



Development model of integrated development post for non-communicable diseases in West Java of Indonesia

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ABSTRACT

Data from the West Java Health Office in 2013 stated that the prevalence of non-communicable diseases (NCD), one of which is diabetes Mellitus, was 4.2% with pre-diabetes at 7.8% and 144 cases in the work area of the Singaparna Puskesmas.¹ Empowerment of Posbindu cadres with NCD (PTM)) to reduce cases of PTM. The purpose of this research is to develop a model of empowerment of Posbindu PTM by increasing the role and skills of the Posbindu PTM cadres. This study uses a combined or collaborative method approach, namely qualitative and quantitative. Sampling by stratified random sampling from August to November 2019 consisted of four government stakeholders as research informants, and 16 Posbindu PTM cadres. Collecting data using questionnaires, in-depth interviews, and Focus Group Discussions (FGD).

Analysis using thematic content analysis and Wilcoxon Test. Results shows in qualitative research that cadres have knowledge about the role of cadres, but do not yet know the main tasks and functions of cadres and do not have cadre skills. The quantitative analysis showed that there were differences in the knowledge and skills of cadres after training compared to before training $p = 0.000$ ($p < 0.05$). In conclusion, Cadres know the role of cadres through training. There were differences in the knowledge and skills of cadres after training compared to before training.

Keywords: *Non-communicable diseases; empowerment; role; cadres*

INTRODUCTION

The prevalence of non-communicable diseases (NCD) is increasing in the world. NCD (PTM) is a cause of death in the world. Various types of NCD include cancer, diabetes mellitus, coronary heart disease, hypertension, atherosclerosis, chronic obstructive pulmonary disease, vision problems, mental disorders, injury, genetics, and NCD due to the environment such as PTM due to air pollution, and radiation. Deaths caused by PTM other than a cardiovascular disease in 2015 were cancer of 8.8 million people and chronic respiratory disease of 3 million.¹ The highest prevalence of PTM in 2013 in Indonesia was hypertension at 9.5% of the total population of ≥ 15 years of 722,329 people, the second most COPD was at 3.7% of the total population of ≥ 30 years of 508,3302 people followed by diabetes mellitus of 2.1% of a total population of 722,329 people.² The lowest prevalence of hypertension according to age characteristics was at the age of 15–24 years as much as 8.7%, the most at the age of 65–74 years 57.6%, and at 75 years and over as much as 63.8%. Based on gender, most women (28.8%) than men (22.8%). The prevalence of hypertension was more in urban areas (26.1%) than in rural areas (25.5%). The prevalence of PTM in West Java includes strokes (12.1%), coronary heart disease (1.6%) and diabetes mellitus (2.1%). Meanwhile, coronary heart disease was 1.6%, and diabetes mellitus was 2.1%. Smoking behavior

in West Java Province ranks third nationally. The West Java Health Office stated that the prevalence of NCD, one of which is diabetes Mellitus, was 4.2% with the number of people with diabetes at 7.8%.³ The criteria also includes the use of insulated doors (swing or sliding) to control the pathogens, bacteriostatic floors with corner covings, the operating table must be set in such a way that the laminar airflow reaches it, the use of modern operating tables, the adequate filtration of the air conditioning system and the air distribution system, and use of sterile corridors.⁴ Based on surveillance data for NCD at the Singaparna Public Health Center, the prevalence of hypertension was still high in 2018, namely 144 cases.⁵ Some of the risk factors that can increase the risk of PTM are mostly influenced by lifestyle, including smoking, alcohol consumption, unhealthy eating patterns, lack of physical activity, and obesity. This can cause physiological changes in the body, such as resulting in hypertension, diabetes mellitus, and increased cholesterol.⁶ Posbindu PTM is one of the strategies for preventive and promotive efforts in the prevention and control of NCD (PTM). Empowerment Posbindu PTM is a community empowerment strategy that requires high participation from the target to produce positive results for better behavior change. The community empowerment strategy is expected to generate enthusiasm from the community in participating in changes in healthy living behavior.^{7,8} The purpose of this study

was to formulate a model for the empowerment of Posbindu NCD by providing an understanding of the importance of the role and skills of Posbindu cadres for NCD through the training and providing material for Posbindu NCD. The purpose of implementing Posbindu PTM is to reduce the morbidity rate.⁹ This empowerment is by empowering Posbindu PTM cadres and activating the PTM protection community with the concept of, by and for cadres for the sake of creating a healthy community, namely reducing NCD.

