55 years old. The level of maturity of a person in thinking and working will be more mature with the adequacy of his age. A person who is considered mature will be more trusted (Widyaswara and Yuwono, 2017). The dominance of mature age respondents can foster trust so that it can be correlated with sources of cough medicine information the majority of which are obtained from family or friends (56.2%). In research from Martinez and Perez-Acosta (2021) in Latino, self-medication is not only a medical process, but a sociocultural process. When people have health problems, they rely on the experiences of family, friends, family traditions, and cultural preferences.

Another demographic profile is the occupation. The highest percentage working as farmers or gardeners. This is associated with research by Nugraheni (2023) which shows that the majority of respondents are farmers. Farmers often have worse health status compared to other occupations, one of which is due to limited access to health services (Zukiewicz-Sobczak *et al.*, 2013). In obtaining cough medicine, 190 respondents (52.3%) obtained medicine from stalls. In contrast to research from Elly and Chory (2022) which showed that 68.7% of respondents got cough medicine from pharmacies. This shows that people are still not wise in buying medicine. If we look at questions related to frequently consumed drugs, the dominant answer of respondents was OBH (43.3%). This OBH is not only available in pharmacies, but is also available in stalls.

On the question of why people do self-medication, 39.1% answered because it saves time. In a previous study conducted by Rathod *et al.*, (2023) in India related to one of

the reasons for self-medication. A total of 136 respondents (57.4%) answered this because it saves time. The advantage of doing self-medication is that it saves time because you don't have to see a doctor (Lei *et al.*, 2018). In consideration of choosing cough medicine, 49% of respondents adjusted to the type of cough suffered. Based on the decree of the Indonesian Ministry of Health, to obtain good health, rational use of drugs is important. In rational therapy, one important aspect is the accuracy in choosing drugs because it can increase the chances of patient recovery (Indonesian Ministry of Health, 2011).

Another demographic profile is the duration of cough medicine use for self-medication before coming to health services (hospital/community health center). 230 (63.4%) respondents answered in less than 4 days. Drugs that can be used for self-medication are over-the-counter drugs and limited over-the-counter drugs that can be used for a maximum of 1 week. If within 1 week it has not caused a therapeutic effect, you can consult a health service (Handayani and Jatmika, 2022). Most respondents answered incorrectly. On the question of the distance of residence to the pharmacies and to the hospital/community health center, the majority of respondents answered the same choice, 3-4 km with a percentage of 58.4% and 59% respectively. Research by Ocan *et al.*, (2014) states that long distances to health facilities are one of the factors for patients to do self-medication in Uganda. The minority of respondents answered that the distance from their residence to pharmacies (3.6%) and hospital/community health center (2.8%) were 7-8 km. This may be influenced by differences in respondents' perspectives on distance.

Table 1. Demographic overview of the community in one of the areas in East Java

Characteristics	Category	Frequency	% (n=363)
Gender	Male	204	56.2
	Female	159	43.8
Age	17-25 years old	31	8.5
	26-35 years old	72	19.8
	36-45 years old	73	20.1
	46-55 years old	95	26.2
	56-65 years old	54	14.9
	>65 years old	38	10.5
Occupation	Farmer/gardener	176	48.5
	Self-employed	126	34.7
	Private employee	10	2.8
	Housewife	23	6.3
	PNS	1	0.3
	Student	14	3.9
	Mechanic	1	0.3
	Unemployment	12	3.3
Place to get medicine	Pharmacies	95	26.2
	Drug store	78	21.5
	Stalls	190	52.3
Reasons for self-medication	Saving time	142	39.1
	Saving on medical cost	89	24.5
	The disease is still minor	31	8.5
	Easy to get	101	27.8
Source of cough medicine information	Medicines that have been given by doctors	10	2.8
	Information from pharmacy staff	34	9.4
	Advertisement	96	26.4
	Information from friends/family	204	56.2
	Internet	19	5.2
Considerations for choosing	The type of cough I suffer from	178	49

a cough medicine	Price	171	47.1
	Composition	5	1.4
	Side effects	9	2.5
Length of use of self-medicated cough medicine	<4 day	230	63.4
	4-7 day	113	31.1

