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Community-based Non-Communicable Diseases (NCDs) Prevention in the Elderly Using the CERDIK Method

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ABSTRACT

Background: *Non-Communicable Diseases (NCDs) are one of the main health challenges in Indonesia, especially for the elderly. To reduce the risk of NCDs, prevention efforts are needed through education and implementing a healthy lifestyle. The CERDIK program (regular health checks, get rid of cigarette smoke, be diligent in physical activity, have a healthy and balanced diet, get enough rest, manage stress) is an effective approach in supporting the prevention of NCDs. This outreach activity was carried out at Posyandu Kemuning RT 01 RW 08 Made Village with the aim of increasing the understanding and awareness of the elderly regarding the prevention of NCDs.*

Methods: *This activity included interactive education, practical simulations, group discussions, and simple health checks. The activity was attended by the elderly from RT 01 RW 08 and involved posyandu cadres and village midwives. The community service activities were carried out in four stages, namely preparation, implementation of socialisation, mentoring and evaluation, and follow-up.*

Results: *This activity showed an increase in participant knowledge, participant understanding in doing simple physical activities, and understanding of the importance of healthy eating and exercising. The mentoring and education program provided showed an average increase in scores of 42.4% in three main aspects: knowledge, understanding of physical activity, and motivation for healthy living.*

Conclusion: *This activity emphasizes the importance of a community-based approach to support the sustainability of a healthy lifestyle. With ongoing mentoring and education, it is hoped that this program can have a long-term impact in reducing the prevalence of NCDs in the elderly.*

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INTRODUCTION

Non-communicable diseases (NCDs) are one of the biggest challenges in the health sector in Indonesia (1). The incidence of NCDs continues to increase every year, along with changes in people's lifestyles that tend to be less healthy. Several types of NCDs such as diabetes, hypertension, heart disease, and cancer not only cause physical health

problems but also reduce the quality of life of sufferers (1). This impact is increasingly felt in the elderly, who are the most vulnerable group to NCDs.

The natural decline in body function in the elderly, coupled with an unhealthy lifestyle, increases their risk of developing NCDs (2). Habits such as an unbalanced diet, lack of physical activity, and exposure to risk factors such as cigarette smoke, further worsen the health conditions of the elderly. If not anticipated, this can lead to serious complications, dependence on others, and premature death (3).

Therefore, efforts to prevent and control NCDs are a top priority to maintain the quality of life of the elderly (4). Measures such as health promotion, implementing a healthy lifestyle, and increasing public awareness about the dangers of NCDs need to be intensified. With the right approach, the elderly can live healthier, more independent and productive lives despite their advanced age (5).

The CERDIK program (Cek Kesehatan secara berkala, Enyahkan asap rokok, Rajin aktivitas fisik, Diet sehat dan seimbang, Istirahat cukup, Kelola stres/Periodic Health Checks, Get rid of cigarette smoke, Diligent physical activity, Healthy and balanced diet, Get enough rest, Manage stress) is one of the preventive strategies designed to help people prevent and control non-communicable diseases NCDs (6). This approach emphasizes holistic lifestyle changes, focusing not only on disease control but also on maintaining overall health.

Through the CERDIK Program, the public is encouraged to routinely check their health conditions to detect potential NCDs risks early. In addition, campaigns to avoid bad habits such as smoking, which is one of the main triggering factors for NCDs, continue to be promoted (7). Regular physical activity is also one of the important pillars, as it can help maintain body fitness and reduce the risk of various chronic diseases (8).

The program also teaches the importance of a healthy and balanced diet, which includes consuming nutritious foods and avoiding foods high in sugar, salt and fat. Adequate rest is integral to restore the body's energy, while good stress management helps maintain mental and emotional health, which plays a major role in preventing NCDs (9). With a holistic approach, CERDIK not only encourages people to live healthier lives but also increases their awareness of the importance of proactively maintaining their health.

Through the implementation of CERDIK, it is hoped that the community can lead a more quality, productive life, and be free from the threat of NCDs (10). Posyandu Kemuning RT 01 RW 08 Made Village is a health cadre in Made Village, Made Village, Lamongan District, Lamongan Regency, which is one of the health facilities at the community level that has a strategic role in improving the health status of its citizens. With a focus on promotive and preventive efforts, this posyandu is committed to providing education and affordable health services, especially for the elderly who are vulnerable to various diseases, NCDs (11).