METHOD

This research uses a combined or collaborative method approach or a combination, namely qualitative and quantitative. Qualitative aims to explore in depth the roles, duties, and functions of cadres, cadres' understanding and knowledge, and skills of cadres in the implementation of Posbindu. Qualitative research was carried out utilizing in-depth interviews with policymakers such as the village head, the head of the Puskesmas, the Singaparna sub-district, and the head of the Health Office. In addition to community leaders and Posbindu PTM cadres, 16 cadres from three Posbindu PTM namely Posbindu Gunung Kasur, totaling eight Posbindu cadres Margamulya has five cadres and Posbindu Pamengpeuk has three cadres. Qualitative research aims to explore the factors that impede the role of cadres, identify factors that drive the cadres "functions and duties, know cadres" knowledge of their roles, duties, and functions as cadres of NCD, as well as know the types of skills of cadres in implementation. posbindu PTM. Quantitative approach using the research design before and after one group design, the instruments used are the pre-test and post-test. The calculation with the Wilcoxon signed rank ton 16 cadres aims to determine the effect of cadre empowerment by increasing cadres' knowledge and skills. The 16 cadres were given cadre training with six training materials and accompanied by

cadre skills practice. Both of these methods are used as study material in designing the empowerment model for posbindu PTM by increasing the role of cadres and cadre skills. Sampling was stratified random sampling from August to November 2019. Data collection used questionnaires, in-depth interviews, and Focus Group Discussions (FGD). The analysis used was thematic content analysis and statistical calculations with a significance of 95%. This study has gone through a review process and received ethical approval from the Health Research Ethics Commission of the Health Politeknik Kesehatan Kemenkes of Tasikmalaya with the registration number KEPPKN 3278012P.

RESULTS

Table 1 shows that respondents at the age 29–48 years old were the largest with percentage of 56.25%. The education characteristics showed that senior high school had a higher proportion of 15 people (93.75%) compared to university.

Based on Table 1 above, it can be seen that the data normality test uses the Kolmogorov Smirnov test if the p -value > 0.05 is normally distributed and the next test uses the Paired Sample T -Test test, whereas if the p -value < 0.05 then it is not normally distributed then the next test used is the Wilcoxon test. In the normality test results, first training

TABLE 1. Characteristics of respondents.

Characteristics of respondents	Frequency (n)	Percentage (%)
Age (years)		
29–48	9	56.25
49–58	6	37.50
59–79	1	6.25
Education		
Senior high school	15	93.75
University	1	6.25

TABLE 2. Result of data normality test, Wilcoxon test, paired sample *t* test before and after NCD (PTM) Posbindu Cadres Training in Cikunir Village, Singaparna Sub District.

Variable Posbindu Cadres NCD (PTM) Training	<i>p</i> -value (Kolmogorov Smirnov)	Mean	SD	<i>p</i> /Sig
Before NCD (PTM) Screening Training	0.127	11.5625	1.03078	0.000
After to NCD (PTM) Screening Training	0.609	14.6250	1.36015	
Before Training The Importance of Diet Arrangements and Diet Procedures in Controlling NCD (PTM)	0.335	13.625	1.4500	0.000
After Training The Importance of Diet Arrangements and Diet Procedures in Controlling NCD (PTM)	0.740	16.312	1.4900	
Before Environment based NCD (PTM) training	0.000	12.680	1.4000	0.000
After Environment based NCD (PTM) training	0.008	14.87	0.341	
Before NCD (PTM) Surveillance Training	0.000	13.062	0.997	0.000
After NCD (PTM) Surveillance Training	0.008	14.812	0.543	
Before Extention Training NCD (PTM)	0.003	15.993	1.486	0.000
After Extention Training NCD (PTM)	0.705	18.0667	1.279	
Before to Advocacy NCD (PTM)	0.680	16.187	1.2763	0.000
After Advocacy NCD (PTM)	0.995	18.312	1.0144	

NCD, Non-communicable disease.

session (screening), second session (importance of nutrition and determination of nutritional status), fifth session (advocacy and counseling), and sixth session (counseling) are normally distributed with the Paired T test with a sig/*p* value of 0.000 This means that there are differences in the provision of Posbindu PTM cadres training with screening material, the importance of nutrition, advocacy, and counseling before training and after cadre training. The provision of environment-based NCD training materials and surveillance was not normally distributed on the data normality test with Kolmogorov Smirnov so it was continued with the Wilcoxon test with a sig 0.000 result, meaning that there was a difference between before training and after training environment-based NCD material and surveillance material. This was proven by the cadres after attending the Posbindu PTM cadre training, the cadres' knowledge had increased so that it increased the role of the Posbindu PTM cadres by holding education,

regeneration, advocacy, community empowerment to carry out programs for prevention and control of NCD.

