Availability and Information Needs of Traditional Medicine in Urban Community, Surabaya, Indonesia

Oeke Yunita[1,*] Fernanda Rizky Putri Heriwana[1] Erlin Theterissa[1] Jimmy Jimmy[2]

[1]*Faculty of Pharmacy, University of Surabaya, Raya Kalirungkut, Surabaya, Indonesia, 60294*
[2]*Faculty of Engineering, University of Surabaya, Raya Kalirungkut, Surabaya, Indonesia, 60294*
[*]*Corresponding author. Email:* oeke@staff.ubaya.ac.id

ABSTRACT
Indonesian traditional medicine has been widely used in the urban community to treat several symptoms and prevent diseases before accessing the hospital for professional help. Information is critical in modern culture, since it aids in the development of people's health knowledge. The purpose of this study was to identify and ascertain the availability and information needs of traditional medicine at Surabaya, capital of East Java and Indonesia's third-largest city. This research is a cross-sectional survey. This study makes use of primary data gathered through questionnaires. Individuals who consumed various types of traditional medicine in Surabaya, Indonesia, were recruited in this study. Purposive sample was utilized; respondents who stayed in Surabaya already had experience with traditional medicine and were interested in consuming it for personal advantage. Results show that most respondents (51.4%, N=70) admitted to having herbal information and their source of information from internet media, mostly (91.4%) through search engines, health websites, and health applications. The study's findings revealed that the urban community needs information about traditional medicine, especially about the dosage form, composition, and use. Based on data analysis, it can be concluded that respondents gain their knowledge about traditional medicine primarily from internet media. This preliminary survey provides valuable information to create an information system in the form of an application to facilitate the public to get all useful information about Indonesian Traditional Medicine.

Keywords: Information needs, Survey, Traditional medicine, Urban community.

1. INTRODUCTION

The priority for Indonesian traditional medicinal preparations and products is following the needs of the community as stated in the 2018 Basic Health Research (Riskesdas), 31.4% of families rely on traditional health services, with 48% using prepared products and 31.8% using homemade materials [1].

The global market for Indonesian traditional medical items is now projected to be worth around US$ 138.350 billion. Around 55% of these goods are herbal medications, while the rest are herbal functional foods, herbal dietary supplements, and herbal beauty products. The market turnover for these products over the next five years is projected to reach around US$ 218.940 billion in 2026, with an estimated growth of 6.7% per year [2].

The growth and development of the traditional medicine industry need to be supported by information on traditional medicines that are available and needed by the community, therefore in this study a preliminary survey was conducted on the availability and need for information on traditional medicines by the general public in Surabaya, East Java, Indonesia.

2. MATERIALS AND METHODS

The research is cross-sectional survey research, which uses primary data collected using a structured self-administered questionnaire. Primary data needed in this research is the availability and information need of traditional medicines. The questionnaire was designed and developed based on preliminary studies conducted by researchers and the final questionnaire was sent to the respondents through handling by Google Form. The

population in this study are consumers who use herbal medicine in Surabaya. Surabaya was chosen as a study area because Surabaya is the capital of East Java and Indonesia's third-largest city. Respondents who live in Surabaya can be representatives of urban communities, which frequently need access to information about herbs for their health.

Purposive sampling is employed in this study, which encourages consumers who have prior experience with herbal therapy and use herbs for their health to participate freely. The respondents were informed about the research aims and the protection of personal data from the beginning of the study.

2.1. Questionnaire Structure

The questionnaire was constructed to include three sections. The first section comprised demographic information on several characteristics such as age, gender, employment status, educational level, and frequency of using the internet. The second section asked eleven questions about information needs of traditional medicines, such as the type of information needed, for whom the information is needed, and the frequency of herbal information needed. The third section asked seven questions for the availability of information about traditional medicine, such as sources of information, types of media to obtain information, and completeness of the information.

The questionnaire's closed and open questions were in the form of multiple-choice and fill-in brief responses. In the questionnaire, there was a section for respondents' free remarks.

2.2. Data Collection

Data collection and analysis were carried out between June - September 2021, which questionnaire in google form was distributed using social media. Respondents in this study were the general public, not health workers; 17 - 45 years old; minimum high school education; have worked and lived in Surabaya for at least one year; and active internet users at least 1-1.5 hours per day.

Data collection resulted in 70 valid responses after excluding several responses that had no experience in herbal medicine.