Table 1. Continued

Characteristics	Category	Frequency	% (n=363)
	>1 week	20	5.5
Distance from residence to pharmacies	1-2 km	3	0.8
	3-4 km	212	58.4
	5-6 km	135	37.2
	7-8 km	13	3.6
Distance from residence to hospital/community health center	1-2 km	11	3
	3-4 km	214	59
	5-6 km	128	35.3
	7-8 km	10	2.8
Frequently used drugs	Panadol	1	0.3
	OBH	157	43.3
	Laserin	14	3.9
	Komix	23	6.3
	Vicks Formula 44	80	22
	Ultraflu	33	9.1
	Decolsin	9	2.5
	Konidin	18	5
	Siladex	24	6.6
	Mixagrip	1	0.3
	Bodrex	3	0.8

Self-Medication Knowledge Level

Most of the respondents answered correctly in the domains of rules for taking cough medicine and drug stability. In the domain of rules for taking medicine, the majority of respondents answered correctly to statement number 10, that is cough medicine should be used according to the rules of use.

If treatment is not according to the rules, it can have a negative impact on health, is inefficient in terms of time and cost, and must seek new treatment (Sariwating, 2021). This is aligned with research by Simanjuntak *et.al.*, (2021) which states that 81.6% of health respondents and 46.8% of non-health respondents answered correctly in the domain of drug usage rules.

In the drug stability domain, the majority of respondents answered correctly to statement number 16, that if cough medicine has exceeded its expiry date, it should not be taken. According to the Indonesian Ministry of Health (2021) expired medicine is medicine that is no longer suitable for consumption. Medicines that have passed their expiry time can cause side effects or reduce their efficacy (Putri *et al.*, 2022). The research results of Melviani and Rohama (2022) show that 54.9% of respondents pay attention to the expiration date of medicines.

The average percentage score of respondents on the knowledge variable is 76.86% and is included in the good knowledge level category. Good knowledge will contribute to the emergence of good behavior as well (Ramadani *et al.*, 2023). Based on the results of research from Khuluqiyah *et al.*, (2016), it shows that the level of knowledge of community cough self-medication in Airlangga Surabaya Village is high with a percentage of 45%; medium 40%; and low 15%. This study is aligned with

research from Retno and Tri (2022) that shows the level of knowledge of cough self-medication in the community of Cilangkap Village, Depok is high with a percentage of 87.1%; medium 10.9%; and low 2.0%.

Table 2. Frequency distribution of answers to the knowledge variable of the community in one of the areas in East Java

Domain	No	Statement Item	Answer Key	Respondent's Answer	
				True	False
Definition of Cough	1.	Coughing is a protective reflex to remove foreign objects from the airways.	True	349 (96.1%)	14 (3.9)
Types of Cough	2.	A dry cough is a cough that does not produce mucus.	True	272 (74.9%)	91 (25.1%)
	3.	A productive cough is a cough that produces mucus.	True	164 (45.2%)	199 (54.8%)
Cause and Ways to Prevent Cough	4.	Not drinking a lot of ice water can prevent coughing.	True	357 (98.3%)	6 (1.7%)
	5.	Cigarette smoke causes coughing.	True	349 (96.1%)	14 (3.9%)
	6.	Prevent coughing by keeping the home environment clean	True	281 (77.4%)	82 (22.6%)
Other Disease Related to Cough	7.	Coughing is a symptom of bronchitis	True	196 (54%)	167 (46%)
	8.	One of the symptoms of TB disease is coughing.	True	218 (60.1%)	145 (39.9%)
Rules for Taking Cough Medicine	9.	In order for a cough to heal more quickly, cough medicine may be taken in excess of the prescribed dose.	False	8 (2.2%)	355 (97.8%)
	10.	Cough medicine should be used according to the instructions for use.	True	358 (98.6%)	5 (1.4%)
	11.	If you forget to take medicine, you can take 2 doses of the medicine at once.	False	53 (14.6%)	310 (85.4%)
Pharmacological and Non	12.	A cough with phlegm can be treated with the drug bromhexine.	True	175 (48.2%)	188 (51.8%)
Pharmacological Therapy	13.	If the cough is dry, treat it with the drug guaifenesin.	False	190 (52.3%)	173 (47.7%)
	14.	The choice of cough medicine must be appropriate to the type of cough you are suffering from.	True	357 (98.3%)	6 (1.7%)
	15.	Drinking lots of water can reduce dry coughs.	True	290 (79.9%)	73 (20.1%)
Drug Stability	16.	If cough medicine has passed its expiration date, it should not be taken.	True	358 (98.6%)	5 (1.4%)
	17.	If the cough syrup has changed color, you can still take the medicine.	False	23 (6.3%)	340 (93.7%)
Side Effect of Cough Medicine	18.	Dextromethorphan HBr cough medicine has the side effect of drowsiness.	True	276 (76%)	87 (24%)
	19.	Guaifenesin cough medicine has no side effects.	True	210 (57.9%)	153 (42.1%)
	20.	OBH (Black Cough Medicine) has side effects of nausea and vomiting.	True	192 (52.9%)	171 (47.1%)