Apart from being an educational medium, this socialization is also a place to strengthen relationships between community members. In an atmosphere of togetherness, residents are encouraged to support each other and motivate the elderly to lead healthier and more active lives (12). Thus, Posyandu Kemuning RT 01 RW 08 is not only a place for health services, but also a center for community empowerment in creating an environment that supports a healthy lifestyle.

The purpose of this activity is to improve the knowledge, attitudes, and skills of the elderly in implementing a healthy lifestyle through a participatory and community-based approach. Program implementation is carried out through continuing education, simple physical activity training, nutrition consultation, and strengthening the role of cadres and

families as elderly companions. With the CERDIK Program, it is hoped that increased awareness and behavior change in the elderly in Made Village can be realized, so that they can enjoy a healthier, independent and productive old age.

METHODS

Community service with the theme "Socialization of Non-Communicable Disease Prevention with CERDIK for the Elderly at Posyandu Kemuning RT 01 RW 08 Made Village" will be carried out from October to November 2024 through a participatory approach involving the elderly as the main target as well as cadres posyandu and village midwives as supporters. This community service activity was carried out by a team consisting of Annisa' Carina, Luqman Cahyono, Heru Setyo Cahyono, and Ratna Fajarwati Meditama, who acted as the main facilitator in the preparation of materials, implementation of education, and program evaluation. They worked collaboratively to design a targeted approach for the elderly, taking into account social, cultural, and public health aspects.

The implementation of this activity also received full support from the cadres of Posyandu Kemuning and the local village midwife. The village midwife and cadres played an important role in mobilizing residents, identifying elderly participants, and assisting during health education sessions (13). This synergy between the academic team and local health workers is the key to success in creating a program that is not only informative but also applicable and sustainable for the Made Village community.

The method used includes several stages, as shown in Chart 1 below:

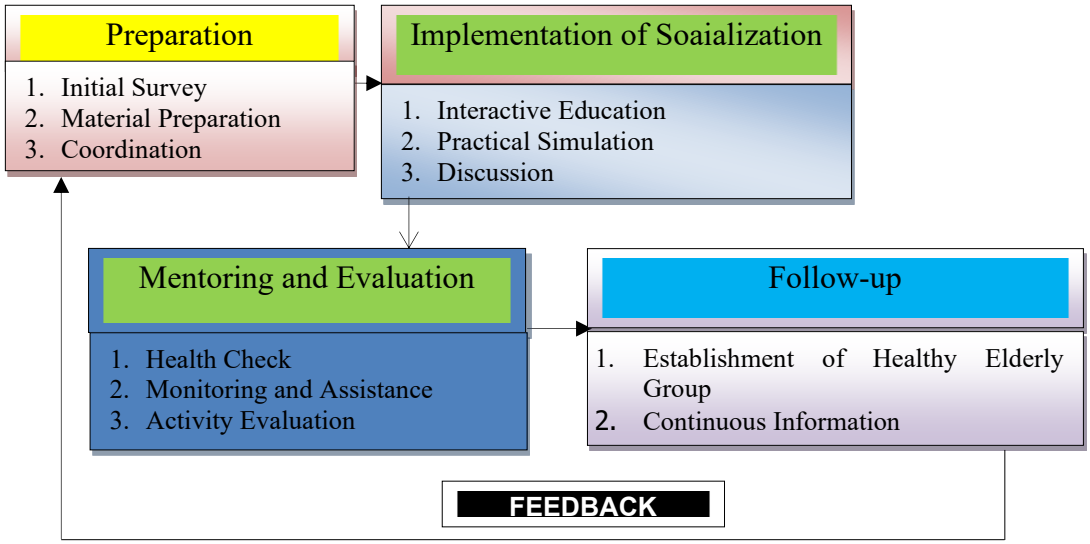


Chart 1. Community Service Method

Preparation

This community service activity began with an initial survey conducted at Posyandu Kemuning RT 01 RW 08, Made Village. The service team conducted direct observations and interviews with the elderly, posyandu cadres, and local health workers to understand the general health conditions of the elderly. Through this survey, an overview of the main needs of the community was obtained as well as the most dominant risk factors for NCDs, such as hypertension, diabetes, and lack of physical activity.