2.3. Statistical Analysis

Before performing data analysis, the collected data were subjected to test the validity and reliability of research data. The validity test in this study uses the factor analysis method while the reliability test uses Cronbach's Alpha. The result obtained from respondents' data was analyzed with the aid of Microsoft Excel 2016. It then was further analyzed with Statistical Package for Social Sciences (SPSS) version 20.0 for

windows (SPSS Inc., Chicago, IL). Descriptive statistics were utilized to summarize the data for the full sample as well as each defined group of respondents.

3. RESULTS AND DISCUSSION

Respondents in this study can be categorized into several characteristics of respondents, namely by gender, age, educational level, employment status, and frequency of using the internet. The demographic characteristics of the respondents were summarized in Table 1. A total of 70 respondents participated in the study, consisting of 35.71% males and 64.29% females. Women are more likely to participate in surveys than men, as previously proven in a survey study of trends in herbal usage [3].

Table 1. Sociodemographic Characteristics of Respondents (N=70)

Variables	N(%)
Sex	
Female	45 (64.29)
Male	25 (35.71)
Age (years)	
17-25 years	38 (54.29)
26-35 years	15 (21.42)
36-45 years	17 (24.29)
Educational Level	
Senior High School	33 (47.14)
Diploma	9 (12.86)
Bachelor	27 (38.57)
Magister	1 (1.43)
Doctor	0 (0.0)
Employment	
permanent employees	27 (38.57)
Teacher/lecturer	14 (20.20)
entrepreneur	14 (20.20)
housewife	7 (10.10)
others	8 (11.43)
Frequency of using the internet	
>16 hours per day	36 (51.42)
5-7 times a week	28 (40.40)
2-4 times a week	3 (4.29)
1 time a week	3 (4.29)

The data presented refer to the general public, not health workers who have worked and lived in Surabaya for at least one year and was generated in June 2021

Participants in the survey ranged in age from 15 to 25, with the most common age group being those between the ages of 15 and 25. The majority of respondents in the sample (98.57%) were in senior high school or

undergraduate school, with only 1.43% having completed postgraduate studies. Around thirty‑eight percent (38.57%) of the participating respondents are permanent employees while 20.20% are teachers or lecturers and 20.20% are entrepreneurs. More than half of the survey respondents (51.42%) use the internet for more than 16 hours per day. The findings in this study

are strongly supported by the pandemic conditions that led to higher internet usage for various community needs, such as studying, meeting, and other online activities. In 2021 internet users in Indonesia will have increased 11% from the previous year, from 175.4 million to 202.6 million users [4].
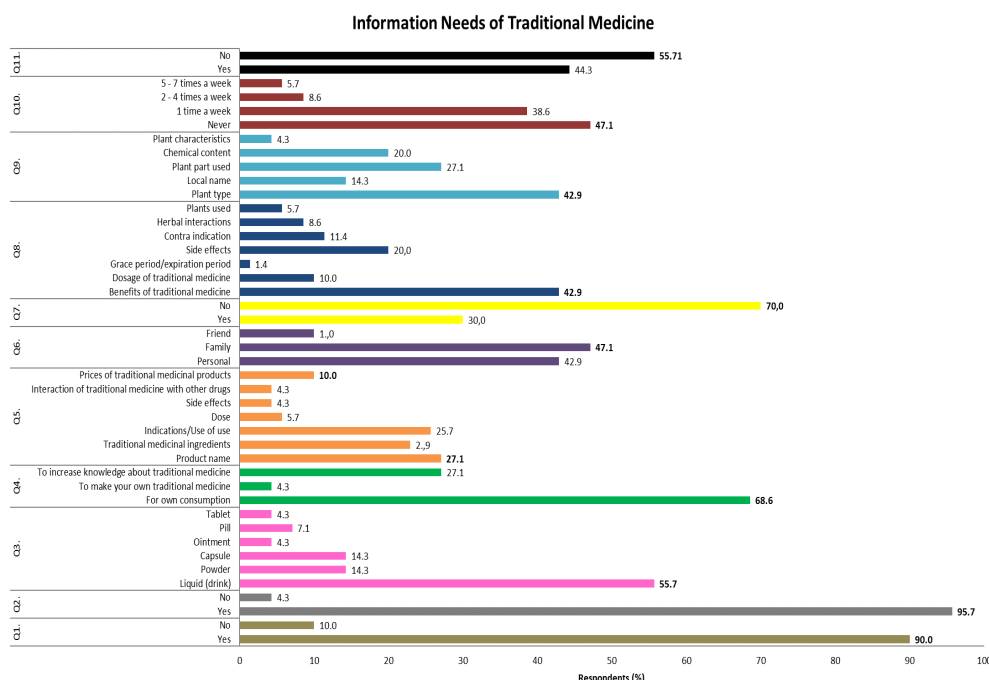
Information Needs of Traditional Medicine

