



## Analysis of Behavioral Factors in the Use of Traditional Medicine: Observational Study in Yogyakarta, Indonesia

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### ABSTRACT

Traditional medicine has long been used by the people of Yogyakarta, Indonesia as an alternative treatment to modern medicine. Various factors influence traditional medicine use, including psychological factors such as attitudes, subjective norms, and perceived behavioral control. This research aims to determine the factors that influence the use of traditional medicine among the people of Yogyakarta Indonesia using the theory of planned behavior (TPB). This research was conducted using an analytical observational research design with a cross-sectional design. Data was collected from 110 respondents living in Yogyakarta who met the inclusion and exclusion criteria. The research instrument is a questionnaire that refers to the TPB construct which has been tested for validity and reliability. Data analysis was carried out using logistic regression statistical tests and Pearson correlation tests. The results of the analysis show that attitudinal factors and perceived behavioral control partially contribute to the intention to use traditional medicine, while the subjective norm construct does not contribute. Attitudes and perceived behavioral control are important factors that influence the intention to use traditional medicine among Indonesian people. This suggests that interventions that focus on increasing positive attitudes and perceived behavioral control can increase the use of traditional medicine.

### 1. Introduction

The use of traditional medicine has been an inseparable part of the culture of the people of Yogyakarta, Indonesia for centuries. Amid the onslaught of modernization and advances in medical technology, traditional medicine remains popular and trusted by many people. The people of Yogyakarta have a long tradition of using traditional medicine. Local knowledge and wisdom about medicinal plants and herbal treatments is passed down from generation to generation. Traditional medicine is considered part of a society's culture and identity, and its use is often associated with spiritual and religious values. Traditional medicine is generally more accessible and affordable compared to modern medicine. Many traditional medicinal ingredients are found in nature and can be prepared at home. This makes it an

attractive option for people who have financial limitations or live in remote areas with limited access to health services. Many people in Yogyakarta believe that traditional medicine is safer and has fewer side effects compared to modern medicine. Traditional medicine is also considered more effective in treating various chronic diseases and health problems that cannot be treated with modern medicine.<sup>1,2</sup>

In Yogyakarta, traditional medicine is easy to find in various places, from traditional markets, and herbal medicine shops, to remote villages. People use it for various health needs, from treating minor illnesses to chronic illnesses. The existence of traditional medicine in Yogyakarta not only reflects cultural richness, but also shows people's trust in its efficacy and safety. Various studies have confirmed the high use of traditional medicine in Indonesia. Basic Health

Research (Riskasdas) 2018 shows that 40.2% of the Indonesian population has used traditional medicine in the past year. This figure shows that traditional medicine is still the main choice for the majority of people, even among those who have access to modern health services.<sup>3,4</sup>

Although the use of traditional medicine has many benefits, it is important to understand the underlying factors. Previous research has examined many demographic, socio-economic, cultural, and belief factors that influence the use of traditional medicine. However, understanding of the psychological factors underlying individual behavior in using traditional medicine is still limited. The theory of planned behavior (TPB) is a psychological theory that can be used to understand these factors. TPB has been applied in various health research, including research on the use of traditional medicine in various countries. TPB proposes that an individual's intention to carry out a behavior is influenced by three main factors, namely the individual's beliefs about the positive and negative consequences of a behavior, the individual's perception of social norms related to behavior, and the individual's beliefs about how easy or difficult it is to carry out a behavior.<sup>5,6</sup> This research aims to determine the factors that influence the use of traditional medicine among the people of Yogyakarta, Indonesia using the theory of planned behavior (TPB).