Table 3. Self-medication knowledge of the community in one of the areas in East Java

Total value % (Mean ± SD)	Categorization (%)		
	Good (76-100%)	Sufficient (60-75%)	Less (<60%)
76.86 ± 9.40	197 (54.3%)	141 (38.8%)	25 (6.9%)

Self-Medication Behavior Level

Most respondents answered correctly in the domain of cough medicine use, especially statement number 5 that is, before taking cough medicine, I read the dose to be used. The right dose is one of the conditions for rational drug use (Indonesian Ministry of Health, 2011). Based on a journal review written by Adiana and Maulina (2022), one of the biggest causes of Drug Related Problems is dose inaccuracy. According to the American Society of Hospital Pharmacists (ASHP) 1993, drug problems that can arise related to dosage are subtherapeutic doses (too little dose) and overdose (too much dose). Research by Kuswinarti *et al.*, (2022) on students of the Faculty of Medicine, Padjadjaran University showed that the ability of respondents to answer correctly on the dosage of drugs was shown by a percentage of 97.4%.

The average percentage score of respondents on the behavior variable is 77.39% and is included in the good behavior level category. This is in line with research by Saputra *et al.*, (2021) regarding the level of knowledge and behavior of cough self-medication in health students at the Faculty of Medicine, Tanjungpura University which shows that 295 (97.682%) respondents have positive behavior towards cough self-medication. Based on research on students in Mansoura Egypt, patterns in self-medication vary greatly between populations. This is influenced by age, gender, income and expenditure, self, care orientation, education level, medical knowledge, satisfaction, and non-serious illnesses (Helal and Abou-Elwafa, 2017).

Table 4. Frequency distribution of answers to the behavior variable of the community in one of the areas in East Java

Domain	No	Statement Item	Answer Key	Respondent's Answer				
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Selection Cough Medication	1.	When I cough, I use cough medicine that suits the type of cough.	Strongly Agree	148 (40.8%)	197 (54.3%)	16 (4.4%)	2 (0.6%)	0 (0%)
	2.	If I have a dry cough, I choose a type of cough medicine that contains dextromethorphan	Strongly Agree	26 (7.2%)	125 (34.4%)	102 (28.1%)	75 (20.7%)	35 (9.6%)
Use of cough medicine	3.	Before taking cough medicine, I read the instructions for use first.	Strongly Agree	98 (27%)	238 (65.6%)	20 (5.5%)	3 (0.8%)	4 (1.1%)
	4.	Before taking cough medicine, I read the warning printed on the medicine package.	Strongly Agree	56 (15.4%)	208 (57,3%)	78 (21.5%)	20 (5.5%)	1 (0.3%)

	5.	Before taking cough medicine, I read the dosage to be used.	Strongly Agree	67 (18.5%)	271 (74.7%)	20 (5.5%)	2 (0.6%)	3 (0.8%)

