

Integrative Empowerment Intervention of Community Health Workers In Controlling Non-Communicable Diseases (NCDs) With A Herbal- Based Local Wisdom Approach

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ARTICLE INFO	ABSTRACT
<p>Article history Received : 12 June 2025 Revised : 04 July 2025 Accepted : 08 July 2025 Available Online : 17 July 2025 Published Regularly : July 2025</p> <p>DOI: https://dx.doi.org/10.33366/jc.v13i2.7120</p> <p>Keywords: Community Health Worker, Herbal Medicine, Integrative Empowerment, NCDs.</p> <p>Corresponding author e-mail ikacahyaningrum86@unitri.ac.id</p> <p>PUBLISHER: UNITRI PRESS Jl. Telagawarna, Tlogomas-Malang, 65144, Telp/Fax: 0341-565500</p>  <p>This is an open access article under the Creative Commons Attribution-ShareAlike 4.0 International License. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI. CC-BY-SA</p>	<p><i>Promotional and preventive efforts are very important in combating non-communicable diseases (NCDs), including through the use of traditional medicines. Given the public's limited knowledge about the safe and effective use of natural ingredients, it is essential to raise awareness about the types, processing, and proper consumption of medicinal plants. Community health workers, as the frontline of primary health care, play a particularly important role in disseminating this information. The purpose of this study was to analyze the effect of applying an integrative empowerment model on the ability of community health workers to control NCDs with an herbal-based local wisdom approach. The research method used was a pre-experimental experiment with one group pretest-posttest design. Researchers applied an empowerment model with a meeting duration of 200 minutes. The sample of this study consisted of 57 community health workers in the Wagir community health center, using consecutive sampling techniques. The results showed a significant effect of applying the integrative empowerment model on the knowledge and skills of community health workers in controlling NCDs with an herbal-based local wisdom approach in the Wagir community health center with a p value (<0.001) with a difference in the mean knowledge and skills of 15,228 and 46,632, respectively. This study concluded that there was a significant effect of applying the integrative empowerment model on the knowledge and skills of community health workers in controlling NCDs with an herbal-based local wisdom approach.</i></p>
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1. INTRODUCTION

Non-communicable diseases (NCDs) are a public health problem due to the high morbidity and mortality rates worldwide (Ministry of Health Indonesia, 2022). Some types of diseases included in NCDs are hypertension and diabetes mellitus. Globally, an estimated 1.28 billion adults aged 30–79 years have hypertension (WHO, 2023a). In 2023, the prevalence of hypertension in Indonesia based on blood pressure measurements in people aged ≥ 18 years was 30.8% (Ministry of Health Indonesia, 2023). In East Java, there are 11,702,478 cases of hypertension. Of this total, 73.8% or 8,632,039 people with hypertension received health services. In 2023, the achievement of health services for hypertensive patients in Malang Regency was still low at 35.5% (East Java Provincial Health Office, 2024).

Risk factors that trigger the occurrence of NCDs include 2 factors, namely factors that can be changed such as physical activity, diet, smoking, consuming alcohol, and being overweight. Other factors that cannot be changed include age, gender and heredity (Ministry of Health Indonesia, 2023). Some of the dangers of hypertension include stroke, blindness, heart failure and kidney failure (Tanggul, 2024). Similar to hypertension, complications from diabetes mellitus are also dangerous, such as heart attacks and strokes, infections or severe injuries to the legs, kidney failure and sexual dysfunction, visual impairment (P2PTM, 2019), (P2PTM, 2021).

Promotive and preventive efforts against non-communicable diseases are carried out to prevent complications. The use of traditional medicine is one method of promotive and preventive that originates from various medicinal plants and herbs based on local wisdom, namely by utilizing herbal plants that are available in the community and have been known by the community for generations. If consumed regularly, the community will obtain various health benefits ((Ministry of Health Indonesia, 2021). Traditional herbal medicines have been used by people to treat health problems and are recognized by many countries for their benefits in improving public health. WHO recommends the use of traditional medicine to monitor physical and mental health. Herbal medicines include medicinal plants, herbal ingredients, herbal preparations, and herbal finished products containing active ingredients from plant parts, or their combinations. (WHO, 2023b).

Promotive and preventive measures against non-communicable diseases are taken to prevent complications. The use of traditional medicine is one method of prevention that utilizes medicinal plants found in the community and has been used for generations. If consumed regularly, it can provide various health benefits ((Ministry of Health Indonesia, 2021). Herbal plants such as ginger (*Zingiber officinale*), ginseng (*Panax spp.*), garlic (*Allium sativum*), tea (*Camellia sinensis*) (Kamyab et al., 2021), the cat's whisker plant (*Orthosiphon stramineous*) and *Moringa* have antihypertensive properties (Ali et al., 2022) , besides that garlic processed into black garlic can also be antidiabetic, antioxidant and anti-inflammatory (Thach, 2018). There are many other herbal plants that have been clinically tested to control NCDs.