Q	Category	%
Q11	No	55.71
	Yes	44.3
Q10	5 - 7 times a week	5.7
	2 - 4 times a week	8.6
	1 time a week	38.6
	Never	47.1
Q9	Plant characteristics	4.3
	Chemical content	20.0
	Plant part used	27.1
	Local name	14.3
	Plant type	42.9
Q8	Plants used	5.7
	Herbal interactions	8.6
	Contra indication	11.4
	Side effects	20,0
	Grace period/expiration period	1.4
	Dosage of traditional medicine	10.0
	Benefits of traditional medicine	42.9
Q7	No	70,0
	Yes	30,0
Q6	Friend	1,0
	Family	47.1
	Personal	42.9
Q5	Prices of traditional medicinal products	10.0
	Interaction of traditional medicine with other drugs	4.3
	Side effects	4.3
	Dose	5.7
	Indications/Use of use	25.7
	Traditional medicinal ingredients	2,,9
	Product name	27.1
Q4	To increase knowledge about traditional medicine	27.1
	To make your own traditional medicine	4.3
	For own consumption	68.6
Q3	Tablet	4.3
	Pill	7.1
	Ointment	4.3
	Capsule	14.3
	Powder	14.3
	Liquid (drink)	55.7
Q2	No	4.3
	Yes	95.7
Q1	No	10.0
	Yes	90.0

Respondents (%)

Figure 1. Information needs of traditional medicine. Data collected from 70 respondents of the general public, not health workers, which have worked and lived in Surabaya, Indonesia, for at least one year
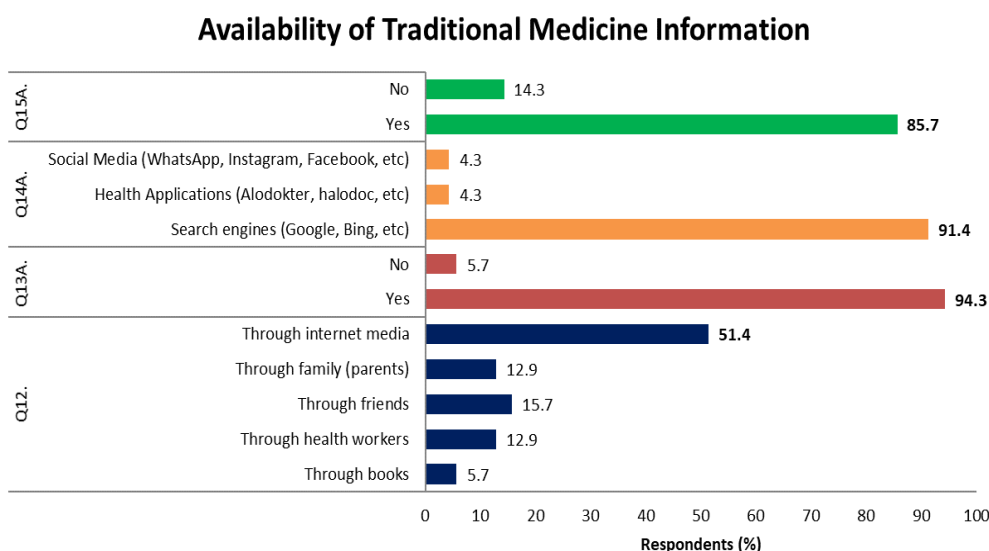
Availability of Traditional Medicine Information

Q	Category	%
Q15A.	No	14.3
	Yes	85.7
Q14A.	Social Media (WhatsApp, Instagram, Facebook, etc)	4.3
	Health Applications (Alodokter, halodoc, etc)	4.3
	Search engines (Google, Bing, etc)	91.4
Q13A.	No	5.7
	Yes	94.3
Q12.	Through internet media	51.4
	Through family (parents)	12.9
	Through friends	15.7
	Through health workers	12.9
	Through books	5.7

Respondents (%)

Figure 2. Availability of traditional medicine information. Data collected from 70 respondents of the general public, not health workers, which have worked and lived in Surabaya, Indonesia, for at least one year

The Cronbach's Alpha values of the constructs (availability, Cronbach's Alpha=0.683; information needs, Cronbach's Alpha=0.637) reveal that the data collected for each variable was reliable to analysis, with reliability values above 0.7 being acceptable and values above 0.8 being better for analysis [5].

