

# Modification of Curcuma Herbal Honey and Elderly Exercises as an Effort to Improve the Health of Elderly Patients Participating in the Prolanis Program

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**Abstract.** In 2020, Indonesia has the third largest elderly population in the world. The high number of elderly people (seniors) is directly proportional to the problems faced by the elderly which can cause several health problems. Diseases that are often experienced by the elderly group include degenerative diseases, hypertension and diabetes, which have high cases which can reduce their current standard of living. According to the Central Agency of Statistics (BPS), most elderly people do not undergo disease treatment, one of the risk factors being concerns about consuming chemical drugs in the long term. Using herbal honey is one solution that can be used to maintain the health of the elderly. Herbal ingredients are ingredients derived from plants, plant extracts that humans use to influence their health. Curcuma is a herbal ingredient that contains anti-inflammatory and antioxidant properties. The aim of this research is to find out how to use ginger herbal honey to improve the health of the elderly. The research methodology uses a quasi-experimental design and provides educational interventions with survey *pre-test* and *post-test*. A total of 41 elderly people were given educational exposure and filled out pre-test questionnaires *post-test* and hedonic test for 11 panelists. Statistical results show that *p-value*  $0,000 < 0,05$ , on knowledge and behavior variables. This shows that the group of elderly people with hypertension at the Kasihan I Community Health Center had a significant increase in knowledge and behavior regarding health using herbal ingredients. According to the panelists, the most popular taste test results were the preparation of herbal honey with milk. In conclusion, education can improve the knowledge and behavior of the elderly and a taste test of herbal medicine that can be preferred is a preparation of herbal honey mixed with milk.

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## 1 Introduction

The elderly are the age group over 60 years, generally those entering old age experience various health problems. Conditions in old age generally experience a decline both physically, in stamina and in appearance (1). It is important to maintain your health more strictly by managing a healthier lifestyle. Projections in 2030 are estimated that at least 1 in 6 people will be elderly. This happens because of the high elderly population. (2). Statistical data collected from the Central Statistics Agency (BPS) in 2022 states that among elderly people who have health problems, 81.99% treat their complaints independently, the rest seek outpatient treatment or do not even treat or control them at all. These habits can have an impact on uncontrolled disease. Efforts to maintain safe health can be done by drinking herbal medicine.

Herbal ingredients are ingredients that refer to natural ingredients derived from plants or plant parts that are used for health or medicinal purposes. Herbal ingredients can be roots, leaves, flowers, fruit, seeds, or even plant bark. The innovation and use of herbal ingredients has existed since ancient times and has been part of various medicinal traditions throughout the world. Therefore, older people are usually used to consuming herbal ingredients as medicine and daily drinks to maintain stamina and health.

Herbal ingredients have various benefits that can depend on the type. The following are some general benefits of using herbal ingredients as a) Anti-inflammatory: Curcumin shows its effectiveness by inhibiting cell proliferation, inflammation, metastasis, and various molecular targets (3). Many herbal ingredients have natural anti-inflammatory properties that can help reduce inflammation in the body. Examples are turmeric, ginger and chamomile flowers. b) Antioxidants: Antioxidant activity can be determined by looking at the ability of ginger extract to inhibit free radicals (4). Herbal ingredients such as green tea, red wine, and berries are rich in antioxidants, which help fight free radicals and maintain cell health.

Curcuma rhizome, which is also known as curcuma or *Curcuma xanthorrhiza*, is part of a plant belonging to the Zingiberaceae family. This plant originates from Southeast Asia and has a long history as a traditional herbal ingredient used in traditional medicine in various cultures in the region (5). curcuma rhizome is the underground part of the ginger plant which is similar to ginger or turmeric. This rhizome has a brownish yellow color and has a distinctive taste and aroma. In many countries in Southeast Asia, ginger is traditionally used for a variety of health purposes, including as a tonic to increase appetite, relieve mild digestive disorders, and cleanse or treat liver function. Some of the active compounds contained in ginger include curcuminoids, starch, essential oils, and various other substances that have the potential to provide health benefits. Starch is usually yellowish white because it contains curcuminoids (6). The curcuminoid compounds in ginger have anti-inflammatory and antioxidant properties which can help fight free radicals and reduce inflammation in the body.

