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STUDY OF MEDICINAL PLANTS FOR TRADITIONAL MALARIA TREATMENT

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ABSTRACT
The pharmaceutical world is also revisiting traditional medicine. The use of plants or natural ingredients as medicine is known as traditional medicine. Traditional medicine, or herbal medicine, refers to ingredients or concoctions derived from plants, animals, minerals, or a combination of these ingredients. This poses a challenge in efforts to prevent and control malaria in Jayapura. The objective of this study is to examine medicinal plants used in traditional malaria treatment in the Harapan Community Health Center Working Area. This study is a qualitative study with a phenomenological approach. The techniques used are in-depth interviews and observation. The informants selected are those who have had malaria, malaria sufferers, and families of sufferers. a total of 41 respondents with malaria. In this study on the use of traditional medicine for malaria treatment, the sample size was originally planned to be 100 respondents, but only 41 malaria respondents were obtained. This was due to the limited time frame of the study, which ended in July 2025. All respondents were malaria patients who visited the health center, as well as long-term patients who were visited directly at their homes in order to meet the required sample size. The types of medicinal plants used by the community in the Harapan Community Health Center working area are papaya, yellow string.

Keywords: empirical malaria; medicinal plants; traditional medicine

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INTRODUCTION

As the trend of returning to nature proves that natural things are not rustic or outdated. The pharmaceutical world is also revisiting traditional medicine. The use of plants or natural ingredients as medicine is known as traditional medicine. Traditional medicine, or herbal medicine, refers to substances or concoctions derived from plants, animals, minerals, or a combination of these ingredients (Bayu & Novairi, 2013). Currently, traditional medicine is widely used because, according to several studies, the advantage of using traditional medicine is that it does not cause side effects, or if there are any, they are relatively minor, unlike chemical treatments (Sukmono, 2009). This poses a challenge in efforts to prevent and control malaria in Jayapura. One of the efforts made is to utilize local wisdom, namely the use of traditional medicinal plants. Traditional medicinal plants have been used by the Papuan people for a long time to prevent and treat various diseases, including malaria (Astuti et al., 2019).

Malaria is an infectious disease caused by the Plasmodium parasite. This disease is transmitted through the bite of the Anopheles mosquito. Malaria is a serious public health problem in Papua, Indonesia. Various efforts have been made to prevent and control malaria in Papua (Maulana et al., 2024). According to the 2020 World Malaria Report prepared by the World Health Organization, approximately 229 million people were infected with malaria in 2019, with an average of 400,000 deaths. Most malaria victims are children under the age of five. Malaria is also most prevalent in Africa (approximately 90%), followed by Southeast Asia, South America, and sub-Saharan Africa (Keytimu et al., 2025). Based on data from the Indonesian Ministry of Health, the prevalence of malaria in Papua in 2022 reached 14.2% (Sugiarta et al., 2024). Nationally, the incidence of malaria in Indonesia is quite high. In 2015, the incidence of malaria reached 4.1/1000 population, in 2016 it

was 0.88/1000 population, in 2017 it was 0.99/1000 population, and in 2018 it was 0.68/1000 populatio (Pamangin & Irjayanti, 2024).

Several other studies have been conducted to test the effectiveness of traditional medicinal plants in preventing malaria. The results of these studies show that some traditional medicinal plants have the potential to prevent malaria. However, further research is still needed to prove the effectiveness and safety of traditional medicinal plants in preventing malaria (La & Kurnianta, 2019). One of the strategies used is to explore medicinal plants that can be used for traditional anti-malaria treatment. Therefore, based on the above background, it is necessary to conduct a study to describe the types of medicinal plants used in traditional anti-malaria treatment. The results of this study are expected to be useful, especially for the community in the Harapan Jayapura health center area, as information on medicinal plants that can be used in traditional scientific malaria treatment.