DISCUSSION

The stages in empowering Posbindu PTM are by increasing roles and skills and conducting a situation analysis by exploring the related element risk factors. This activity begins with licensing with related agencies, preliminary surveys, in-depth interviews with office stakeholders and community leaders, self-survey (SMD) with Posbindu PTM cadres, Training for Posbindu PTM cadres to improve the roles and skills of cadres, advocacy to policy-makers, education for the community, community regeneration, Establishment of PTM Protectors Community, implementation of work programs by the community and accompanied by cadres, monitoring, and evaluation of community activities.

Licensing with related agencies

Licensing in this study included permits to Kesbang and linmas, ethical permits, permits to the Tasikmalaya District Health Office, permits to the Singaparna District, permits to the Singaparna Puskesmas, and permits to Cikunir Village.

Preliminary survey

Preliminary survey with secondary data from the Singaparna Puskesmas and the Integrated Field Learning Practice I report. Based on preliminary survey data, in the work area of the Singaparna Health Center in 2018 144 cases of hypertension were found, in the same year in Cikunir Village there were 84 people (24.1%) suffering from hypertension from 349 families. These 84 people consist of 47 heads of households, 36 housewives, and one child (0.3%). Based on data reports from the Singaparna Puskesmas, there was 127 hypertension (43.49%) in the elderly out of 292 elderly. Meanwhile, in Cikunir Village, 51 elderly people are suffering from hypertension from three posbindu in Cikunir Village.¹⁰

Exploring risk factors and identifying problems

Exploring risk factors utilizing in-depth interviews with policymakers, community leaders, and cadres of Posbindu PTM. According to information from various informants stated that the Posbindu PTM cadres were very enthusiastic in every Posbindu PTM activity implementation with various ages and were not young anymore but still enthusiastic in carrying out their role as cadres. Posbindu PTM cadres have not routinely received guidance from the local government but every Posbindu implementation health workers are always present to participate in Posbindu PTM such as blood pressure checks, blood sugar checks, cholesterol checks, and counseling to the community. There was a Posbindu PTM that had a vacuum but with the encouragement of the puskesmas, it was able to be active again. Posbindu PTM cadres must continue to be given support so that they are more active and hope that they can become an effort to prevent and reduce PTM cases, besides

that, people are aware of the importance of checking themselves in Posbindu PTM so that it is necessary to empower Posbindu PTM. In extracting information, apart from interviewing policymakers, an in-depth interview was also conducted with PTM's Posbindu cadres. Based on the results of interviews with cadres, it is known that the number of cadres is 16 people ranging in age from 29 years to 70 years. The results of the interview stated that they did not understand the main tasks of the cadres' functions, most of them stated that they only assisted health workers in the implementation of Posbindu PTM. Nugraheni et al. stated that the duties of cadres in implementing PTM control programs must follow the guidelines listed in the Juknis Posbindu PTM book. The task of cadres is to remind the schedule and empower the community to play an active role in the Posbindu PTM activities.¹¹ The next stage is to conduct an introspective survey (SMD) on Posbindu PTM cadres to identify problems and explore risk factors in Posbindu PTM by cadres and cadres trying to find alternative solutions to the problems at hand. The researcher acts as a facilitator in implementing the SMD. In addition, because the drilling process is carried out using generator power, it causes air pollution that can interfere with the respiratory system (respiratory inorganics).¹² From the results of the SMD with FGD, some of the problems raised by the cadres at each posbindu, among others. Based on the results of the FGD for Posbindu cadres. PTM Gunung Kasur has several problems, namely that young people rarely come to Posbindu, most of them are elderly, visitors always ask for medicine, do not have their place or building because so far they are staying at madrassas, some common disease problems in society include other than hypertension, knee pain, rheumatism, the number of people who smoke, lack of physical activity, diet is not following the standard of balanced nutrition, some parts of the community still do not realize the importance of vegetables and fruit, there is no routine guidance from the relevant government. The results of the FGD for Posbindu cadres of PTM