## **2. Methods**

This research uses an analytical observational research design with a cross-sectional design. A cross-sectional design was chosen because it allows researchers to collect data at one point in time and analyze the relationships between the variables under study. The population of this study was all Yogyakarta people who had used traditional medicine in the last 1 month. The sample for this study was determined using a purposive sampling technique with inclusion and exclusion criteria. The inclusion criteria are a minimum age of 18 years, having used traditional medicine in the last month, and being willing to fill out a research questionnaire. Meanwhile, the exclusion

criteria are having a serious health condition and currently undergoing medical treatment. The number of samples for this study was 110 people. The sample was considered sufficient to represent the study population because it had a high level of heterogeneity. This research has received approval from the Health Research Ethics Committee of Universitas Respati, Yogyakarta (No. 0163.3/FIKES/PL/VII/2023). Before conducting the research, the researcher explained to the respondents about the research objectives, research procedures, and benefits of the research. Respondents were also given the right to refuse or stop participating in the research at any time.

Research data was collected through a questionnaire that refers to the TPB construct. The questionnaire consists of 30 items which are divided into 3 parts, namely: Part 1: Measuring respondents' attitudes towards the use of traditional medicine; Part 2: Measuring respondents' subjective norms towards the use of traditional medicines and Part 3: Measuring the respondents' perceived behavioral control towards the use of traditional medicines. The questionnaire has been tested for validity and reliability. Validity testing was carried out using construct validity tests and convergent validity tests. Reliability testing was carried out using Cronbach's alpha test. The results of the validity and reliability tests show that the questionnaire is valid and reliable for use in this research. Research data was collected through direct interviews with respondents. Interviews were conducted at the respondent's residence using Indonesian. Each respondent was interviewed for approximately 10 minutes. Research data analysis was carried out using two statistical methods, namely: The logistic regression statistical test: Used to determine the contribution of behavior to the intention to use traditional medicine. Pearson correlation test: Used to find out how much a variable contributes to the intention to use traditional medicine. Data analysis was carried out using the SPSS version 26.0 program.

### 3. Results and Discussion

Table 1 presents the characteristics of 110 research respondents who examined psychological factors that influence the use of traditional medicine in Yogyakarta. This data provides a glimpse of the respondent profile and trends in the use of traditional medicine among urban communities. The gender distribution is balanced with 50% male respondents and 50% female respondents. This shows that the use of traditional medicine is not limited to one gender. The majority of respondents (55%) were aged between 26 and 55 years, indicating that the use of traditional medicine is more common among adults. This can be caused by various factors, such as more life experience and a higher potential for disease with age. Respondents' education levels varied, with high school as the largest category (35%). However, it should be noted that respondents with higher education (diploma and bachelor's degrees) are also quite significant (33%). This shows that the use of traditional medicine is not only limited to people with low levels of education. Respondents' occupations were diverse, with civil servants (23%) and private employees (27%) as the largest categories. This shows that the use of traditional medicine is not only limited to one particular type of work. Most respondents (55%) had an income below IDR 3,000,000. This suggests that the use of traditional medicine may be more common among people with lower incomes, who may seek cheaper treatment alternatives compared to modern medicine. Respondents' intention to use traditional medicine was classified as high, with 89.1% of respondents indicating high intention. This shows that traditional medicine is still a popular choice for urban communities in Yogyakarta. The majority of respondents (96.4%) had a positive attitude towards the use of traditional medicine. This shows that people generally have trust and confidence in the benefits of traditional medicine. The high subjective norm value (93.6%) indicates that respondents feel social support for using traditional medicine. This can come from

family members, friends, neighbors, or medical personnel. Respondents had a high perception of behavioral control (97.3%) regarding the use of traditional medicine. This shows that they feel they have control over the decision to use traditional medicine.