Given the lack of knowledge and skills among the community in the safe and effective use and processing of natural materials to combat degenerative diseases, there is a need for socialization regarding the types of medicinal plants, their processing and consumption that

do not pose a health risk to the community. The community group closest to the community is the community health workers. Community health workers are volunteers selected by the community and play a role in community development. They are recruited from, by and for the community (Sunarti, 2018). Therefore, the skills of community health workers related to NCD control using a local wisdom-based herbal approach need to be improved in promotive and preventive efforts. Community skills can be improved through an integrative empowerment model. The integrative empowerment model is designed to improve the capacity of individuals or communities in decision-making and self-control (Robbins et al., 2002), (Iswanti et al, 2023).

The results of the assessment at the Wagir community health center, the prevalence of hypertension in the community was 7,213 (10.14%) and diabetes mellitus was 1,288 (1.81%) out of 71,135 total age fifteen years and over. Interviews with six health workers at the Wagir Community Health Center revealed that only two health workers frequently used natural ingredients to prevent NCDs at home, while the other four did not use them at all.

Based on the above background, the researcher is interested in conducting a study on integrative empowerment models for NCD control with herbal-based local wisdom. The research problem in this study is whether there is an effect of the application of the integrative empowerment model on the ability of community health workers in efforts to control NCDs with herbal-based local wisdom in the Wagir community health center. The purpose of this study is to analyze the effect of the application of the integrative empowerment model on the ability of community health workers in efforts to control NCDs with herbal-based local wisdom at the Wagir community health center.

2. METHODS

2.1 Research design

The researcher conducted quantitative research using a pre-experimental method with a one group pretest-posttest design, which involves an initial test (pretest) in the form of knowledge and skills of community health workers before being given treatment. After being given treatment, then conduct a final examination (posttest) of the level of knowledge and skills. This study aims to analyze the effect of the integrative empowerment model in changing the knowledge and skills of Community Health Workers as an effort to control NCDs before and after being given the intervention of applying the integrative empowerment model.

2.2 Setting and Sample/Participants

The study was conducted in the working area of Wagir community health center, namely Petungsewu and Parangargo Villages, and was conducted from September to October 2024. The population in this study consisted of 114 community health workers in the villages of Petung Sewu and Parangargo, and the sample in this study was 57 community health workers in those villages. The sampling technique used was convenience sampling.

Inclusion criteria

- 1) Public health workers in the working area of the Wagir Community Health Centre (Petungsewu and Parangargo villages) who were present at the time of the study;
- 2) The community health worker willing to be the subject of the study;
- 3) The community health worker who was present on time at the time of the activity and participated in the activity until completion.

Exclusion criteria

The community health worker who did not participate in the activity until it was completed as scheduled.

2.3 Intervention (Applicable to Experimental Studies)

In this study, researchers provided interventions in the form of integrative empowerment model training to all community health workers. Before the intervention was given, researchers gave a pretest to community health worker by distributing questionnaires and observing the skills of community health workers in the use and processing of herbal-based natural ingredients. The training was conducted for 200 minutes. The following is the intervention of the implementation of the integrative empowerment model for controlling NCDs with herbal-based local wisdom approach for community health workers in Wagir community health center.

Table 1. Intervention Implementation of Integrative Empowerment Model

Duration	Activity	Methods
10 minutes	Pretest of knowledge level of community health worker	Questionnaire Distribution
15 minutes	Observation of community health worker skills before intervention	Demonstration Observation
100 minutes	NCDs and their control, Utilization of herbal ingredients in NCD control	Lecture and Discussion Distribution of training module
50 minutes	Demonstration on how to make herbal ingredients for NCD control	Demonstration
10 minutes	Post test of knowledge level of community health worker	Questionnaire Distribution
15 minutes	Observation of community health worker skills after intervention	Demonstration Observation

