Pharmacy Staff's Recommendations for Self-Medication Requests on Non-Infectious Productive Cough: A Study in Padang City, Indonesia

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ABSTRACT: Cough is a physiological reflex to liberate the airway from mucus or foreign objects. Many cough medicines in pharmacies require special expertise to select the proper medication according to the patient's condition. This research aims to evaluation recommendations of drugs for non-productive cough for self-medication from pharmacy staff in Kuranji subdistrict, Padang City. A cross-sectional study with *total sampling* techniques is used for collecting data. This research uses a structured interview technique with the main question, what medicine would pharmacy staff recommend if an adult patient comes with a productive cough without any symptoms of infection? There are 30 pharmacies in Kuranji subdistrict, but data that meets the inclusion criteria is only from 25 pharmacies because five pharmacies are not willing to be research sites. Those who were willing to take part in this research were 16 pharmacists and nine non-pharmacist staff. Only 37.5% (6 of 16) of correct drug recommendations were given by pharmacists, and 33.3% (3 of 9) of proper drug recommendations were provided by non-pharmacist staff. There are still many things that could be improved in drug recommendations for this case, with a total average of correct administration of only 36%. The proper drug choices were Bromhexin and Acetylcysteine, while other drugs that were incorrectly chosen were drugs that should have been given with a doctor's prescription, branded drugs with more than one active ingredient , herbs or not the drug of choice for now.There are still many mistakes in the medicine choice, with an average total of only 36% accurate recommendations.

Keywords: **cough; self-medication; recommendation; pharmacy.**

Introduction

The cost of going to the hospital or going to a doctor is expensive, which makes many people choose self-medication instead. Therefore, self-medication is one of the alternatives taken by the community in terms of treatment. According to the Indonesian Ministry of Health, self-medication is one of the efforts made by a person to treat the symptoms of the disease they are suffering from without consulting a doctor. Self-medication can be done using over the counter medicine or Limited over the counter medicine available at the Pharmacy [1,2].

In research conducted by Jajuli (2018), it was explained that advertising on television could also influence the public in choosing medicines. The study also demonstrated that the educational history factor can influence the choice of self-medication. With this educational history, patients can be more selective in choosing and using self-medication medicines [3]. This is also in line with the research conducted by Mujiati (2022), which also mentioned that advertisements can also influence drug election as a self-medication for the public, which the advertisement is a way to promote and introduce a product that have patients as their target market. Therefore, patients will remember the product and buy it. [4].

Based on Central Bureau of Statistic's data in 2021, Indonesian residents did self-medication or self treatment as big as 63.67%, whereas For West Sumatra Province, there was 52.46% people who did self-medication [5]. Therefore, it can be seen that most people choose to self-medicate to treat their disease.Self-medication is a matter of choosing and using

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a drug, both modern and traditional drugs selectively to protect somebody from a disease and its symptoms [6]. Self-medication is a treatment that could be done without a doctor's prescription. This treatment is intended for individuals who have symptoms and diseases that can diagnosed by the patient to treat minor illnesses; one of the light diseases is Cough.

Cough is a common disease that everyone suffers from, therefore it is well known by public, which can increase secretion cleaning as well as particle from mucus, foreign particles, microbes and irritants that triggers the body's defense mechanisms. It's can also become a serious problem, as well as symptoms in various diseases such as respiratory and lung [7]. Cough is a way for the lungs to defend itself from various stimulation and physiology reflexes to protect the lungs from mechanical trauma, chemistry, and temperature, and a way for body to clear the respiratory tract from mucus or foreign objects that entered the body and can treated with self-medication method [8,9].

Cough can be caused by two things, namely infectious cough disease and non-infectious cough disease. According to Indonesian basic health research (2018), coughing is an indication or early symptoms of several dangerous respiratory tract diseases, such as Acute respiratory infections (ARI), pneumonia, and pulmonary tuberculosis (Lung TB) [10]. Thahir (2022) conducted research at one of the pharmacies in Makassar, which said that the majority of self-medication is done due to light illness (52.43%), only for temporary treatment, and also because the drugs obtained only as an alternative and medicines could easily obtained from health facilities [1] .According to research conducted by Nugraha (2021), for the cough medicine selection in Cibeber Hamlet, Cikalong subdistrict residents. There are 42.86% of people that used chemical (synthetic) cough medicines which are chemical cough medicines that is often used by public, that is Komix$^®$ (66.67%), Siladex$^®$ (15.47%), Woods$^®$ (9.52%), and Konidin$^®$ (8.34%). The research data shows that most people overcome their coughs with Komix drug [11].