Based on the results of the survey, the team then continued with the preparation of

educational materials that were relevant and easily understood by the target of the activity. The materials were developed based on the principles of the CERDIK Program. To facilitate understanding, the materials are packaged in various educational media such as illustrated leaflets, informative posters, and interesting short videos.

In order for the implementation of activities to run effectively and receive full support from the community, the team also conducted intensive coordination with various related parties. Meetings were held with village officials, posyandu cadres, and local community leaders to explain the objectives of the program, the flow of activities, and the roles of each party. This coordination not only strengthens collaboration but also builds a sense of shared ownership of the program, so that its implementation becomes more participatory and sustainable.

Implementation of Socialization

The implementation of the community service program took place in an interactive and participatory atmosphere. The activity began with an interactive education session aimed at increasing the understanding of the elderly about NCDs, the risk factors that accompany them, and the importance of early prevention efforts. Educational materials are delivered with a communicative approach, supported by visual media such as colorful posters and short videos designed to be easily understood by the elderly, even by those with limited literacy.

After the educational session, the activity continued with a practical simulation as a form of direct application of the material that had been delivered. The elderly were invited to practice simple physical activities such as light gymnastics and stretching, which were designed according to their physical condition. In addition, the team also provided concrete examples of healthy eating arrangements, including how to choose nutritious menus and adjust daily meal portions to remain balanced but not excessive.

In closing, a small group discussion was held to explore the personal experiences of the elderly regarding their health conditions. This discussion opened a space for dialogue between participants and facilitators, where the elderly could share the obstacles, they faced in living a healthy lifestyle. The team then provided practical advice and solutions based on their respective situations and encouraged participants to support each other. This activity not only provides information but also builds a sense of togetherness and care within the elderly community.

Mentoring and Evaluation

As part of the promotive and preventive approach, the program also includes simple health screening activities to detect early the risk of NCDs in the elderly. The check-up was conducted at Posyandu Kemuning with the involvement of health workers and local posyandu cadres. The elderly who attended were checked for blood pressure, weight, and blood sugar levels. This activity not only provided initial information on the health condition of each participant but also served as a means to sensitize them to the importance of early detection and regular health monitoring.

After the education and examination sessions, the activities continued with monitoring and mentoring. The elderly are encouraged to apply the healthy habits they have learned, such as doing light physical activity, adjusting their diet, and avoiding risk factors such as smoking or consumption of foods high in sugar. For one month, posyandu cadres provide regular assistance through home visits or small group meetings to monitor behavior changes and provide motivation to participants.

As a final stage, an evaluation of the activities was conducted to measure the impact and effectiveness of the program. The evaluation included a participant satisfaction survey to determine the extent to which the materials and methods used were acceptable and understood. In addition, observations were made of changes in the behavior of the elderly in living a healthy lifestyle, as well as collecting reports from posyandu cadres regarding the response and development of the participants. The results of this evaluation are an important basis for designing follow-up and ensuring the sustainability of the program in efforts to prevent NCDs in the Made Village elderly community.

Follow-Up

To ensure the sustainability of the program and its long-term impact, the service team formed a Healthy Elderly Group at Posyandu Kemuning RT 01 RW 08. This group serves as a support forum for the elderly to motivate each other and share experiences in living a healthy lifestyle. With this group, the elderly are encouraged to continue to be active, not only in participating in routine physical activities, but also in maintaining a diet, managing stress, and conducting regular health checks. Group meetings are held regularly and facilitated by posyandu cadres, so that communication and a spirit of togetherness among members are maintained.

In addition, as part of the sustainability strategy, efforts were also made to disseminate information on an ongoing basis. Posyandu cadres are actively involved to continue socialization to other elderly people in the surrounding area who have not had time to participate in the main activities. Information dissemination is done through simple media such as leaflets, posters, and informal discussions during home visits or monthly posyandu activities. The role of cadres as agents of change is very important in maintaining the continuity of health messages that have been delivered, as well as expanding the reach of education to all elderly in the neighborhood.

