

# TRADITIONAL MEDICINE SELF-MEDICATION BEHAVIOR AMONG PHARMACY STUDENTS IN SEMARANG CITY INDONESIA

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**Submission date:** 26-Aug-2024 08:54AM (UTC+0700)

**Submission ID:** 2438024756

**File name:** manuscript.docx (69.26K)

**Word count:** 3646

**Character count:** 21596

**TRADITIONAL MEDICINE SELF-MEDICATION BEHAVIOR AMONG PHARMACY STUDENTS IN SEMARANG CITY INDONESIA**

**ABSTRACT**

**Background:**

Traditional or herbal medicine is widely used by the community, especially in developing countries. People usually use it as self-medication and usually, they know the benefits of traditional medicine from their ancestors. <sup>18</sup> Studies have shown that self-medication was common among pharmacy students.

**Objective:**

This research aims to evaluate the self-medication behavior of traditional medicine among Pharmacy students in Semarang City and determine the differences in the behavior of junior pharmacy students (maximum in 4<sup>th</sup> semester) and senior pharmacy students (starting 6<sup>th</sup> semester and above).

**Methods:**

This research is a cross-sectional analytical descriptive study. Using Purposive and consecutive sampling technique by filling out a questionnaire. Respondents in this study were students from the College of Pharmaceutical Sciences "Yayasan Pharmasi Semarang" on even semester, divided into senior (semester 6 and above) and junior (up to semester 4), who met the inclusion criteria. Data were analyzed using chi-square SPSS 23, with hypothesis: "the self-medication behavior of traditional medicine is the same between senior and junior pharmacy students".

**Result:**

Many pharmacy students use traditional medicine as self-medication, there were 506 students as respondents. The self-medication behavior of students mostly uses ginger as an active ingredient (45.15%). Most respondents bought traditional medicines

(trademarks) at pharmacies (34.85%), the purpose of using Traditional medicine was to heal ailments (57.82%), respondents said they would consume traditional medicine until the symptoms disappeared (261= 51.58%) if the symptoms were remained, majority of respondents said they would consult a physician 338 (66.80%). The reason why traditional medicines are used is because they assumed that Traditional medicine rarely has side effects 209 (41.30) and the absence of perceived side effects of traditional medicines was stated by 402 (79.45%) respondents.

#### Conclusion:

This research concludes that Senior and Junior pharmacy students were different in 2 behaviors: how they get knowledge about traditional medicine (senior students stated, from Health Education in the college), and when the symptoms still, what would they do (senior students stated they consult a

physician/medical doctor), with  $p = 0.037$  and 0,007 consecutively. The senior and junior students were the same in behavior: using traditional medicine until the symptom has gone ( $p = 0.503$ )

#### KEYWORDS

Adverse Drug Event, Ginger, side-effect, Senior and junior pharmacy students

### <sup>3</sup> INTRODUCTION

Self-medication occurs in many developing countries in the world, including Indonesia, which can cause various global impacts, namely inappropriate drug use that can result in irrational drug use, or there can be an increase in side effects and drug interactions (Unnari and Kartini, 2019).

<sup>2</sup> The World Health Organization (WHO) promotes the practice of self-medication to effectively and quickly relieve symptoms of disease without consultation with medical personnel, to reduce the burden on health services, which are often understaffed and sometimes inaccessible in rural and remote areas (Ahmad et al., 2014).

<sup>1</sup> World Health Organization (WHO) presumes, around 80% of the population in the developing countries have been using traditional medicine or herbal products for their primary health care (Başaran et al., 2022). Traditional

medicines (TM) are considered a significant health support worldwide.

<sup>8</sup> Due to their efficacy, safety, and fewer side effects, they are in high demand in many countries (Tahir et al., 2022).

Pharmacy students were chosen as subjects because there are studies that state the <sup>16</sup> practice of self-medication among Health students is more than non-Health students (Behzadifar et al., 2020). <sup>6</sup> The purpose of this study is to

describe the behavior of traditional medicine self-medication among pharmacy students in Semarang City, represented by students of the College of Pharmaceutical Sciences Yayasan Pharmasi Semarang (the oldest pharmacy education private provider in Semarang City, Indonesia) and knowing the differences in the behavior of junior pharmacy students (max semester 4) and senior pharmacy students (starting semester 6 and above). The findings of this study are expected to provide

information that may be useful for the pharmacy education curriculum on self-medication awareness, especially traditional medicine, and the implementation of traditional medicine self-medication that can be accounted for.