Pameungpeuk have several problems, the target of Posbindu when using the invitation is, 50–60-year-olds who do not regularly come to Posbindu PTM if the harvest season does not come to Posbindu, there is no routine guidance from the relevant government. The results of the FGD for Posbindu cadres of PTM Margamulya include the reluctance of residents to attend Posbindu PTM because of the long distance and having to cross the highway, the target coverage for Posbindu visitors is not many, only a maximum of 30 people, lack of awareness of residents in efforts to prevent PTM, one of which is to visit Posbindu PTM. Most of the posbindu targets are the elderly

Training for Posbindu PTM cadres

Posbindu PTM cadre training which consists of six training materials aims to increase knowledge so that the role of cadres can be maximized in carrying out their main duties and improve cadre skills to increase the empowerment of Posbindu PTM. Posbindu PTM cadres training with resource persons from the Dinas Health of Tasikmalaya District and the staff of the Singaparna Public Health Center. In the training of Posbindu PTM cadres, a pre and post-test was carried out on each of the counseling materials aimed at knowing the increase in knowledge to increase the role and skills of the Posbindu PTM cadres. Cadres after participating in the Posbindu PTM cadre training, the cadres' knowledge has increased to increase the role of the Posbindu PTM cadres by holding education, regeneration, advocacy, and community empowerment to carry out programs for prevention and control of NCD. Posbindu cadres' skills also improve after cadre training, cadres become skilled in PTM screening, can carry out independent blood sugar checks, screening calculations, BMI, prepare menus for PTM sufferers using antihypertensive plate media designed by researchers, skilled in designing health promotion media, namely each learns to draw health promotion about recommended consumption

of fruits and vegetables, smoking prohibition. In addition, cadres also have advocacy skills. In facilitating coordination and communication, there is a WhatsApp group that functions to discuss empowerment activities for Posbindu PTM. This is following the process of cadres attending Posbindu PTM cadres training.¹³ In line with Khayati's research states that health workers who encourage community empowerment in cadres can be a protective, preventive, and promotive effort and reduce the morbidity of NCD. The training has a positive impact on increasing the knowledge and skills of cadres. This research is also in line with research by Armiyati et al. which states that empowerment of Posbindu PTM cadres by providing training and skills by designing promotional media such as leaflets and flipcharts can increase cadres' knowledge in the prevention of PTM such as hypertension, diabetes, hyperuricemia with proven value increases post-test instead of pre-test.¹⁴ Empowerment of Posbindu PTM by increasing the role and skills of cadres is an effort to reduce the prevalence of PTM because the principle of community empowerment is that people know, are aware, and have the will and can increase the degree of public health. According to defined protocols, the productive zakat distribution model is carried out precisely and accurately.¹⁵ This is in line with Yandrizal, et al. stating that empowerment of Posbindu PTM by involving community participation in early detection in the prevention of PTM such as hypertension, and DM because members of Posbindu PTM or cadres have skills in Posbindu PTM activities and have a role in empowering the community.¹⁶ Sudharma et al. stated that communication participation in empowering Posbindu PTM, one of which is health education, advocacy, policies, and communication in health promotion with effective counseling in reducing NCD.¹⁷ Alifah et al. states that deep participatory communication is by forming groups as a forum for discussion for PTM control activities, cross-sectoral collaboration that includes various health institutions in increasing

community empowerment.¹⁸ According to Pratiwi in the experimental pretest and posttest control group study, it was stated that there was an effect of increasing cadre empowerment by conducting training on the knowledge and skills of cadres in Posbindu PTM services in the Bayat Health Center Work Area ($p = 0.014$ and $p = 0.019$).^{19,20} Posbindu PTM cadres with surveillance because surveillance capabilities can carry out case finding, and confirm indexed case reports with better accuracy than passive surveillance.²¹ The necessities of life for each individual in the community will certainly not be the same, to be able to fulfill the purpose of these needs it is financed by the availability of funds or financial means.²²