Table 4. Continued

Domain	No	Statement Item	Answer Key	Respondent's Answer				
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	6.	If the cough medicine tablet has broken, I don't take the medicine.	Strongly Agree	52 (14.3%)	266 (73.3%)	27 (7.4%)	7 (1.9%)	11 (3%)
	7.	If I forget to take medicine, I don't take 2 doses of medicine at once.	Strongly Agree	55 (15.2%)	225 (62%)	30 (8.3%)	48 (13.2%)	5 (1.4%)
	8.	If the medicine is past the expiration date, I don’t take the medicine	Strongly Agree	116 (32%)	230 (63.4%)	12 (3.3%)	4 (1.1%)	1 (0.3%)
	9.	If the cough doesn't get better quickly, I take more than the prescribed dose of medicine.	Strongly Disagree	1 (0.3%)	12 (3.3%)	38 (10.5%)	259 (71.3%)	53 (14.6%)
	10	If my cough gets worse, I immediately go to the doctor.	Strongly Agree	61 (16.8%)	225 (62%)	48 (13.2%)	18 (5%)	11 (3%)
	11.	Before taking medicine, I look at the expiration date first.	Strongly Agree	147 (40.5%)	193 (53.2%)	19 (5.2%)	2 (0.6%)	2 (0.6%)
	12.	If I don't understand the rules for using medicine, I ask the pharmacy staff or pharmacist.	Strongly Agree	58 (16%)	170 (46.8%)	108 (29.8%)	23 (6.3%)	4 (1.1%)
	13.	I store cough medicine (tablets) at a temperature of no more than 30℃	Strongly Agree	5 (1.4%)	132 (36.4%)	116 (32%)	72 (19.8%)	38 (10.5%)

Table 5. Self-medication behavior of the community in one of the areas in East Java

Total value % (Mean ± SD)	Categorization (%)		
	Good (76-100%)	Sufficient (60-75%)	Less (<60%)
76.86 ± 9.40	214 (59%)	134 (36.9%)	15 (4.1%)

Relationship Between Knowledge and Behavior Level

The data is not normally distributed so correlation analysis uses Spearman Rank. The Sig. (2-tailed) Spearman Rank test result is less than 0.05, that is 0.000, so there is a relationship between the level of knowledge and the level of cough self-medication behavior in the community in one of the areas in East Java. The correlation coefficient obtained was 0.49. The correlation coefficient has a positive sign (+), which means the relationship is in the same direction, so the better level of knowledge, the better behavior in self-medication (Yamin *et al.*, 2011). The strength of the relationship between the level of knowledge and behavior is moderate (Rosalina *et al.*, 2023). These results are in line with research by Abdiman (2021) on visitors to the Arjasa 2 Malang Pharmacy which shows that there is a relationship between the level of knowledge and cough self-medication behavior. A person's actions that can be observed or studied are called behavior. One of the important factors that influence human or community behavior is knowledge (Martias *et al.*, 2022).

Table 6. Correlation Between Knowledge and Behavior Level of the community in one of the areas in East Java

		Level of Knowledge	Level of Behavior
Level of Knowledge	Correlation Coefficient	1.000	.490**
	Sig. (2-tailed)		.000
Level of Behavior	Correlation Coefficient	.490**	1.000
	Sig. (2-tailed)	.000	

****Correlation is significant at the 0.01 level (2-tailed)**

CONCLUSIONS

Based on the research that has been conducted, the description of the profile of self-medication in the community in one of the areas in East Java includes most of the respondents are male, 46-55 years old, farmer/gardener occupation, obtaining drugs for self-medication by buying at stalls, the reason for self-medication is because it saves time, obtaining drug information from friends/ family, consideration of choosing cough medicine is adjusted to the type of cough suffered, the duration of use of cough medicine for self-medication <4 days, the distance of residence to pharmacies and hospitals/community health centers 3-4 km, and cough medicine that is usually used for self-medication is OBH. The level of knowledge and the level of behavior of the community towards cough self-medication were classified as good. In the variable level of knowledge, the percentage of high 54.3%; sufficient 38.8%; and less 6.9%. While at the level of behavior, the percentage of high 59%; sufficient 36.9%; and less 4.1%. There is a relationship between the level of knowledge and the level of cough self-medication behavior in the community. The strength of the relationship is moderate.

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