### **MATERIALS AND METHODS**

The sampling method uses *purposive and consecutive sampling*. The questionnaire includes questions about the general characteristics of respondents (personal data: student ID number, mobile number, semester, gender, and age); Variables related to traditional medicine (TM) self-medication behavior (what TM is often used, the purpose of using TM, how long TM use, the reason for TM use, sources of information about TM use, perceived side effect, place of purchase of TM and what to do if symptoms do not disappear). The questionnaire has passed the validity and reliability test of 30 pharmacy students. The results of the

validity test of the 7 questions all have a significant value of  $< 0.05$ , so all 7 questions are declared valid. Cronbach's *alpha value* of 0.653 is greater than 0.60, so the instrument is also reliable.

Univariate and chi-square descriptive statistical analysis using SPSS 23.0 (IBM Corp., Chicago) was conducted to present the frequency and percentage distribution of each item listed in the questionnaire and to determine the differences in the behavior of junior students (up to semester 4) and senior students (at least semester 6) about where to get information about the use of traditional medicine, whether students will see a doctor/physician if symptoms do not disappear and how long they use traditional medicine. The hypothesis: junior pharmacy student behavior's is the same with senior pharmacy students behavior's.

This research was carried out at the

campus of Stifar (College of Pharmaceutical Sciences) “Yayasan Pharmasi Semarang”, data was collected on June- August 2023 (even semester) and has received approval from the Chairman of the Health Research Ethics Committee of the Stifar (College of Pharmaceutical Sciences “Yayasan Pharmasi Semarang” No512/YP-NA/KEPK/ STIFAR/EC/VI/ 2023.

## RESULTS

All respondents were 506 pharmacy students, with an average age of  $20.13 \pm 1.65$  years, the largest age range was 20-22 years, and the majority were 449 women (88.73%). The complete data on respondent characteristics can be seen in Table 1.

Treating minor illnesses is the goal of using traditional medicine for more than half of the respondents (292 people, 57.82%). Minor illnesses in this research, mean dizziness, flu, cold etc., while another reason is to restore health, which was stating by 149

respondents (29.50%) and to prevent health was stated by 36 respondents (7,13%). Product to restore health such as Stimuno (branded product, contain extract of *Phyllanthus niruri*) and beras kencur (*kaempfera galanga* rice) are widely used in Indonesia. The data can be seen in Figure 1.

The types of traditional medicine that are most widely used by students can be seen in figure 2. Ginger and lime are the most widely used Traditional Medicine ingredients (45.15% and 41.78%) while the least are telang flower/*clitoria ternatea* and beras kencur/ *kaempfera galanga* rice (3.36% and 1.58%).

Respondents get traditional medicines from various places. The most are 176 respondents (34.78%), buying trademarks’ traditional medicines at pharmacies and the other 156 respondent (30,83%) in roadside stall. In Indonesia, many pharmaceutical

industries are developing traditional medicinal products, because there are many raw materials in Indonesia. Also, many roadside stalls in the city which sell jamu (herbal medicines). Moreover, people increasingly believe in the efficacy of herbal products, many of which are even exported to neighboring countries.

More data can be seen in figure 3. Most of the respondents (pharmacy students), namely 260 students (51.38%) stated that they took traditional medicine until the symptoms disappeared. While 27.47% of students stated that they consumed traditional medicine for 2-3 days only. If the symptoms felt by respondents did not disappear, then 338 subjects (66.80%) said they would consult a physician. A total of 159 subjects (31.42%) stated that they received information about the use of traditional medicine empirically or from books, while

141 subjects (27.87%) stated that they knew TM from the results of health education. Only 38 subjects (7,51%) said they knew about TM use from advertising

## DISCUSSIONS

In this research, the most respondents are in range of 20-22 years. Another research conducted by (Almalki et al., 2022) regarding self-medication for students of the Pharmacy Study Program, shows that the age of most respondents is also in the range of 17-22 years. Another research on self-medication conducted by university students in Nepal stated that the respondents of the study both men and women were in the age range of 17-29 years (Gyawali et al., 2015). The number of female students (88.73%) is not comparable to male students. This is also the same with Research at the University Saskatchewan College of Pharmacy and Nutrition which states that 80% of pharmacy students are

Women (Janzen et al., 2013).