METHOD

This study is a qualitative study with a phenomenological approach. The techniques used are in-depth interviews and observation. The informants selected are those who have suffered from malaria, malaria sufferers, families of sufferers, and health workers. The study was conducted in March 2025 at the Harapan Community Health Center. The sample in this study was selected based on inclusion and exclusion criteria. The inclusion criteria were: people living in the Harapan Community Health Center service area, people who had knowledge about the use of plants as medicine, and people who were willing to be respondents in the study. The exclusion criteria were people who were unwilling to be respondents in the study. total of 41 respondents. Research instruments are tools used in collecting research data, which are also related to research materials. The instruments used in this study were interview guidelines in Indonesian. The interviews covered the identification of plant names, properties, parts used, methods of processing, and rules of use (Nasution, 2016).

The interview contained several questions, specifically questions related to information on the use of plants as medicine. The validity of each question was determined based on its suitability with the literature review and the variables to be studied. The content of each question related to information on plants as medicine was adjusted to the references from scientific journals and literature that were able to interpret the things to be analyzed in accordance with the research objectives. The data obtained was collected and analyzed using qualitative descriptive methods, namely by describing the properties and characteristics of plants, local names, scientific names, uses, efficacy, parts used, processing methods, and rules of use. Data analysis was performed using Microsoft Excel software and data processing in the form of univariate analysis. Univariate analysis is an analysis used to analyze each variable descriptively. Descriptive analysis aims to view the data as a whole with the originality of the data to obtain an overview of the variables measured in the research sample (Norfai, 2022). The analysis conducted includes:

a) Study of the use of medicinal plants by malaria patients in the Harapan Senatani health center area
b) Overview of the monitoring of the implementation of the program for the development of the use of medicinal plants in the Harapan Senatani health center area.

RESULT

The age range of respondents was 25–65 years, with diverse educational backgrounds, ranging from elementary school dropouts to public health graduates. Based on the table above, out of a total of 41 respondents with malaria, the researchers created 14 questions to be answered by the respondents, which can be seen in the appendix of the questionnaire on medicinal plants for traditional malaria treatment in the working area of the Harapan Community Health Center. The results can be seen in the following graph.

Table 1.
Frequency distribution table based on age, gender, education, religion, and occupation (n=41)

No	Characteristic	f	%
1	Gender		
	Female	27	65.85
	Male	14	34.15
2	Age		
	26-35	7	19.51
	36-45	14	34.15
	45- 55	11	26.83
	>55	8	19.51
3	Education		
	No schooling	4	9.76
	Elementary school	7	17.07
	Junior high school	7	17.07
	High school	15	36.59
	D3/S1/S2	8	19.51
4	Occupation		
	Housewife	10	24.39
	Merchant	8	19.51
	Farmer	12	29.27
	Entrepreneur	6	14.63
	Casual worker	5	12.20