With this approach, it is expected that the socialization of NCD prevention through the CERDIK program can be accepted, understood, and applied by the elderly at Posyandu Kemuning RT 01 RW 08 Made Village in a sustainable manner.

RESULTS

The socialization of the prevention of NCDs with the CERDIK approach carried out at Posyandu Kemuning RT 01 RW 08 Made Village went well and succeeded in achieving the set targets. The following are the results obtained:

Participant Participation

This activity was attended by 20 elderly out of 29 elderly registered in the neighborhood around Posyandu Kemuning RT 01 RW 08. Most of the participants were enthusiastic and actively participated in discussion, practice, and simulation sessions. In addition to the elderly, posyandu cadres and village midwives are also present, providing moral support to participants, as for the activities carried out every month seen in Figure 1.



Figure 1. Participation of Elderly Posyandu Participants Kemuning RT 01 RW 08 Made Village

Knowledge Enhancement

There is an increased understanding of the CERDIK concept and its relation to NCD prevention. This is indicated by participants routinely attending the posyandu for the elderly every month, as a form of the importance of routine health checks, stress management, and a healthy lifestyle. Every month an elderly posyandu will be held for the prevention of NCDs by recording scales, measuring height, measuring abdominal circumference as shown in Figure 2, and direct examination by the village midwife as shown in point 3.



Figure 2. Weight Weighing, Height Measurement, and Abdominal Circumference

Satisfaction questionnaire scores are based on participants' assessments of aspects of activity implementation, material presented, educational media, interaction with facilitators, and perceived benefits after attending the program.

Table 1. Participants' Satisfaction with the NCD Prevention Program Using the CERDIK Method at Posyandu Kemuning

Satisfaction Aspect	Average Score (0-100)
Suitability of the material to the needs	88
Ease of understanding information	85

Satisfaction Aspect	Average Score (0-100)
Quality of educational media (posters, videos)	84
Facilitator interaction and communication	90
Benefits of activities for daily life	87
Overall Average Satisfaction	**86.8**

The average satisfaction score of 86.8 indicates that participants were very satisfied with the implementation of the program, both in terms of content, delivery methods, and the impact on their understanding and behavior. These results support the sustainability of community-based programs as an effective strategy in improving the quality of life of the elderly.

Direct Practice

The elderly managed to practice simple physical activities such as light exercises according to their abilities, providing light exercises by the village midwife as shown in Figure 3. The simulation of setting a healthy diet using local food ingredients was also appreciated by participants as a practical step to be applied daily.



Figure 3. Elderly Hand Gymnastics

Health Screening

Examination of blood pressure, weight, and blood sugar levels showed that 30% of participants were at risk of NCDs, particularly hypertension and diabetes. These results provide a basis for further intervention. From the data of the elderly of RT 01 RW 08, there were 10 elderly with non-communicable diseases as shown in Table 2 below:

Table 2. Profile of Elderly Participants and Types of Non-Communicable Diseases Identified (n = 10)

Age (years old)	Gender	Types of Non-Communicable Diseases			
		Hypertension	Diabetes	Heart	Stroke
59	M	√	√	-	-
59	F	-	√		

Age (years old)	Gender	Types of Non-Communicable Diseases			
		Hypertension	Diabetes	Heart	Stroke
67	F	√	-	-	-
63	M	-	√		
58	F	-	√	-	-
65	F	√	-		
66	F	-	√	-	-
65	M	-	√		
63	F	√	-	-	-
64	M	-	√		
Total		**4**	**7**	**0**	**0**

Note: M = Male; F = Female

Establishment of Healthy Elderly Group

A healthy elderly group is formed consisting of several elderly people who are willing to be the driving force for a healthy lifestyle in their community, such as by forming the Made Karyo Cycle Club (MKCC) group in Figure 4 by exercising together in the morning every weekend. The formation of healthy groups can improve the health of the elderly. Exercise if done regularly can help restore muscle function (14).