Table 2 shows the regression coefficient value (B) of 0.189 indicating that there is a positive relationship between attitudes and intentions to use traditional medicine. This means that every one-unit increase in the attitude score will increase the intention to use traditional medicine by 1.197 times (or 23%). The regression coefficient (B) value of 0.104 indicates that there is a positive relationship between subjective norms and intention to use traditional medicine. This means that every one-unit increase in the subjective norm score will increase the intention to use traditional medicine by 1.114 times (or 12%). The regression coefficient (B) value of 0.201 indicates that there is a positive relationship between perceived behavioral control and intention to use traditional medicine. This means that every one-unit increase in the perceived behavioral control score will increase the intention to use traditional medicine by 1.235 times (or 26%). The independent variable that makes the largest contribution to the dependent variable is perceived behavioral control, with a contribution strength of 1.235. Then followed by the attitude variable with a contribution strength of 1.197 and subjective norms with a contribution strength of 1.114. These findings indicate that perceived behavioral control is the most important psychological factor in influencing individuals' intention to use traditional medicine. This means that individuals who feel they have control over their behavior are more likely to use traditional medicine. Attitudes and subjective norms also make a significant contribution, indicating that these factors also need to be considered in efforts to promote the rational and safe use of traditional medicine.

Table 1. Characteristics of respondents.

Variable	Frequency	Percentage
<b>Gender</b>		
Male	55	50%
Female	55	50%
<b>Age</b>		
18-25 years	22	20%
26-35 years	33	30%
36-45 years	27	25%
46-55 years	18	16%
56 years and over	10	9%
<b>Education</b>		
Primary school	12	11%
Junior high school	25	23%
Senior high school	38	35%
Diploma	23	21%
Bachelor's degree	12	11%
<b>Occupation</b>		
Farmer	15	14%
Fisherman	8	7%
Trader	22	20%
Civil servants	25	23%
Private employees	30	27%
Unemployment	10	9%
<b>Income</b>		
< IDR 1,000,000	18	16%
IDR 1,000,000 - IDR 2,000,000	32	29%
IDR 2,000,000 - IDR 3,000,000	25	23%
IDR 3,000,000 - IDR 4,000,000	17	15%
> IDR 4,000,000	18	16%
<b>Intention to use traditional medicine</b>		
High	98	89.10%
Low	12	10.90%
<b>Attitude</b>		
Positive	106	96.40%
Negative	4	3.60%
<b>Subjective norms</b>		
Positive	103	93.60%
Negative	7	6.40%
<b>Perceived behavioral control</b>		
High	107	97.30%
Low	3	2.70%

Table 2. Regression analysis of independent variables.

Independent variable	Regression coefficient (B)	Standard error (SE)	Wald	p-value	Exp (B) (OR)	95% CI
Attitude	0.189	0.062	9.45	0.002	1,197 (1.23)	1.073 - 1.333
Subjective norms	0.104	0.061	2.7	0.1	1,114 (1.12)	0.902 - 1.249
Perceived behavioral control	0.201	0.058	11.32	0.001	1,235 (1.26)	1.111 - 1.428

Table 3 shows the results of the Pearson correlation between attitudes, perceived behavioral control, and intention to use traditional medicine. There is a significant positive relationship between attitude and

intention to use traditional medicine ( $r = 0.568$ ,  $p < 0.001$ ). This shows that individuals who have a positive attitude towards traditional medicine are more likely to have the intention to use it. There is a

significant positive relationship between perceived behavioral control and intention to use traditional medicine ( $r = 0.492$ ,  $p < 0.001$ ). This shows that individuals who have a high perception of behavioral control regarding the use of traditional medicine are more likely to have the intention to use it. There is a

moderate positive relationship between attitude and perceived behavioral control ( $r = 0.423$ ,  $p < 0.001$ ). This shows that these two variables are interrelated and can mutually strengthen their influence on the intention to use traditional medicine.

Table 3. Results of correlation tests between variables.

Variable	Attitude	Perceived behavioral control	Intention to use traditional medicine
Attitude	1,000	0.423 ( $p < 0.001$ )	0.568 ( $p < 0.000$ )
Perceived behavioral control	0.423 ( $p < 0.001$ )	1,000	0.492 ( $p < 0.001$ )
Intention to use traditional medicine	0.568 ( $p < 0.001$ )	0.492 ( $p < 0.001$ )	1,000