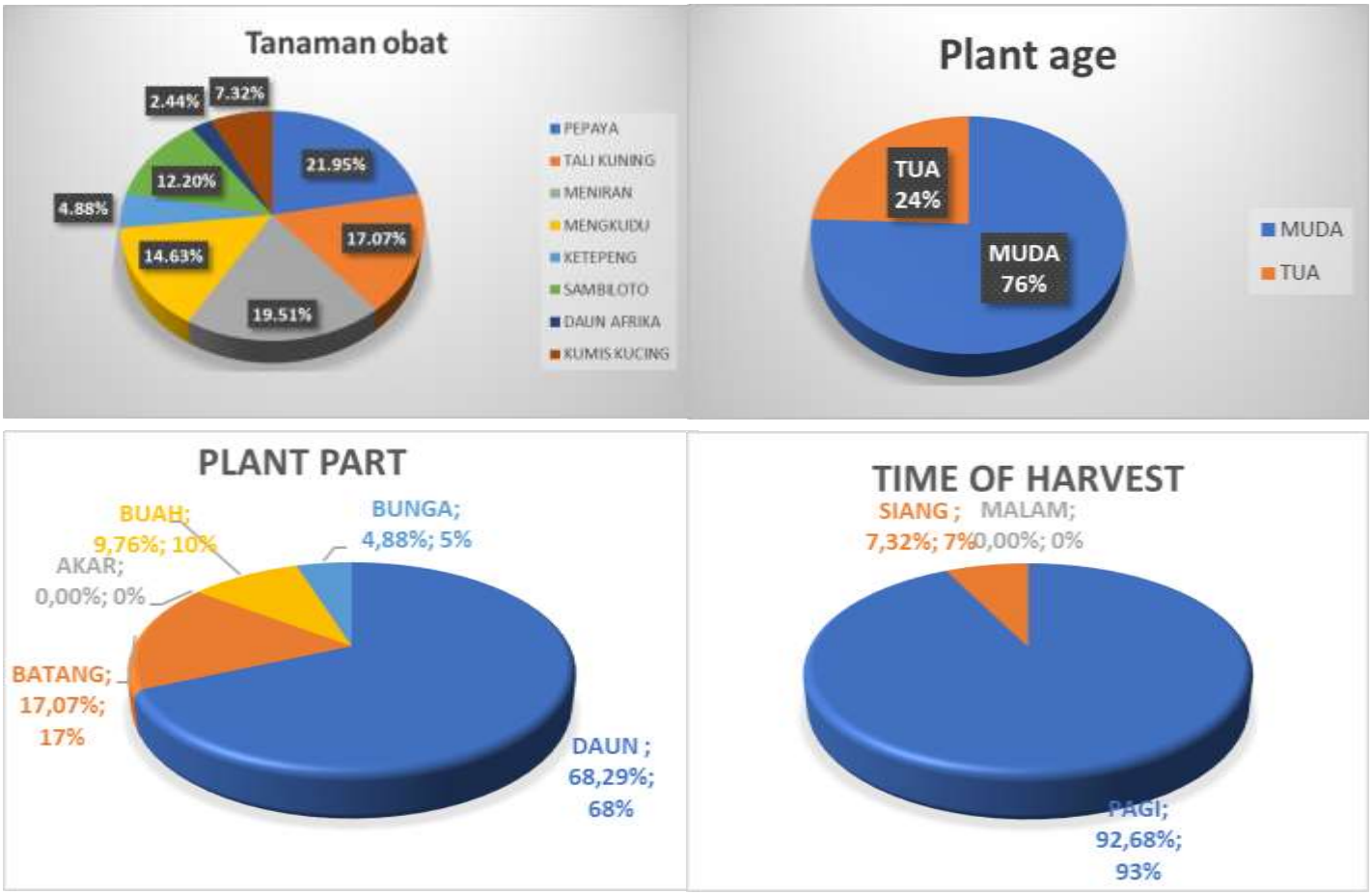

Figure 1. (A): Types of traditional plants used; (B): age of medicinal plants used; (C): parts of medicinal plants used; (D): time of collection of medicinal plants.

Based on Figure 1, the types of plants commonly used by respondents as traditional medicine for malaria treatment are papaya leaves (21.95%), meniran (19.51%), tali kuning (17.07%), and others

(mengkudu, ketepeng sambiloto, African cat's whiskers). These selected plants are indeed plants that are already known in the community as plants for the treatment of malaria. The age of the plants commonly used by respondents as traditional medicine for malaria treatment is divided into two categories, namely old (24%) and young (76%). The most common time for collecting medicinal plants is in the morning (92.68%), while the least common time is at noon, and there is no collection or picking of plants at night. The plant parts used for processing malaria medicinal plants are mostly leaves (68.29%), followed by stems (17.07%) and fruits (9.76%), and none of the respondents used plant roots.