A similar study in Saudi Arabia suggested the reasons for self-medication were treating minor illnesses (62%), based on <sup>11</sup> previous experience (33.2%), and lack of time to visit health facilities (Mannasaheb et al., 2021). A study in India is more specific, stated that (23.3%) of respondents used self-medication for headaches and other pain relief (Ahmad et al., 2014). People in Poland also believe that self-medication can cure diseases and pain quickly (Alves, Precioso, and Becoña, 2021)

The reason for using traditional medicine that respondents most often conveyed was because respondents assumed the absence of side effects of traditional medicine (87.35%). This is not entirely true, cause all drugs that were used can bring out adverse drug reactions; traditional medicines have no exception, that's why Traditional

medicine should be used by appropriate dosage (Zhang et al., 2015). Although majority of respondents stated that they did not experience adverse effects, there was one respondent who stated that she had experienced tachycardia side effects. A systematic review study stated that the use of traditional medicine is often associated with cardiovascular side effects (Ernst, 2003). The content of traditional medicine compounds can cause chemical herbal-drug interactions, both pharmacokinetic and pharmacodynamic interactions. Green tea (*Camelia sinensis*) has been shown to cause an increase in the patient's heart rate (Cohen & Ernst, 2010). There may be some female students drank Green tea because green tea is widely sold in packaging and is often used also to reduce appetite and weight (Bahmani et al., 2016) (Parsa et al., 2019). Another report said that they found herbal-

related hepatotoxic. In effect, the traditional medicines are not safer than conventional drugs since they contain pharmacologically active ingredients, and some of the ingredients can cause adverse effects. In the literature, severe adverse effects such as; congestive heart failure, cerebral haemorrhage, renal failure, respiratory arrest, convulsions, liver damage, hallucinations, perforation of the gastrointestinal tract, and cancer were reported in many patients taking herbal medicine (Başaran et al., 2022).

One study in India stated that most respondents get traditional medicine from pharmacies (86.67%), the same as the results of this study. This is because there are already many pharmacies that sell traditional medicines, especially trademark of traditional medicine from industrial pharmacies. The fewest were subjects who mixed their own

traditional medicines (self-concoction 11.46%), this is understandable, because the subjects were students, who felt reluctant and did not have time to boil and mix their own medicines because they were busy as pharmacy students. Respondents in India said they get traditional medicine from friends (3.33%), online shops (3.33%), medical representatives (4.67%) and elsewhere (Sivasakthi K et al., 2020).

Only 38 respondents in this research said they knew about using TM from advertising, also the same with the results of the study about Traditional Chinese Medicine (TCM) by (Kara Chan, PhD, 2015) which states that people are sceptic and worried about advertising, cause they think that it can increase the price of the TCM. Respondents may rarely pay attention to advertisements that appear frequently but rather trust the knowledge they gain from Education

in the field of Health, such as Pharmacy education.

In this study, Ginger (*Zingiber officinale* Rosc.) and lime (*Citrus aurantifolia*) are the active ingredients of traditional medicine most used by the respondents (45.06% and 41,70% respectively). This is also in accordance with a research conducted in Vietnam, during the Covid period, that ginger is the most widely used TM (79.71%), followed by honey 74.7% and garlic (64.7%) (Nguyen et al., 2021). Ginger has been widely used to cure digestion problems, reduction of nausea, and also to fight against the flu and common cold (Rasheed, 2020). Whereas garlic, *Clitoria ternatea* flower, and beras kencur/ *Kaempferia galanga* rice are the traditional medicine that are least used by pharmacy students (only 6,32%, 3,36% and 1,58%). Garlic is commonly consumed by the elderly for cholesterol and blood pressure, the students didn't

have that health problems and didn't like the unpleasant smell of garlic (Tesyfaye, 2021). Meanwhile, telang (*Clitoria ternatea*) flowers have begun to be widely used by the community in Indonesia, because it has many good effects, especially because it has anti-cancer effect, but it need to be prepared (being concocted) because there aren't any branded products (Shirodkar et al., 2023). Beras kencur (*Kaempferia galanga* rice) is preferred by women to relieve aches and has another effect that has been tested preclinically, to lower blood sugar levels (Khairullah et al., 2021), but it is not widely used by pharmacy students, maybe the respondent do not like it taste. Beras kencur is a kind of concocted traditional medicine by mixing *Kaempferia galanga* with rice, and usually sold by "jamu gendong" seller (a woman who bring many kinds of jamu/ liquid traditional medicine in her back, and go around the

housing area).

While research in Saudi Arabia states that they use traditional medicine because it is easy to obtain (41.4%) and to treat minor ailments (40.8%), another respondents state that they do not have time to consult a doctor and feel that they already know about medicine (Almalki et al., 2022). Another study in Saudi Arabia stated that more than a half (53.9%) of respondents gained knowledge from health education <sup>15</sup> as a source of drug information, especially for self-medication (Mannasaheb et al., 2021). Research in Iran states that <sup>10</sup> the most common reason for self-medication is the ease of obtaining self-medication (Abdarzadeh et al., 2016).