The use of curcuma is not only limited to traditional medicine, but is also the subject of modern scientific research. Traditional herbal drink innovations often associated with traditional models, now they are widely sold online. Consuming herbal preparations usually has a very sharp aroma and taste. curcuma is one of the rhizomes that has an unattractive taste. Meanwhile, consumption of herbal medicine is influenced by the human senses. A taste can be grouped into sensory attributes, namely words that describe taste, color, shape, appearance and texture (7). To test how herbal preparations are accepted by the sense of taste, you can use the hedonic test. The hedonic test is used to assess and measure the taste that can be received by the human senses which produces an impression (8). There are now various herbal medicine innovations that can be an alternative to vitamins to maintain the body's health condition. Herbal medicine is chosen because it is easy and cheap to obtain (9). Several

studies have shown that ginger has the potential to support liver health, improve digestive function, and have anti-inflammatory effects for osteoarthritis (10).

## **2 Methodology**

This section contains how the author arranges research steps to meet the research objectives.

### **2.1 Intervention design and methods**

We used a quasi-experimental pre- and post-test design without a control group. The intervention took the form of health education on elderly topics and treatment with herbal honey. Session one was given through a short lecture assisted by the media followed by discussion and demonstration. The second session carried out free examinations for the elderly. Knowledge, attitudes and behavior were measured in a checklist questionnaire before and after the intervention was given. The instrument used was a questionnaire to assess the knowledge, attitudes and behavior scores of the elderly.

### **2.2 Population and Subject**

The research participants were guests of the Kasihan I Community Health Center. Initially there were 50 participants in this research sample; However, four participants withdrew due to technical reasons. A total of 41 respondents agreed to take part in the training until the end, but only 46 respondents were willing to be interviewed and fill out a questionnaire regarding attitudes and health behavior of the elderly. Most respondents were in the age range 46-65 years, which was the range of respondents who met the inclusion criteria. ready to participate in research as a subject. The researcher verified the respondent's identity by not including the respondent's name in the research results. In addition, researchers will only use data that has been obtained for empirical analysis purposes.

In addition, the information collected will only be used by researchers. In addition, researchers will uphold and protect the rights of respondents by asking for consent before asking for the patient's willingness to participate in the research. The health research ethics committee of the Faculty of Medicine and Health Sciences, Muhammadiyah University of Yogyakarta has issued a research approval protocol. Location and Time of Research Kasihan I Community Health Center was the location of this research from January 2 to February 20 2024.

### **2.3 Research Instruments and data collection**

The questionnaire consists of 3 parts, namely the knowledge section, and the elderly's behavior towards herbal ingredients and quality of life. Hedonic test treatment was also carried out to determine the sensory or taste of herbal honey preparations that the elderly could feel and accept appropriately. The demographics section of the questionnaire was designed to collect information about respondents' age, gender, education, body mass index, blood pressure, and random blood sugar test results. Data collection was carried out through interviews to fill out the questionnaire.

### **2.4 Data analysis**

Descriptive statistics were used to present the demographic and clinical characteristics of the subjects. Bivariate analysis used the dependent t-test to assess differences in knowledge and skill scores for using elderly health education with a confidence level of 95%.

### 3 Results and Discussion

#### 3.1 Respondent profile characteristics based on demographics.

The table below shows the data obtained in the research regarding the basic data of the respondents who took part in the research.

**Table 1.** Characteristics of respondents

Variable	Frequency	Percentage
<b>Sex</b>		
Man	1	2,4
Women	40	97.6
Total	41	100
<b>Age</b>		
46-65	32	76,6
>65 years	9	23.4
total	41	100
<b>Education</b>		
elementary school	9	22
First Secondary School	12	29.38
SMA	11	26.82
D3	2	4.8
S1	7	17
total	41	100
<b>BMI</b>		
Normal	31	75.60
Obesity	5	12.20
Total	41	100
<b>Blood pressure</b>		
Normal	9	21.95
Hypertension	32	78.5
total	41	100
<b>Random blood sugar</b>		
Normal	39	95.20
Abnormal	2	4.8
total	41	100

Based on the results in table 1 above regarding gender specific characteristics, there were 40 respondents (97.6%) who were female and only 1 respondent (2.4%) who was male. The next age variable, most of the respondents who took part in this study were between 46 and 65 years old (76.6%) and the remainder were over 65 years old (23.4%).

### 3.2 The results in the form of percentages on the variables of knowledge, attitudes, and behavior regarding Efforts to Maintain Health with Physical Activity and Consumption of Herbal Honey

Based on the results in Table 2, it can be seen that there was an increase in the pre-test and post-test percentages for each statement item. The lowest result in the pre-test was 83% with the statement "Habatussauda is another name for black cumin seeds". And the highest pre-test was obtained from the statement "Elderly exercise is an effort to maintain 100% health. Meanwhile, the majority of post test results had a percentage of answers above 90% correct.