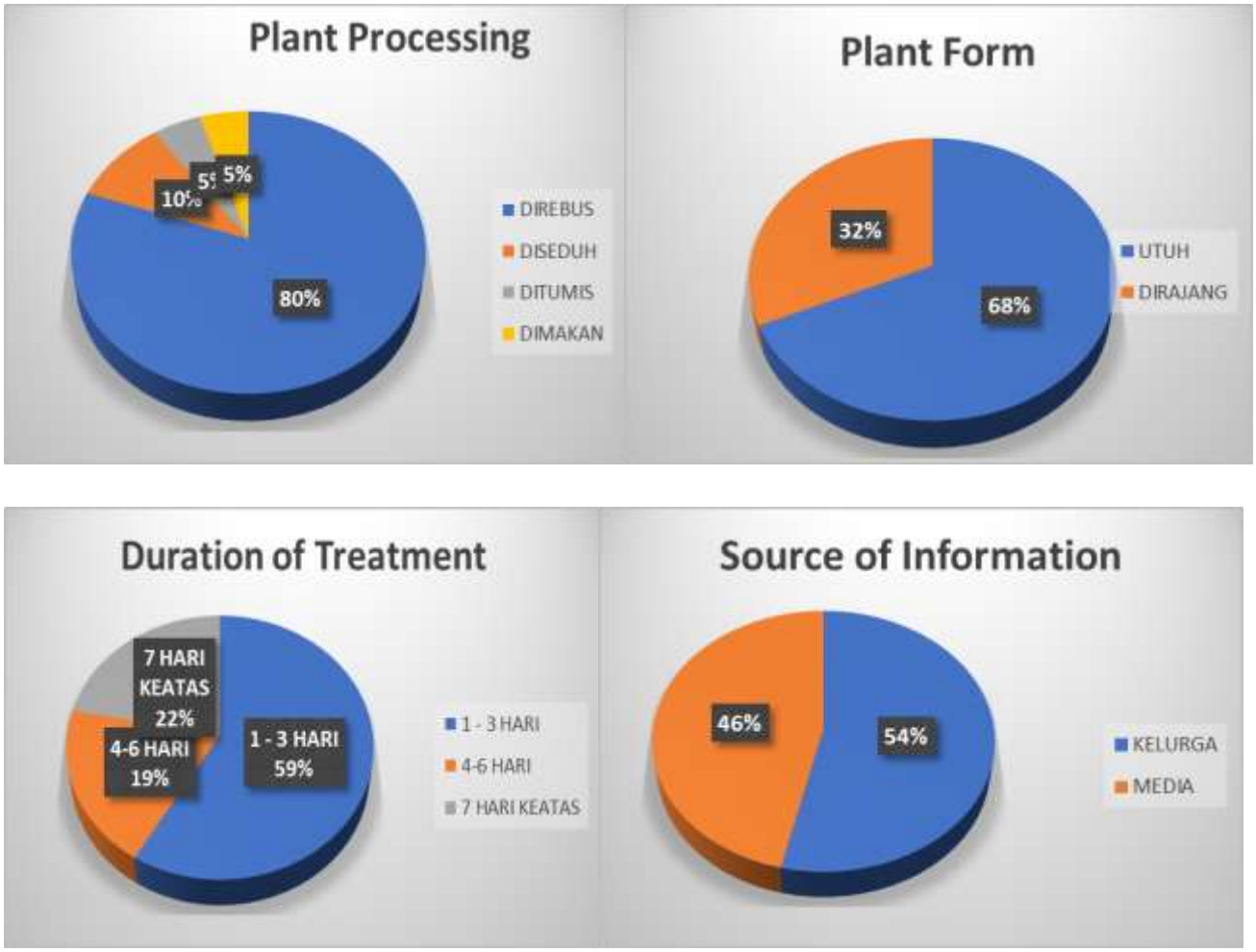

Figure 2. (A): Processing of medicinal plants used; (B): Form of medicinal plants used; (C): Duration of medicinal plant treatment; (D): Source of information on medicinal plants

Based on Figure 2, the most common method of processing the plant is by boiling (80%), followed by brewing or stir-frying for consumption. The most common duration of malaria treatment is 1-3 days (59%), followed by 7 days or more (22%), and finally 4-6 days (19%). The figure above shows that the primary source of information on the use and processing of herbal medicine is obtained from family (54%), while media, including TV and the internet, account for 46%.