Many cough medicines in pharmacies require special expertise to select the proper medication according to the patient's condition. The research was conducted in the Kuranji subsubdistrict because it has many pharmacies above the average for a section in Padang city, and there is a population of the highest education people in Padang city, namely students and lecturers who mostly live in this subdistrict. Hence, the pharmacy in Kuranji subsubdistrict certainly prepared the best pharmacist to serve this group.

and subsubdistrict Kuranji has the second most residents with 30 pharmacies [12].

Method

Data Collection

This research is a descriptive study with a cross-sectional approach, carried out in January–February 2023 at the pharmacies in Kuranji subdistrict, Padang City. The population used in the study is every pharmacy located in Kuranji Subsubdistrict, Padang City, with a total population of 30 pharmacies. The sampling technique used is total sampling, for all 30 pharmacies in Kuranji subdistrict, Padang City [12], but only 25 pharmacy participants for data collection because five pharmacies are not willing to be research site.

This research uses an instrument in the form of an interview question sheet and recording equipment. Data taking is done with interviews to pharmacy staff's who were willing to be interviewed when visiting the pharmacy every afternoon on weekdays during the data collection period. The researcher took notes directly and recorded the answers using a recording device after getting permission from the participant.This research has received research ethics approval from the Research Ethics Committee Pharmacy Andalas University Padang west Sumatra, Number: 26/UN.16.10.D.KEPK-FF/2023.

Recruitment Procedures

Structured interviews are used as a data collection technique, where researcher prepares related questions that will be answered by participants. The following is a sequence of conversations between the researcher and the participants.

a. Researcher give greeting, introduces self, and asking for participant's permission to follow research activities for 4-5 minute.

b. Participants that is willing to do an interview fills in the Informed Consent sheet as well as giving permission to record the conversation

c. Researcher gathers data by asking point questions in interview guidelines

d. Researcher give questions to participant

"One woman aged 22 come to the pharmacy and request a drug for productive cough. The woman has complained about the productive cough has already happened since 2 days ago. The woman does not experience fever or any other infection signs. This woman is a student, does not have a drug allergy history with no disease history, and is currently not using any drug to treat

her productive cough".Which medicine name would you recommend for productive cough disease based on that case based on the drugs available in your pharmacy ?

Data Analysis

Related to the given recommendation (*open-ended question*), the participant's answer record is transformed into the transcript. The given answer will be analyzed by comparing the recommendation with descriptive reference..

Results and Discussion

From the total of 30 pharmacies in Kuranji subdistrict, Padang City, There were 5 pharmacies that met the exclusion criteria, that results in 25 pharmacy becoming the study place. At the end of the research, only 25 participants involved in this research. The majority of the participants in this study is female (68%). As much as one pharmacy that was visited and contacted did not provide certainty of permission for the research, while four other pharmacies were closed during the study.

The data collection results of the study of productive cough medicine recommendation that is given by pharmacists and non-pharmacists who could be pharmacy staff or other educational graduates are listed in Table 1 and Table 2. There are 16 recommendations given by pharmacists and 9 recommendations from non-pharmacists. As shown in Table 2, 6 pharmacist participants gave an accurate recommendation, meanwhile non-accurate recommendations were given by 10 pharmacist participants.

The recommendations provided by non-pharmacists, as shown in Table 2; there are 3 participants that gave accurate drug recommendations, and the other 6 participants gave recommendations that are not accurate. According to existing rules, non-pharmacists can not give drug recommendations as explained in Minister Health Republic Indonesia Regulation Number 51 in year 2009, which explained that pharmaceutical technical personnel are personnel who assists pharmacists in carrying out pharmaceutical work and carrying out self-medication, which is pharmacist's responsibility namely in the form of support for patients by carrying out self-medication based on accurate evidence and suggestion, as well as showing various self-medication choice possible according to patient's health condition [13,14].

On research results, obtained that most of the participant recommends drug which contains active substance that is bromhexine and guaifenesin mixture, like Siladex Expectorant®, Wood's Expectorant®.