The use of traditional medicine has been an inseparable part of the culture of the people of Yogyakarta, Indonesia for centuries. In the midst of the brilliance of modernity, traditional medicine, with all its wealth of knowledge and practices, continues to be preserved and utilized by the community. One of the important findings from this research is that respondents' attitudes toward traditional medicine have a positive relationship with their intention to use traditional medicine. This shows that individuals who have a positive attitude towards traditional medicine are more likely to use it. Attitude is an individual's tendency to respond to an object or situation in a consistent way. Attitudes are formed through the learning process and are influenced by various factors, such as personal experience, knowledge and beliefs. Individuals who have positive experiences with traditional medicine, such as recovering from an illness using traditional medicine, tend to have a positive attitude towards traditional medicine. Individuals who have good knowledge about the benefits and risks of traditional medicine, as well as their safe and effective use, tend to have a positive attitude towards traditional medicine. Individuals who have confidence in local culture

and traditions who use traditional medicine tend to have a positive attitude towards traditional medicine.<sup>7-9</sup>

One of the important findings of this research is that individuals who have a positive attitude toward traditional medicine are more likely to consider using it when experiencing health problems. This is due to their belief in the benefits and effectiveness of traditional medicine in treating various diseases. Positive attitudes towards traditional medicine are not only formed from personal experience, knowledge, and belief in culture and traditions but are also influenced by individual beliefs in the benefits and effectiveness of traditional medicine. These beliefs can come from various sources. Positive stories and experiences regarding the use of traditional medicine passed down from generation to generation can strengthen individuals' beliefs in the benefits and effectiveness of traditional medicine. Individuals who have positive experiences with traditional medicine, such as recovering from illness using traditional medicine, will be increasingly convinced of the benefits and effectiveness of traditional medicine. Testimonials from other people who have used traditional medicine with

positive results can strengthen an individual's belief in the benefits and effectiveness of traditional medicine. Scientific research that shows the effectiveness of traditional medicine in treating various diseases can strengthen an individual's belief in traditional medicine. Individuals' belief in the benefits and effectiveness of traditional medicine encourages them to consider its use when experiencing health problems. This is because they believe that traditional medicine can be an effective solution to overcome their illness. Individuals are more likely to consider using traditional medicine for minor or chronic illnesses that do not require immediate medical attention. Individuals who have less than satisfactory experiences with modern medicine, such as unwanted side effects or lack of effectiveness, are more likely to consider using traditional medicine. Individuals who have easy access to traditional medicine, such as at a traditional medicine shop or in their neighborhood, are more likely to consider using it.<sup>10-12</sup>

Individuals who have a positive attitude towards traditional medicine are more likely to follow instructions for using traditional medicine appropriately. Compliance with instructions for using traditional medicines is an important aspect in ensuring the effectiveness and safety of their use. Individuals who comply with instructions for using traditional medicines are more likely to consume traditional medicines with the right dose, frequency and time, follow the appropriate way of using traditional medicines, such as boiling, sticking or inhaling, avoiding using traditional medicines together with modern medicines which can cause drug interactions, as well as maintaining cleanliness and proper storage of traditional medicines. This

compliance is very important, especially for traditional medicines which have minimal side effects and work slowly. Individuals who have a positive attitude towards traditional medicine are more likely to believe that traditional medicine can help them recover from illness. This belief encourages them to follow instructions for use precisely in order to maximize the benefits of traditional medicine. Individuals who have a positive attitude towards traditional medicine have high motivation to recover from illness. This motivation encourages them to follow usage instructions precisely in order to achieve their goals. Individuals who have a positive attitude towards traditional medicine are more likely to trust the information they get about traditional medicine, including instructions for use. This belief encourages them to follow usage instructions dutifully. Individuals who have a positive attitude towards traditional medicine are more likely to follow instructions for using traditional medicine appropriately. Individuals who have a positive attitude towards traditional medicine are more likely to understand and remember instructions for using traditional medicine. Individuals who have a positive attitude towards traditional medicine are more likely to seek additional information about instructions for using traditional medicine. The findings of this study are in line with previous research which shows that a positive attitude towards traditional medicine is an important factor in influencing individual compliance with instructions for its use. Efforts to educate and promote the benefits and effectiveness of traditional medicines that are rational and based on scientific evidence, as well as the correct way to use them, need to be carried out to increase public knowledge and understanding. Efforts to