2.4 Measurement and Data Collection

The research instrument used for knowledge and skills of community groups used a was a questionnaire assessing knowledge of NCD control using an herbal-based local wisdom approach consisting of 25 questions. Indicators used in the questionnaire include the concept of NCDs, the use of butterfly pea (*clitoria ternatea l.*), moringa leaves (*moringa oleifera*), orthosiphon aristatus, and garlic in controlling NCDs. The questionnaire has been tested for validity and reliability with the results of the validity test of 25 instruments showing all 25 items to be valid, with calculated r-values exceeding the r-table value (0.324) and reliable, as shown by a Cronbach's alpha of 0.841. In addition to the questionnaire, researchers also used an observation sheet of containing 13 items to observe the skills of community health

workers in utilizing herbal ingredients with a local wisdom approach in promotive and preventive NCD efforts, while training was conducted using a training module. The training module covers the basic concepts of NCDs, an introduction to herbal plants for NCD prevention, and how to process them, including butterfly pea (*Clitoria ternatea* L.), moringa leaves (*Moringa oleifera*), *Orthosiphon aristatus*, and garlic. Data collection was conducted by the researchers through contacting potential research subjects with the involvement of village nurses, village midwives and local village community health worker coordinators. The study was conducted simultaneously in each village, and participants received the same training materials. The following is a flowchart of data collection:

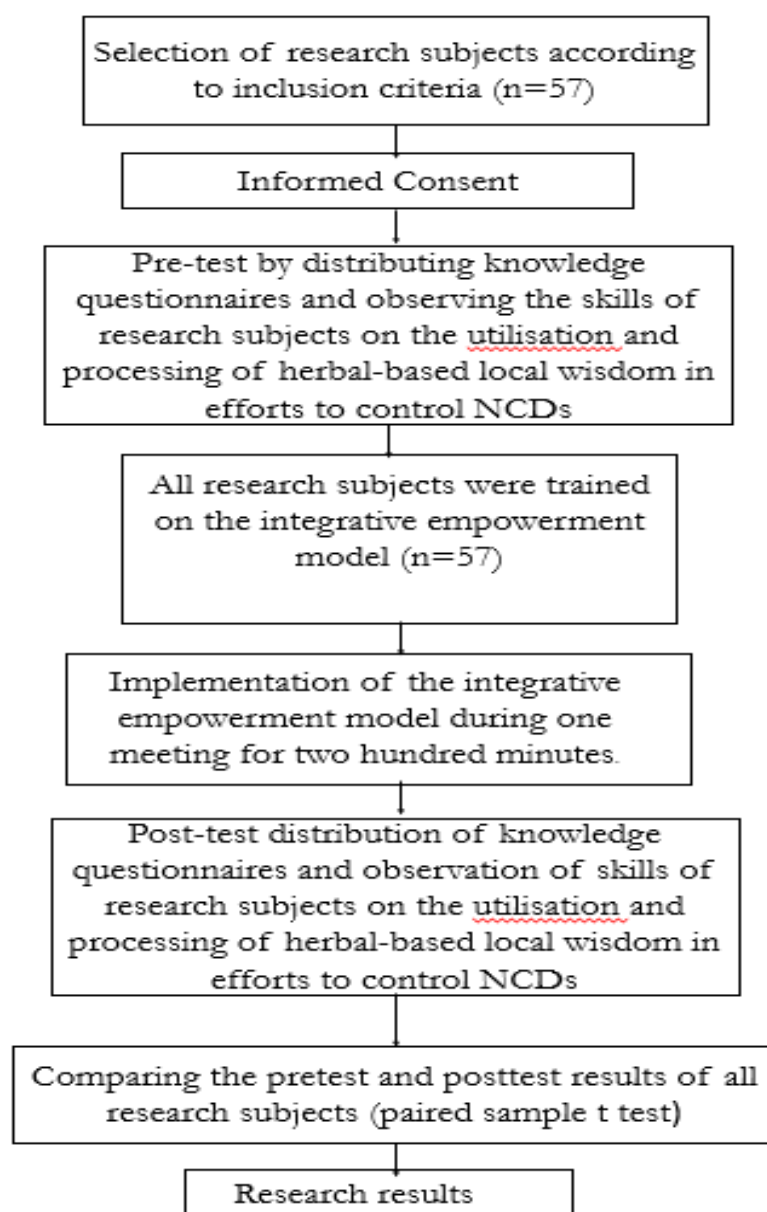


Figure 1. Flowchart of Data Collection

2.5 Data Analysis

This study analyzes the effect of training using the integrative empowerment model on changes in knowledge and skills as an effort to control NCDs with herbal-based local wisdom in community health workers in the Wagir community health center. Data analysis used a paired sample t-test, which is a parametric statistical test used to compare the means of two paired or related data groups. The paired t-test was used to test the difference in knowledge and skills before and after the integrative empowerment model training.