Figure 4. Made Karyo Cycle Club (MKCC) Community RT 01 RW 08

DISCUSSION

The socialization NCD prevention with the CERDIK approach conducted at Posyandu Kemuning RT 01 RW 08 Made Village showed positive results and in accordance with the set targets. The CERDIK approach, which includes routine health checks, eliminating cigarette smoke, diligent physical activity, healthy diet, adequate rest, and managing stress, is the main foundation in efforts to prevent NCDs, especially in the elderly group. This socialization activity was attended by 20 elderly out of 29 elderly registered in the environment around Posyandu Kemuning.

This shows a fairly good level of participation, considering that the number of participants who attended almost reached two-thirds of the registered elderly. The active participation of participants in discussion, practice, and simulation sessions indicated their high interest in acquiring knowledge and skills that can be applied in daily life, especially in maintaining health and preventing NCDs. The average satisfaction score of 86.8 indicates that participants were very satisfied. The presence of posyandu cadres and

village midwives also added enthusiasm and provided moral support for participants, which was an important factor in increasing their motivation to continue participating in the program (15).

The increase in participants' knowledge of the CERDIK concept was very clear during the activity. This can be measured by the regular monthly posyandu for the elderly for health checks and education on the importance of a healthy lifestyle. A better understanding of the CERDIK concept, especially in terms of regular check-ups, stress management, and the importance of a healthy lifestyle, has made participants more active in maintaining their health (16). Every month, activities such as weight weighing, height measurement, and abdominal circumference measurement, reflected in Figure 2, become part of a routine process that helps the elderly monitor their condition and prevent NCDs risks. These activities not only increase knowledge but also help them to care more about their health.

One important aspect of this socialization is the application of theory into practice. The elderly successfully practiced simple physical activities such as light gymnastics, which were adapted to their physical abilities. Physical activity, as seen in Figure 3, has helped the elderly improve mobility and body strength, which is very important for preventing NCDs (17). In addition, the simulation of a healthy diet using local food ingredients was also highly appreciated by the participants. It gave them a more practical understanding of how to implement a healthy diet that can support daily NCDs prevention.

Health checks conducted during the activity, including measurements of blood pressure, weight, and blood sugar levels, showed significant results. As many as 30% of participants were detected to have NCDs risks, especially hypertension and diabetes, which are two of the most common non-communicable diseases among the elderly. This provides a strong basis for further intervention measures, both in the form of medication and lifestyle changes. The recorded data, as seen in Table 1, shows that there are some elderly people who already have NCDs conditions, so further monitoring and assistance is needed to manage these conditions (18).

In addition to providing education, this activity also succeeded in forming a healthy elderly group that could become a driving force for a healthy lifestyle in their community. The formation of the MKCC group as seen in Figure 4 is one concrete example of this effort. The elderly who are members of this group exercise together every weekend, which not only benefits their physical health but also creates solidarity and social support among members. This is an important step towards encouraging sustainable healthy lifestyle changes, where older adults not only receive information but are also directly involved in activities that support healthy lifestyles (19).

The socialisation activities for the prevention of non-communicable diseases using the CERDIK approach have demonstrated effectiveness in increasing the knowledge and awareness of the elderly about healthy living. Active participation and the formation of healthy elderly groups are evidence of the success of the community-based approach. This programme is recommended for replication in other areas with more intensive and sustainable implementation. Involving families and conducting regular monitoring of at-risk elderly individuals are necessary to support lifestyle changes. Posyandu should also be strengthened as centres for education and prevention of NCDs at the community level.

CONCLUSIONS AND SUGGESTIONS

The implementation of the CERDIK programme at the Kemuning Posyandu has proven effective in improving knowledge, shaping positive attitudes, and encouraging healthy behaviours among the elderly. Interactive and practice-based methods have contributed to high participant participation and motivation. However, sustainable behavioural change still faces challenges, such as high sugar consumption habits, cultural factors, and lack of family support. The formation of the CERDIK Healthy Elderly Group is a strategic step to ensure the sustainability of the programme and strengthen social support. For long-term impact, the active involvement of Posyandu cadres and support from village officials are essential to integrate the programme into the community health agenda in a sustainable manner.

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DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

AI tools were used solely for grammar and language editing. The authors take full responsibility for the content and integrity of the manuscript.

CONFLICT OF INTERESTS

The author states that there are no conflicts of interest.

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