**Table 2.** Percentage difference of knowledge regarding efforts to maintain health with physical activity and consumption of herbal honey in 41 elderly people in Bangunjiwo Village before and after receiving intervention

No.	Question	Pretest	Posttest
1.	Elderly exercise is an effort to maintain health	100%	100%
2.	Movements in elderly exercise is a fast, jerky movement	88%	90%
3.	curcuma can be in the form of powder or drink with honey	90%	100%
4.	curcuma is beneficial for the body's metabolism	98%	100%
5.	Habatussauda is another name for black cumin seeds	83%	100%

**Table 3.** Percentage differences of attitudes towards efforts to maintain health with physical activity and the benefits of consuming herbal honey in 41 elderly people in Bangunjiwo Village before and after receiving the intervention

No.	Question	Pretest	Posttest
1.	I take part in gymnastics regularly to improve your health	95%	95%
2.	People with chronic illnesses should always do regular exercise	34%	66%
3.	I have planted family medicinal plants in my yard	93%	90%
4.	Herbal medicines are safer for elderly people to consume than chemical medicines	83%	78%
5.	Drinking herbs makes my body fresher	90%	88%

Based on the results in table 3 above, it can be seen that there was an increase in the pre-test and post-test percentages for each statement item. There was a significant increase in the pretest with the question "regular exercise should always be done by people with chronic diseases". Meanwhile, the decrease in value after intervention on the question "Herbal medicines are safer for elderly people to consume than chemical medicines" decreased from 83% to 78% and Drinking herbs makes my body fresher from 90% to 88%.

**Table 4.** Percentage differences of behavior regarding efforts to maintain health with physical activity and the benefits of consuming herbal honey in 41 elderly people in Bangunjiwo Village before and after receiving the intervention

No.	Question	Pretest	Posttest
1.	I always exercise at least 3x/week	71%	76%
2.	Every time I routinely check my health (for example: blood pressure)	93%	95%
3.	I consume more than 1 teaspoon of salt a day	66%	66%
4.	I regularly consume herbs (such as: ginger) to maintain health	51%	71%
5.	I have planted my own herbal plants so that I can make herbal medicine	76%	78%

Based on the results in Table 4 above, it can be seen that there was an increase in the pre-test and post-test percentages for each statement item. There was a significant increase in the pretest with the question "I regularly consume herbs (such as ginger) to maintain health" from 51% to 71% and in the statement "I have planted my own herbal plants so that I can make herbal medicines" from 76% to 78%.

### 3.3 Statistical results of knowledge, attitude and behavior variables

Based on the results in Table 5, it can be seen that statistically there is a relationship between the knowledge and behavior variables. A significant relationship with the knowledge variable can be proven with a p-value of 0.000 < 0.05 so that there is a significant correlation with the knowledge variable in the pre-test and post-test. In the attitude variable, there is also a significant relationship as evidenced by a p value of 0.000 < 0.05.

**Table 5.** Statistical results of the correlation of knowledge, attitudes and behavior

Variable		N	Paired different	
			Mean ± SD	P
Knowledge	Pre-test	41	9,2439 ± 0,66259	0.000
	Post-test		9.8049 ± 0,40122	
Attitude	Pre-test		15.5367 ± 2,0988	0.306
	Post-test		15.0732 ± 2,2180	
Behavior	Pre-test		8.5366 ± 0,95125	0.000
	Post-test		8.5610 ± 0,97593	

### 3.4 Hedonic test results of the method of mixing herbal honey with other ingredients

Based on the results of table 6 above, it is a hedonic test (sense test) carried out on 11 panelists. The hedonic test treatment uses herbal honey preparations mixed with milk, yogurt, soda, and pure without any mixture. The highest score was the mixture of herbal honey with milk and yogurt (score 10), this means that herbal honey has a taste that matches milk and yogurt so it can be an innovative herbal latte. Meanwhile, the lowest score was pure herbal honey and herbal honey without soda (score 1). Based on the highest average score for the hedonic test for herbal honey with milk, it was 9.3182.