On this study, several pharmacists also recommends

Table 1. Non-infectious productive cough medicine recommendation from pharmacist

Pharmacy	Participant Code	Recommendation	Accuracy
Pharmacy B	R2	Bromhexine	Q
Pharmacy C	R3	Succus L, Ammonium Chloride, Anise Oil	TT
Pharmacy E	R5	Succus L, Ammonium Chloride, Anise Oil, Menthol	TT
Pharmacy F	R6	Bromhexine, Guaifenesin	TT
Pharmacy J	R10	Guaifenesin	TT
Pharmacy K	R11	Acetylcysteine	Q
Pharmacy m	R13	Mucohexine	Q
Pharmacy N	R14	Acetylcysteine	Q
Pharmacy P	R16	Bromhexine	Q
Pharmacy R	R18	Ambroxol	TT
Pharmacy S	R19	Ambroxol	TT
Pharmacy Q	R20	Bromhexine	Q
Pharmacy V	R22	Succus L, Ammonium Chloride, Anise Oil, Menthol)	TT
Pharmacy W	R23	Bromhexine, Guaifenesin	TT
Pharmacy X	R24	Various Herbs	TT
Pharmacy Y	R25	Succus L, Ammonium Chloride, Anise Oil, Menthol	TT

Information : Q = Accurate, TT = Not Accurate

ambroxol , which is a prescription drug, namely Pharmacy E, Pharmacy N, Pharmacy P, Pharmacy R, Pharmacy S, Pharmacy U, and Pharmacy V also provides drug recommendations with ambroxol.

It is appropriate to recommend that acetylcysteine be given as self-medication because acetylcysteine is included in the mucolytic group [18]. The mucolytic group is used to treat productive coughs with hypersecretion of phlegm. This drug changes the mucus content and thins it by degrading mucin polymers, deoxyribonucleic acid (DNA), fibrin or F-actin in airway secretions. According to the mechanism of action, there are two groups of mucolytic drugs, namely classical mucolytics and peptide mucolytics. Acetylcysteine is included in classical mucolytics where classical mucolytics can work directly by depolymerizing mucin glycoproteins by hydroizing the disulfide bonds that connect mucin monomers. From this statement, the drug that is often used in this group is N-acetyl L-cysteine [15]. Acetylcysteine can currently be given without a doctor's prescription according to the Regulation of the Minister of Health of the Republic of Indonesia Number 3 of 2021 concerning Changes in the Classification, Restrictions and Categories of Drugs, which states that the drug N-acetylcysteine, which was originally classified as a hard drug, has become a limited over-the-counter drug class with a concentration limit of ≤ 200 mg in oral dosage form per dose [16]. As for the pharmacy staff's who provides the recommendations for acetylcysteine is from pharmacy B, pharmacy K, pharmacy N, pharmacy O, pharmacy Q, and pharmacy X. At pharmacy K, participant recommended acetylcysteine at a dose of 200 mg .

The next drug recommendation given by the participant was the active substance bromhexine. Based on the results of the interview, participants also recommended the drug bromhexine because bromhexine can be given without a doctor's prescription and bromhexine is a limited group of over-the-counter drugs and is included in the List of Compulsory Pharmacy Drugs No. 1 in the respiratory tract drug therapy class, secretolytic, mucolytic. According to the Regulation of the Minister of Health of the Republic of Indonesia Number 3 of 2021 concerning Changes in Classification, Restrictions and Categories of Drugs, there are changes to drug restrictions, namely restrictions on tablet and capsule preparations ≤ 8 mg, packaging of no more than 10 tablets and capsules as well as for syrup and suspension preparations with ≤ 4 mg/5 ml, packaging no more than 60 ml [16].

The usage of bromhexine supports body activities related to clearing mucus from the respiratory tract. Therefore, the recommendation for administering the drug bromhexine or branded preparations containing bromhexine HCl is appropriate for patients in these cases. Most of the participants who were interviewed, namely pharmacy B, pharmacy G, pharmacy J, pharmacy L, pharmacy M, pharmacy R, and pharmacy T also provided recommendations for drugs with bromhexine, both generic bromhexine and drugs with trade names, such as Mucohexine®.