As seen in Figure 1, 90.0% of respondents have used traditional medicine and 95.7% have known relatives or friends who have used traditional medicine. The respondent's experience has a more real impact than the survey results which stated that 45% of the 7,699 respondents who used the Alodokter application chose to use herbal medicines [6].

Respondents of 55.7% of respondents consumed their traditional medicine in liquid form, while 14.3% used supplements in the form of powder or capsules. Only a small percentage of responders used their conventional medication in pill (7.1%), tablet (4.3%), and ointment (4.3%), respectively. When it comes to traditional medicine, 61% of respondents in Plovdiv, Bulgaria, consume herbal tea when they have a cold. Another 44% drink tea drinks on a regular basis, even if they are not sick. When they were not feeling well, 11% of people relied on tea [3].

Around sixty-eight percent (68.6%) of the participated respondents obtained information on traditional medicine for their consumption, 27.1% increased knowledge about traditional medicine, and only 4.3% made their own traditional medicine. They seek information about traditional medicine, especially for family (47.1%), own use (42.9%), and friends (10.0%). The need to search information about traditional medicines is also indicated by the frequency of searching for information on traditional medicines during the week. Half of the respondents stated that the frequency of seeking information about traditional medicines varied, namely once a week (38.6%), 2-4 times a week (8.6%), and 5-7 times a week (5.7%).

As seen in Figure 1, the trend of searching for information on traditional medicines by respondents, starting from the highest priority is the product name (27.1%), indication (25.7%), ingredients (22.9%), price (10%), dose (5.7%), side effects (4.3%) and interactions with other drugs (4.3%). Most of the respondents (42.9%) who wanted to know the identity of the plant searched for the plant species. In addition, they also looked for information about the plant parts used (27.1%), chemical content (20%), local names (14.3%), and plant characteristics (4.3%). This finding is consistent with the findings of a prospective institution-based cross-sectional research conducted on 48 community pharmacists in Gondar, Northwest Ethiopia, utilizing a structured questionnaire delivered by an interviewer. They often received drug-related questions from consumers about drug prices (60.4%) and dosages (43.8%), while questions related to herbal safety were less frequent [7].

The majority (75%) of the sixty traditional medicine sellers interviewed in the streets and local markets in the city of Yogyakarta feel that traditional medicine is safe and not harmful. Only a small proportion (20%) of respondents mentioned concerns about purity, contamination, and interactions with other drugs [8].

Proper awareness of the mechanism of action of traditional medicine, its possible bad effects, contraindications, and combinations with other medications can help encourage the safe and logical use of traditional medicine. Ekor [9] suggests that individual healthcare practitioners, including as physicians, nurses, and pharmacists, demonstrate a sufficient dedication to learning how to utilize herbal medicines and get more training and awareness about how herbal medicines effect their patients' health.

Based on survey results about the information availability of traditional medicine in Figure 2, most respondents choose the internet (51.4%) as a source of information on traditional medicines, while other sources of information are friends (15.7%), family (12.9%), and health workers (12.9%). Only a small proportion of respondents (5.7%) chose books as a source of information on traditional medicine. Similar study results are shown by research that involved 114 respondents at Plovdiv, Bulgaria for 60 calendar days in 2018. Around 66% of them rely on the internet as a dependable source of information, whereas 60% seek information from friends and family members and roughly 29% use literature [3]. People always trust more personal recommendations, so respondents rely more on family and friends, especially knowledge about plants from the elderly relatives. The study's findings indicate a shift in the percentage of information sources used by pharmacist respondents in the Riyadh region of Saudi Arabia in 2011, when they reported using websites (44.8%) to obtain information on herbal medicines, followed by manufacturer-provided information such as package inserts and pamphlets or brochures (39%), and books (32.9%) [3,10].

Further studies show that almost all (91.4%) respondents use search engines such as Google to search for information on traditional medicines, while the rest choose health applications and social media, respectively. Almost all (94.3%) respondents who chose the internet media were satisfied with the information on traditional medicines presented. Most (85.7%) respondents stated that search engines could completely assist the search for information on traditional medicines.

Various researchers have carried out the development of search engines to help search for information on traditional medicines. Thai Herbal Medicine Ontology (THMO) had been developed based on the practices and

theories of Thai traditional medicine as well as the local communities, to conceptualize the formal domain knowledge in herb and support the search for the herb in the treatment of illnesses. THMO can assist the work of healthcare professionals for supporting information finding through a concept-based search system [11].