2.6 Ethical considerations

Before the intervention, all participants provided written informed consent, which reflects the ethical principle of informed consent. In addition, researchers respected the autonomy of the research subjects, maximized benefits, and avoided actions that could harm the subjects. In addition, participants received an explanation of the purpose, benefits, the research process, confidentiality and their right to withdraw before data collection. By providing complete information, maintaining confidentiality and explaining the subject's right to withdraw, potential risks to research subjects can be minimized and the welfare of research subjects can be maintained. The research proposal has been approved and ethically approved by the Health Research Ethics Commission of The College of Health Sciences of Guna Bangsa Yogyakarta with number 026/KEPK/IX/2024.

3. RESULTS

The following is the data on respondent characteristics

Table 2. Age and experience as a community health worker.

Variables	Frequency	Percentage (%)
Age		
late adolescence	3	5.3
early adulthood	15	26.3
late adulthood	31	54.4
early old age	8	14.0
Experience		
≤ 5 years	35	61.44
>5 years	22	38.6

The data shows that most community health workers are in the late adulthood, with a total of 31 people (54.4%), while most have less than five years of work experience, namely 35 people (61.4%), and a small portion has more than five years of experience, namely 22 people (38.6%).

The ability of community health worker in controlling NCDs with an herbal-based local wisdom approach before and after the implementation of an integrative empowerment model.

The following are the results of research on the ability of community health workers in controlling NCDs with an herbal-based local wisdom approach before and after the application of the integrative empowerment model, the ability of community health worker seen from the level of knowledge and skills before and after the intervention.

Table 3. The ability of community health worker in controlling NCDs with an herbal-based local wisdom approach before and after the implementation of an integrative empowerment model

Variables	n	Mean	Min	Max	SD
Knowledge					
Knowledge before Intervention	57	71.02	48	92	10,234
Knowledge after Intervention	57	86.25	56	100	10,114
Skills					
Skills before the Intervention	57	42.96	23	69	9.941
Skills after the Intervention	57	89.60	62	100	8.942

The results of the above study showed the average value of the level of knowledge of community health workers in controlling NCDs with an herbal-based local wisdom approach before the application of the integrative empowerment model was 71.02 and after the intervention was 86.25. The average value of community health workers' skills before the intervention was 42.96.

The Effect of the Integrative Empowerment Model on Community Health Worker Ability to Control NCDs with an Herbal-Based Local Wisdom Approach in Community Health Worker in Wagir community health center.

The following are the results of the paired sample t test in this study.

Table 4. The Effect of the Integrative Empowerment Model on community health worker Ability to Control NCDs with an Herbal-Based Local Wisdom Approach in Community Health Worker in Wagir community health center.

Variables	n	Mean difference ±SD	CI 95%	p
Knowledge				
Knowledge before Intervention	57	15.228±10.126	17.915- 12.541	<0,001
Knowledge after Intervention	57			

Skills		46.632±12.035	49.825-	<0,01
Skills before Intervention	57		43.438	
Skills after Intervention	57			

Table 4 above shows that there is a significant effect of implementing an integrative empowerment model on the knowledge and skills of community health workers in controlling NCDs with an herbal-based local wisdom approach in the Wagir community health center with a p-value (<0.001) with a difference in the mean knowledge and skills of 15,228 and 46,632, respectively.

4. DISCUSSION

The results of the study indicate that the average level of knowledge among community health workers is sufficient, while their skill level is inadequate. From this data, it can be concluded that some community health workers are aware of herbal ingredients that can be used to prevent NCDs, but they are not yet skilled in how to process them. The prevention of NCDs referred to in this study includes the prevention of hypertension, type II diabetes mellitus, coronary heart disease, and cancer. The herbal ingredients used for the prevention of these diseases include the processing of butterfly pea (*clitoria ternatea l.*), moringa leaves (*moringa oleifera*), orthosiphon aristatus, and garlic.

One of the things that affects the level of knowledge of community health workers about the utilization of herbal ingredients is experience. The data shows that a small proportion of community health workers have more than five years of experience. This is in accordance with the results of research by Nurliawati & Sambas (2015), there was a significant relationship between the length of time as a community health worker and the level of knowledge. The data shows that most community health workers are in late adulthood. According to Apriani & Oklaini (2022), other factors that influence the knowledge of community health workers include age and education. According to researchers, the knowledge of community health workers about the use of herbs in controlling NCDs can come from previous experience, and it is possible to get information from health workers at the community health center, considering that the use of complementary therapy treatment, such as herbal medicine can be provided at health facilities with several conditions. In addition, age also affects a person's level of knowledge, the more mature the person is, the better the ability to capture and think in obtaining information or knowledge.