DISCUSSION

Research conducted by researchers in the Harapan community health center working area found that of the 41 respondents (100%), the majority used papaya as their medicinal plant of choice because it is easy to obtain and its leaves and flowers can be easily processed into everyday foods. In addition, there are several other plants such as tali kuning, meniran, menggudu, ketepeng, sambiloto, and African leaves. This data shows the diversity in the use of plants and natural ingredients as alternative treatments for malaria in the community. There are various chemical

compounds in papaya leaves, which is why they are often used in traditional medicine. The roots, bark, and leaves of papaya contain saponins, alkaloids, and flavonoids, while the leaves and roots contain polyphenols, and the seeds contain saponins (Merdekawati, 2016). The antimalarial activity of papaya leaves (*Carica Papaya L.)* is due to the content of the alkaloids caricaksantin, violaksantin, karpain, saponins, flavonoids, papain, polyphenols, and saponins. Additionally, the antimalarial activity of papaya leaves, flowers, and roots (*Carica papaya L.)* is believed to be due to the alkaloid carpaine, which also causes a bitter taste when consumed (Laksemi & Damayanti, 2025).

Sambiloto (*Andrographis paniculata Nees.)* is a medicinal plant that has been empirically used as an antimalarial agent by inhibiting the growth of Plasmodium falciparum in vitro. The leaves of this plant contain mainly diterpenoid lactones (andrographolide), farnesols, panniculitis, and flavonoids. Andrographolide in sambiloto is believed to fight various diseases. In dried sambiloto simplisia, ± 2.5% diterpene lactone andrographolide compound was found, and ± 10.69% in ethanol extract (Apsari et al., 2025). Meniran is widely used and known as "Blakang Babiji" by the community in the Harapan Community Health Center working area. This name was taken from their daily lives as they did not know the exact name of the plant in Indonesian. Meniran contains various bioactive compounds or secondary metabolite content such as flavonoids (including quercetin and nirurin), tannins, saponins, and alkaloids. These compounds possess immunomodulatory properties that can stimulate the immune system, making it scientifically appropriate for many people to use this plant as a treatment for malaria

The methods of processing traditional medicines still vary greatly. They can be processed in simple ways, such as boiling, grinding, and chewing (used directly without processing) while fresh. People in the working area of the Harapan Community Health Center more often process them by boiling (80%) because it is easier and more practical. The use of medicinal plants processed by boiling has benefits that have been felt and mild side effects (Pratomo et al., 2025). Boiling is a method similar to infusion, but the temperature and duration of boiling cannot be controlled. Boiling allows for the extraction of compounds in a short time with an easy method. However, this method should not be used for plants containing heat-sensitive active compounds, such as flavonoids. Boiling above 60°C can damage flavonoids, so there is a possibility that the traditional medicine will not provide the expected benefits. In addition, extracts obtained from boiling are easily contaminated by bacteria and mold, so the juice obtained in this way should not be stored for more than 24 hours (Rahim et al., 2025).

In the study conducted by researchers, it was found that the place where respondents obtained traditional medicines most often was in their home gardens. Home gardens are the closest and easiest place to obtain plants that can be used to treat malaria. This may be due to the lack of education among the community in the Harapan health center working area, resulting in a lack of understanding of traditional medicines. All respondents who participated in this study had experienced malaria and used traditional medicine as their treatment of choice. Based on the findings of this study, it is necessary to provide guidance and education to the community on the use of traditional medicine so that the appropriate use of traditional medicine can be improved.

CONCLUSION

From this study, it can be concluded that: Many people, especially those in the working area of the Harapan Community Health Center, still use medicinal plants as a supplement to conventional medicine. The types of medicinal plants used by the community in the Harapan Community Health Center working area are papaya, yellow string, menran (behind babiji), mengkudu, ketepeng, sambiloto, African leaves, and cat's whiskers. The methods used to process medicinal plants are boiling, as in making infusions, brewing, and some are consumed directly or stir-fried first to be used as vegetables.

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