Guaifenesin belongs to the limited over-the-counter drug class and the expectorant class. The expectorant class is given with the aim of increasing the ability to remove purulent mucus and increasing the secretion of airway fluids, which aim to thin the mucus so that it does not stick to the surface of the airways. This is in line with research conducted by Storms (2018) which states that guaifenesin has been proven to facilitate the expulsion of mucus from the respiratory tract by making bronchial secretions less viscous and increasing the volume of phlegm [17]. The

Table 2. Non-infectious productive cough medicine recommendation from non pharmacist

Pharmacy	Participant Code	Recommendation	Accuracy
Pharmacy A	R1	Various Herbs	TT
Pharmacy D	R4	Bromhexine, Guaifenesin	TT
Pharmacy G	R7	Bromhexine	Q
Pharmacy H	R8	Bromhexine, Guaifenesin	TT
Pharmacy I	R9	Succus L, Ammonium Chloride, Anise Oil, Menthol	TT
Pharmacy L	R12	Ambroxol	TT
Pharmacy O	R15	Acetylcysteine	Q
Pharmacy Q	R17	Acetylcysteine	Q
Pharmacy U	R21	Ambroxol	TT

Information : Q = Accurate, TT = Not Accurate

action of this drug is expected to stimulate the expulsive effect of coughing, which increases if airway dehydration causes mucus to become sticky.

Another effect of this class of expectorants is to stimulate cholinergic pathways and increase mucus secretion from the luminal submucosa of the airways, but can produce toxic effects if they act directly on the airway epithelium [17]. According to the British National Formulary (BNF) in 2018, expectorant drugs can be used to encourage the release of bronchial secretions, but there is no evidence that there is a drug that specifically facilitates expectoration [18]. In Ohar's (2019) research, this researcher stated that guaifenesin as an expectorant is weak and that further studies are needed regarding this matter [19]. The administration of the drug guaifenesin was also recommended by staff's of pharmacy B, pharmacy E, pharmacy G, pharmacy J, pharmacy M, pharmacy R, pharmacy S, and pharmacy U.

Furthermore, participants also provided recommendations for administering OBH Combi$^{®}$ Syrup. Several other pharmacies also recommend this OBH Combi$^{®}$ syrup, which contains 167 mg of Succus Liquiritiae, 50 mg of Ammonium Chloride and 2% ethanol per 5 ml. Ammonium Chloride is used as an expectorant for productive coughs. Examples of other ammonium salts that are used in the same way include acetate, bicarbonate, camphorate, carbonate, citrate, and glycyrrhizate [20]. The choice of OBH for coughs is not appropriate because apart from the ingredients in this drug, it is not clear what its function is, it is also considered polypharmacy. In the interview results, several participants recommended administering the OBH Combi$^{®}$ Syrup medication, namely staff's at pharmacy C, pharmacy H, pharmacy I, pharmacy J, pharmacy M, and Pharmacy Y.

There are several other drug brands that contain a mixture of guaifenesin and bromhexine which are recommended by several participants, namely syrup preparations such as Siladex Expectorant$^{®}$ (or what is known as green Siladex), Wood's Expectorant$^{®}$, and Bisolvon Extra$^{®}$, as well as the recommended tablet preparations. are Graxine$^{®}$ and Bromifar Plus$^{®}$.The choice of giving two active drug ingredients for a patient's condition, as in this research, is not appropriate because giving a combination drug must follow certain rules, for example, if the pain is quite severe or one drug is not able to overcome the patient's pain condition. Participants recommended drugs containing a mixture of bromhexine HCl and guaifenesin, including staff's of pharmacy A, pharmacy B, pharmacy C, pharmacy F, pharmacy G, pharmacy H, pharmacy J, pharmacy L, pharmacy M,

pharmacy O, pharmacy R, pharmacy W , and pharmacy Y.

The number of mistakes in recommendations by pharmacists found in this study is quite surprising, although there have been many studies which state that for productive cough the medicine is an expectorant [21,22]. Apart from that, the need to improve pharmacists' knowledge is urgent because the public has high expectations of the accuracy of pharmacists' recommendations for requests for self-medication drugs. Failure to meet these expectations can cause the public to no longer trust the credibility of the pharmacist profession as part of the professional health workforce [23]. Drug recommendations in pharmacies should only be given by pharmacists, because non-pharmacist staff in pharmacies may or may not have a pharmacy background, so their knowledge is not sufficient to be able to provide drug recommendations for self-medication

Conclusion

There are still many mistakes in the medicine choice for productive cough without symptoms of infection for self-medication from pharmacy staff's in Kuranji sub-subdistrict, Padang City, with an average total of only 36% accurate recommendations.The proper drug choices were Bromhexin and Acetylcysteine, while other drugs that were incorrectly chosen were drugs that should have been given with a doctor's prescription, branded drugs with more than one active ingredient , herbs or not the drug of choice for now.

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