The application of the integrative empowerment model is carried out by providing several training materials to community health workers with the theme of utilizing herbal-based local wisdom. The results showed an increase in the average ability of community health workers in controlling NCDs with an herbal-based local wisdom approach before and after the application of the integrative empowerment model, which was 15,228. This is in line with the research of Iswanti et al (2024), on the effectiveness of integrative empowerment interventions for families in the care and prevention of relapse in schizophrenic patients, the results of their research showed an increase in the average ability of families before and after intervention in the care and prevention of relapse in family members suffering from schizophrenia.

To improve the skills of community health workers in processing herbal ingredients in controlling NCDs, demonstrations were conducted. The results showed an increase in the average skills of community health workers from before and after the intervention. This is in line with research conducted by Setyatama & Damayanti (2023), the results of their research showed an increase in the knowledge of community health workers to prevent stunting through demonstration techniques, the results of his research showed that there were differences in abilities before and after community health worker were given training with demonstration methods.

The results showed that there was a significant effect of implementing an integrative empowerment model on the ability of community health workers to control NCDs with an herbal-based local wisdom approach in the Wagir community health center. This is in accordance with the research of Iswanti et al (2024), which stated that there is a significant effect of integrative empowerment interventions for families in the care and prevention of relapse in schizophrenia patients with a p-value of <0.001.

Researchers used module-based media in this integrative empowerment model training. The results of the study using modules made it easier for community health workers to understand the training material provided, this improvement can be seen from the increase in the average ability of community health workers before and after training. These results are supported by Wahyuni et al (2019), which showed a significant increase in average knowledge and attitudes after training activities in the intervention group with integrated modules. Similarly, according to Prasetyorini et al (2019), there is an increase in knowledge and attitudes in trained community health workers after being given training using module-based media.

The results also showed that there was an effect of the application of the integrative model on the skills of community health workers. In this case one of the training methods provided was demonstration. This is in line with Etrawati et al (2023), whose research showed there is an increase in the ability of community health workers after being given training using the demonstration method. Through the demonstration method of processing herbal ingredients, community health workers can clearly understand about the correct ways and steps of processing herbal ingredients, so that they can be applied independently by the community.

The application of the community empowerment model is carried out by researchers by increasing the ability of the community to control NCDs that are a problem in the Wagir community health center, by increasing the knowledge and skills of Community Health Workers in the use and management of herbal materials around the community. It is hoped that community groups in the area will be able to independently control NCDs. According to Suparji (2019), empowerment means connecting people with their resources, providing opportunities, increasing the capacity, knowledge and skills of the community to determine and participate in shaping their future, so that it affects life in the surrounding community. Therefore community empowerment is an instrument to develop the entire community. According to Mulyawan (2016), the dimensions of community empowerment include enabling by providing an atmosphere that encourages the development of community

potential, empowering is done with the ability and skills of the community, and maintaining, namely protecting the potential of weak communities in a balanced manner

The community empowerment model was implemented by researchers with the aim of increasing community independence in controlling non-communicable diseases (NCDs), which are a problem in the working area of the Wagir community health center. Before being given materials and demonstrations, community health workers were given an initial test to determine the level of ability and skills of health workers in processing herbs. The researchers then provided materials and demonstrations on the utilization and processing of herbal ingredients, including how to process butterfly pea (*Clitoria ternatea* L.), moringa leaves (*Moringa oleifera*), *Orthosiphon aristatus*, and garlic. Subsequently, the researchers administered a post-training examination to the community health workers. Through this activity, there was an increase in the knowledge and skills of community health workers in the utilization and processing of herbal materials available in the community, enabling the community in that area to independently manage non-communicable diseases (NCDs).

According to Suparji (2019), empowerment means connecting communities with resources, providing opportunities, and improving the capacity, knowledge, and skills of communities to make decisions and participate in shaping their future, thereby influencing life in the surrounding community. Therefore, community empowerment is one method for developing the independence of the entire community. The dimensions of community empowerment include enabling by providing an environment that encourages the development of community potential, empowering by developing community capabilities and skills, and maintaining by protecting the potential of vulnerable communities in a balanced manner (Mulyawan, 2016).

5. CONCLUSION

The conclusion of the results of this study is that there is a significant effect of applying the integrative empowerment model on the knowledge and skills of community health workers in controlling NCDs with an herbal-based local wisdom approach in the Wagir Community Health Center. We hope that nurses in the community can use the Integrative Empowerment model as a tool to improve the community's ability to control herbal-based NCDs. In addition, it is suggested that future researchers conduct further studies on the implementation of community health worker socialization efforts to promote herbal-based approaches to NCD control in the community.

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