improve the accessibility and quality of traditional medicines, as well as education about their proper use, can help increase people's positive experiences with traditional medicines and encourage compliance with instructions for their use. Health workers need to be equipped with adequate knowledge and skills about traditional medicine in order to provide appropriate information and education to the public, as well as help them understand and follow instructions for using traditional medicine correctly. A positive attitude towards traditional medicine is an important factor in increasing individual compliance with instructions for its use. Efforts to educate, promote, and increase the accessibility and quality of traditional medicines, as well as the role of health workers, can help increase positive attitudes and individual compliance with instructions for using traditional medicines, thereby ensuring the rational and safe use of traditional medicines in society.<sup>13-15</sup>

Individuals who have a positive attitude towards traditional medicine are more likely to recommend its use to others. This shows that they are not only considering using traditional medicine for themselves, but also want to help others experience its benefits. Individuals who have a positive attitude towards traditional medicine have several reasons to recommend its use to others. They believe that traditional medicine can provide real and effective health benefits for various diseases. They want to help other people who experience health problems by recommending traditional medicines that they find useful. They believe that by recommending traditional medicine to others, they can help increase people's trust and awareness of traditional medicine. They want to preserve the

culture and traditions of using traditional medicine by sharing their knowledge with others. Recommendations for the use of traditional medicine from individuals who have a positive attitude can have several positive impacts. Recommendations from trusted people can increase public awareness about the benefits and effectiveness of traditional medicine, thereby encouraging them to consider using it. Individuals who have knowledge and experience about traditional medicine can provide appropriate recommendations to others, thereby helping them choose traditional medicine that suits their needs and conditions. Recommendations for the use of traditional medicine can strengthen the community of traditional medicine users so that they can share information and experiences with each other about the use of traditional medicine. Individuals who have a positive attitude towards traditional medicine are more likely to recommend its use to others. Individuals who have a positive attitude towards traditional medicine are more likely to recommend its use to people they know and trust. Individuals who have a positive attitude towards traditional medicine are more likely to recommend its use for various types of diseases. The findings of this study are in line with previous research which shows that positive attitudes towards traditional medicines are an important factor in influencing individuals to recommend their use to others. Individuals who have good knowledge about the benefits, effectiveness, and safe and appropriate ways to use traditional medicine are more likely to provide accurate and useful recommendations to others. Individuals who have positive experiences with traditional medicine, such as recovering from an illness using traditional medicine, are

more likely to recommend its use to others with confidence. Individuals who are surrounded by people who have a positive attitude towards traditional medicine and provide support for its use, are more likely to recommend its use to others with a sense of security and confidence. A positive attitude towards traditional medicine encourages individuals to recommend its use to others. These recommendations can have a positive impact in increasing awareness and use of traditional medicine, assist in choosing the right traditional medicine, and strengthen the community of traditional medicine users. Factors such as knowledge, personal experience, and social beliefs can influence recommendations for the use of traditional medicine.<sup>16,17</sup>

Individuals who have a high perception of behavioral control regarding the use of traditional medicine are more likely to have the intention to use it. This shows that individuals who feel they have control over their behavior in using traditional medicine are more likely to choose and use it. Perceived behavioral control refers to an individual's beliefs about how much they can control a behavior. Individuals with high perceived behavioral control believe that they can choose traditional medicine that suits their needs and health conditions. Individuals with high perceived behavioral control believe that they can follow instructions for using traditional medicine correctly and safely. Individuals with high perceived behavioral control believe that they can achieve positive and beneficial outcomes from the use of traditional medicine. The perception of high behavioral control towards the use of traditional medicine encourages individuals to have the intention to use it. Individuals with high perceived behavioral control feel confident in their ability to use