An Iranian study found that although there were no significant differences between years of study and self-medication practice, more senior

students usually used traditional medicine because of their knowledge of medicine ( $P < 0.001$ ) (Mirdoosti et al., 2020)

There is a difference between junior students and senior students in opinions about TM information sources that state getting information from health education with a sig. of 0.037 and subjects whose symptoms do not disappear and deciding to see a doctor, there is a difference between junior and senior students, with a sig. of 0.007. Doctors in this statement mean medical doctors who prescribe chemical drugs, cause in Indonesia doctors do not formally prescribe herbal medicine (Purwono et al., 2023). Senior students has already known that health education is useful for getting information about TM (Purnamasari et al., 2019)

Answering the question, how long they use the TM, pharmacy students stated that they would use TM until

symptoms disappeared, about this statement, there was no difference between senior and junior students with a sig value of 0.503. Using TM as self-medication, until the symptoms disappeared is not appropriate, that was the same with a research in Bahrain, that conclude, <sup>4</sup> the practice of self-medication was common but often inappropriate (James et al., 2006).

The limitation of this study is that the population of the research is only from one pharmacy college. This research could not be generalized to other pharmacy students in another country.

### CONCLUSIONS

Many pharmacy students (most are women) make use of traditional medicine as self-medication, most use active ingredients is ginger and buy traditional medicine berk band/trademark at pharmacies.

Senior students, different from junior, stated that gaining knowledge about traditional medicine from Health Education, and when using traditional medicine, symptoms do not disappear they will consult a doctor. Seniors and juniors have the same behavior, in using traditional medicine until their symptoms have gone.

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706

**FIGURES and TABLES**

Table 1 Characteristics of respondents

1	Age	Sum	%
	17-19	190	37,55
	20-22	271	53,56
	≥23	45	8,89
2	Gender		
	Men	57	11,26
	Women	449	88,74
3	Semester		
	2	181	35,77
	4	101	19,96
	6	111	21,94
	8	70	13,83
	>8	43	8,50

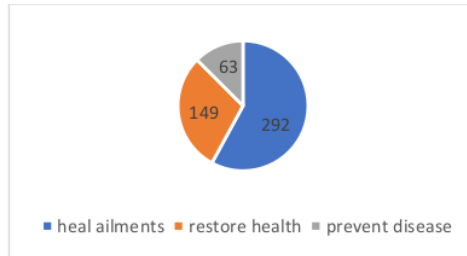


Figure 1. Distribution of reasons for self-medication of traditional medicine

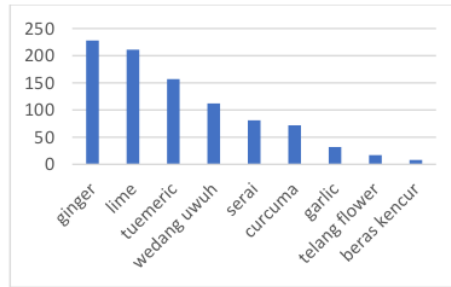


Figure 2. Types of traditional medicines used

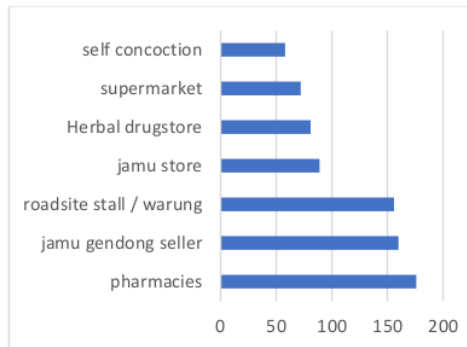


Figure 3. Where to buy Traditional Medicine

# TRADITIONAL MEDICINE SELF-MEDICATION BEHAVIOR AMONG PHARMACY STUDENTS IN SEMARANG CITY INDONESIA

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# TRADITIONAL MEDICINE SELF-MEDICATION BEHAVIOR AMONG PHARMACY STUDENTS IN SEMARANG CITY INDONESIA

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## GRADEMARK REPORT

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FINAL GRADE

GENERAL COMMENTS

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PAGE 1

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PAGE 2

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PAGE 3

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PAGE 4

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PAGE 5

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PAGE 6

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PAGE 7

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PAGE 8

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PAGE 9

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PAGE 10

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PAGE 11

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PAGE 12

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PAGE 13

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PAGE 14

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PAGE 15

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PAGE 16

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PAGE 17

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