Another research developed a website for herb-drug interactions (HDIs) (https://drug-herb-interaction.netlify.com) that included a peer-reviewed database. This work establishes a website platform and an online database of validated multilingual HDIs. This multilingual, user-friendly inquiry website makes searching for HDI monographs accessible to both experts and the general public [12].

From this study, it can be seen that most urban people have used traditional medicine and have known family or friends who have used traditional medicine. Information about traditional medicines they need, especially about product names, indications, ingredients, and prices. They also look for information about plant species, plant parts used, chemical constituents, and local names. The information is useful for self-consumption, increasing knowledge about traditional medicine, and making their own traditional medicine.

The majority of the respondents gain their knowledge about traditional medicine primarily from internet media. Almost all respondents use search engines to search for information on traditional medicines, while the rest choose health applications and social media, respectively.

This preliminary survey can provide valuable initial information for the preparation of a database of traditional medicine information, which will be the basis for the creation of a traditional medicine information system to facilitate the public in obtaining all useful information about Indonesian Traditional Medicine.

AUTHORS' CONTRIBUTIONS

Conceptualization, O.Y.; methodology, O.Y; data collecting, F.R.P.H.; data analysis, O.Y., F.R.P.H., E.T.; writing, O.Y and J.; supervision, O.Y. The published version of the work has been reviewed and approved by all authors.

ACKNOWLEDGMENTS

REFERENCES

[1] Tim Riskesdas 2018, Laporan Nasional Riskesdas 2018, Jakarta, Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan (LPB), 2019.

[2] A.M. Pratama, Industri Jamu dan Herbal Indonesia Dinilai Primadona yang Terabaikan. Kompas, 2020, https://money.kompas.com/ read/2020/09/17/230000126/industri-jamu-dan-herbal-indonesia-dinilai-primadona-yang-terabaikan.

[3] I.N. Alexieva, A.T. Popova, D.S. Mihaylova, Trends in herbal usage – a survey study, Food Research, vol. 4, 2020, pp. 500-506, DOI: 10.26656/fr.2017.4(2).346

[4] P. Agustini, Warganet Meningkat, Indonesia Perlu Tingkatkan Nilai Budaya di Internet, Kementrian Komunikasi dan Informatika RI, 2021, https://aptika.kominfo.go.id/2021/09/warganet-meningkat-indonesia-perlu-tingkatkan-nilai-budaya-di-internet/

[5] K.S. Taber, The use of Cronbach's Alpha when developing and reporting research instruments in science education, Research in Science Education, vol. 48, 2018, pp. 1273-1296, DOI: 10.1007/s11165-016-9602-2

[6] K. Adrian, 45% Masyarakat Indonesia Masih Lebih Percaya Obat Herbal Dibanding Obat Modern, Kementrian Kesehatan Republik Indonesia, 2018, https://www.alodokter.com/45-masyarakat-indonesia-masih-lebih-percaya-obat-herbal-dibanding-obat-modern

[7] D.A. Gelayee, G.B. Mekonnen, M.K. Birarra, The needs and resources of drug information at community pharmacies in Gondar Town, Northwest Ethiopia, BioMed Research International, 2017, pp. 8310636, DOI: 10.1155/ 2017/8310636

[8] I. Wijaya, Socio-cultural knowledge and perceptions of jamu consumption risk: local wisdom of urban Javanese community and its relation to the integration of traditional jamu medicine into formal health system in Indonesia, Maranatha Journal of Medicine and Health, vol. 11, 2012, pp. 129-139.

[9] M. Ekor, The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety, Frontiers in Pharmacology, vol. 4, 2014, p. 177, DOI: 10.3389/ fphar.2013.00177

[10] M.N. Al-Arifi, Availability and needs of herbal medicinal information resources at community pharmacy, Riyadh region, Saudi Arabia, Saudi Pharmaceutical Journal, vol. 21, 2013, pp. 351-360, DOI: 10.1016%2Fj.jsps.2012.11.004

[11] W. Tungkwampian, A. Theerarungchaisri, M. Buranarach, Development of Thai herbal medicine knowledge base using ontology technique, Thai Journal of Pharmaceutical Sciences, vol. 39, 2015, pp. 102-109.

[12] C.S. Wu, Y.H. Chen, C.L. Chen, S.K. Chien, N. Syifa, Y.C. Hung, K.J. Cheng, S.C. Hu, P.T. Lo, S.Y. Lin, T.H. Wu, Constructing a bilingual website with validated database for Herb and Western medicine interactions using Ginseng, Ginkgo and Dong Quai as examples, BMC Complementary and Alternative Medicine, vol. 19, 2019, p. 335. DOI: 10.1186/s12906-019-2731-1