traditional medicine effectively. Individuals with high perceived behavioral control are more motivated to try and use traditional medicine because they believe that they can control the process. Individuals with high perceived behavioral control feel calmer and less anxious when using traditional medicine because they believe that they can control the outcome. Individuals who have a high perception of behavioral control regarding the use of traditional medicine are more likely to have the intention to use it. Individuals who have a high perception of behavioral control towards the use of traditional medicine are more likely to consider its use as an alternative or complement to modern medicine. The findings of this study are in line with previous research which shows that perceived behavioral control is an important factor in influencing intentions to use traditional medicine. Individuals who have good knowledge about the benefits, effectiveness and safe and appropriate use of traditional medicines will have a higher perception of behavioral control over their use. Individuals who have positive experiences with traditional medicine, such as recovering from an illness using traditional medicine, will have a higher perception of behavioral control towards its use. Individuals who are surrounded by people who have a positive attitude towards traditional medicine and provide support for its use will have a higher perception of behavioral control towards its use. The perception of high behavioral control towards the use of traditional medicine encourages individuals to have the intention to use it. Educational efforts, promotions, increasing the accessibility and quality of traditional medicines, and the role of health workers, can influence perceptions of behavioral



control and intentions to use traditional medicines.<sup>16-18</sup>

Individuals who have a high perception of behavioral control towards the use of traditional medicine are more likely to consider its use as an alternative or complement to modern medicine. This shows that individuals who feel they have control over their behavior in using traditional medicine are more open to combining modern and traditional medicine in their efforts to achieve optimal health. Integration of modern and traditional medicine refers to a holistic approach that combines the strengths and benefits of both health systems to achieve optimal outcomes for patients. Individuals with high perceived behavioral control believe that they can choose the right traditional medicine to treat a particular disease and use it as an alternative to modern medicine. Individuals with high perceived behavioral control believe that they can use traditional medicine along with modern treatment to increase the effectiveness of treatment and reduce side effects. Individuals with high perceived behavioral control are open to collaborating with modern and traditional healthcare professionals to develop treatment plans that are comprehensive and appropriate to their needs. The perception of high behavioral control towards the use of traditional medicine encourages individuals to consider the integration of modern and traditional medicine. Individuals with high perceived behavioral control feel confident in their ability to choose and use traditional medicine effectively, so they are more open to combining it with modern medicine. Individuals with high perceived behavioral control feel they have control over their own health, so they are more likely to seek treatment alternatives that align with their

values and beliefs. Individuals with high perceived behavioral control are more open to learning about and trying various treatment approaches, including traditional medicine. Individuals who have a high perception of behavioral control towards the use of traditional medicine are more likely to consider its use as an alternative or complement to modern medicine. Individuals who have a high perception of behavioral control regarding the use of traditional medicine are more likely to seek information about the benefits and effectiveness of traditional medicine. The findings of this study are in line with previous research showing that perceived behavioral control is an important factor in influencing the integration of modern and traditional medicine. Individuals who have good knowledge about the benefits, effectiveness, and safe and appropriate use of traditional medicine will have a higher perception of behavioral control over its use and be more open to integrating it with modern medicine. Individuals who have positive experiences with traditional medicine, such as recovering from an illness using traditional medicine, will have a higher perception of behavioral control over its use and be more open to integrating it with modern medicine. Individuals who have a positive attitude towards modern medicine and are aware of its limitations are more likely to consider the integration of traditional medicine as a complement to improve health outcomes. The perception of high behavioral control towards the use of traditional medicine encourages individuals to consider the integration of modern and traditional medicine. Educational efforts, promotions, increasing the accessibility and quality of traditional medicine, the role of health workers, and the development

of effective integration models, can influence perceptions of behavioral control and the integration of modern and traditional medicine.<sup>19,20</sup>

#### 4. Conclusion

The findings of this study indicate that attitudes and perceived behavioral control are important psychological factors in influencing intentions to use traditional medicine in Yogyakarta. Educational and promotional efforts that focus on increasing positive attitudes and perceptions of individual behavioral control towards traditional medicines can help increase the rational and safe use of traditional medicines in society.

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