**Table 6.** Hedonic test results for mixing herbal honey with drinks for 11 sample respondents in Bangunjiwo village

Type of herbal honey mixture	N	Shoes minimum	Maximum score	Mean
Milk herbal honey	11	6	10	9,3182
Herbal honey with yogurt		5	10	8,8636
Herbal honey with soda		1	9	5,4555
Pure herbal honey		1	10	7,1818

Health education for the elderly is an important effort to improve knowledge, skills, attitudes and health-related behavior in the elderly population. The goal is to provide them with the resources necessary to better manage their health, so they can enjoy an optimal quality of life throughout their lifespan. The interventions carried out are expected to encourage better living habits, especially in the elderly population, needing to pay attention to several aspects other than behavior change. For example, emotional support and encouragement (11), elderly groups often experience complex changes and challenges in facing their lives, such as the loss of a friend or life partner, physical changes, or developing health problems. Emotional support from family, friends or the community can help reduce social isolation and improve their mental well-being.

Aspects of an elderly person's inner self play an important role in influencing their health, quality of life, and independence. Visible changes can be seen in person's behavior. Behavior change theory is an approach or conceptual framework used to understand and explain the processes behind changes in individual behavior (12). These theories help identify factors that influence a person's behavior and provide insight into how behavior changes. The use of the Theory of Planned Behavior (TPB) emphasizes that behavior is influenced by an individual's intention to carry out certain actions. This intention is influenced by the individual's attitude toward the behavior, subjective norms (the individual's perception of social norms), and perceived behavioral control (the individual's beliefs about the extent to which they have control over the behavior) (13).

Changes in behavior related to treatment with alternative uses of herbal ingredients can be influenced by individual beliefs regarding the contents and benefits that are thought to exist in herbal ingredients. The motivation that causes the elderly to consume herbal ingredients is that many people believe that herbal ingredients are a natural treatment option and come from plants or other natural sources. They may have the belief that herbal ingredients are safer or more easily tolerated by the body than synthetic drugs (14). Some believe that the use of herbal ingredients is often related to certain cultural traditions or heritage. Some people use herbal ingredients based on hereditary practices or traditional beliefs that have long been believed in their communities (15).

Innovations in the development of herbal medicine currently include various forms, including powder form (16). Jamu is traditional Indonesian medicine made from natural ingredients such as spices, plants, or other ingredients that have health benefits. Traditionally, herbal medicine is often available in liquid form, as a decoction or extract that is taken orally. However, with the development of technology and diverse market demands, the herbal medicine industry has also experienced innovation to adapt to modern consumers. One form of significant innovation is the development of herbal medicine in powder form to herbal medicine in canned form mixed with soda. Now herbal medicine can be found more easily and sold more widely because it is in powder form so it lasts longer.

Apart from that, today's herbal medicine is not only consumed by the elderly group, but millennials also like to consume herbal medicine. Many innovations in the form of herbal medicine have been developed so that all ages can enjoy and experience the benefits of herbal medicine. One of them is mixing herbs or herbs with milk. Adding flavor to milk can make *creamy taste* (17) The taste of milk can reduce the strong taste of herbal medicine so that it

is more acceptable to the taste buds. The presence of milk ingredients is also a consideration for how long the herbal latte can be stored and is safe for consumption. Based on research, ginger latte has a shelf life of 33–35 days at a temperature of 25 degrees Celsius (18). Herbal medicine innovation in previous research succeeded in making moringa latte which was used to reduce stunting rates (19).

Curcuma or (*Curcuma xanthorrhiza*) is a herbal plant that is often used in traditional medicine in Indonesia. curcuma is a rhizome that can be used for herbal medicine preparations by minimizing its strong taste. One method is to make ginger in a dry form and mix it with honey (20). Curcuma roots contain active compounds such as curcuminoids, which are known to have potential anti-inflammatory and antioxidant effects (21). Many people believe that drinking ginger herbal medicine regularly can provide various health benefits, including controlling blood pressure. Based on several studies, there are indications that ginger can provide benefits for heart and blood vessel health, which in turn can help control blood pressure (22).

## 4 Conclusions

Interventions in the form of education for the elderly and herbal consumption patterns have been proven to increase knowledge and behavior in using herbs and maintain the health of the elderly. Management education carried out through short lectures, dialogue, demonstrations and practice has increased the elderly's knowledge and behavior scores regarding herbal ingredients. An increase in knowledge and behavior occurred after the intervention was carried out, this was proven by the results of a correlation between knowledge and behavior in the elderly and herbal health surveys. Apart from that, the hedonic taste test resulted in the innovation of ginger herbal honey which has a delicious taste and is acceptable to the senses with a mixture of milk or yogurt.

## Acknowledgements

The researcher would like to thank the UMY Community Service Institute for providing financial assistance to carry out this activity. Researchers also appreciate the permission and facilities provided by the Head of Kasihan 1 Community Health Center so that this activity can be carried out. And the author does not forget to thank all respondents for their voluntary participation and cooperation in this research.

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