Advocacy to policyholders by cadres Posbindu PTM

Posbindu PTM cadres after receiving cadre training can increase knowledge by increasing the roles and skills of cadres. One of the enhancements of Posbindu PTM cadres is to advocate for policymakers such as village heads, hamlet heads, RWs, and community leaders. Advocacy carried out by cadres, namely Posbindu cadres of PTM Dusun Pameungpeuk regarding collective physical activity movements, Posbindu cadres of PTM Dusun Gunungkasur conducting advocacy about the movement of fruit vegetable consumption. The Posbindu cadres of PTM Dusun Margamulya conduct advocacy on the anti-smoking movement Posbindu PTM cadres in advocating for policymakers can influence policymakers as evidenced by the output of advocacy, namely a circular from the Village Head concerning the prohibition of smoking in homes with the installation of anti-smoking stickers for each house, the vegetable and fruit planting movement, a joint exercise movement. Advocacy can increase the role, main duties, and functions of cadres. In the implementation of advocacy, cadres must have the ability to communicate and influence the local government to achieve the goal of increasing public awareness and behavior to have a healthy lifestyle

in the prevention of PTM. Indiana et al. stated that in improving Posbindu PTM, one of them is conducting cross-sector advocacy. Kiting et al. stated that the role of cadres is more effective if they can advocate for local government and get a response with advocacy outputs.^{23,24} Posbindu PTM cadres must have the ability to advocate for the insurance regulations so that people healthily in preventing PTM.²⁵

Education by Posbindu PTM Cadres

Posbindu PTM cadres play a role in educating the public to increase public knowledge so that they are aware and able to behave in a healthy life. Posbindu PTM cadres educate the public by providing materials to the public about the importance of early detection or examination, screening, the importance of nutrition, and diet in PTM, and the importance of surveillance in posbindu, environmentally based NCD. The extension is an active procedure requiring contact between the extension worker and the individual to establish a behavior change process.²⁶ Nur Sholihah et al. states that one of the roles of cadres is to improve the communication aspect, namely trying to introduce healthy behavior to prevent PTM in the community. Nasruddin in a cross-sectional study states that there is a relationship between cadre support and the use of Posbindu PTM in the working area of the Ballaparang Community Health Center in Makassar City, namely educating the public.²⁷ Soleha in qualitative research on participatory communication in the Posbindu PTM program in Samarinda that the application of four indicators of participatory communication is quite good, namely the heteroglossia indicator of the diversity of community members is quite accommodated and has formed a synergistic work pattern, dialogic indicators have shown the process of interaction with respect for equal rights and without domination, polophony indicators are carried out to gather a diversity of opinions although they have not succeeded in gathering consensus.²⁸

Restuastuti states that there is an increase in knowledge of Posbindu PTM cadres with an increase of 40% compared to before training so that cadres can educate the public about PTM preventive efforts.²⁹ Cadres must also educate the public about a healthy lifestyle to avoid PTM, one of which is currently a comorbid COVID-19.³⁰ Besides that, is also educated on herbal alternatives for the prevention of hypertension and PTM in general.³¹

Cadre formation and formation of PTM Protector Community

Posbindu PTM cadres carry out regeneration by recruiting people to be formed into communities in charge of implementing work program planning and implementing Posbindu PTM empowerment work programs. Posbindu cadres have recruited six people and were appointed by filling out a form of commitment to become a PTM protector community. To measure and educate public awareness in implementing health protocols, further research is needed.³² The work programs planned by the PTM protector community include the movement to consume vegetables and fruit by planting vegetables and fruit, the anti-smoking movement by installing anti-smoking stickers for each house, physical activity movements along with joint exercise every Friday in their respective Posbindu, disease counseling not contagious in the mothers recitation forum and the Posbindu PTM forum. The counseling delivered was the prevention of hypertension, and diabetes mellitus by using health promotion media Implementation of Posbindu PTM Empowerment Work.

Program and monitoring, evaluation of Posbindu PTM empowerment work programs

The implementation of the Posbindu PTM Empowerment work program is carried out by the community and the cadres that accompany it. The community is tasked with inviting the community to participate in PTM's posbindu activities, while cadres play a role in handling, and reviewing the implementation of work programs. This cadre aims

to empower the community to work together in implementing the Posbindu PTM work program. The objective of this study was to determine the determinant factors for Community-Based Total Sanitation and the incidence of diarrhea in toddler at communities near rivers.³³ The programs that have been running are the planting of vegetables and fruit, the movement to consume fruit together, the joint exercise movement, the anti-smoking movement with a ban on smoking in the house and the installation of anti-smoking stickers, counseling on NCD (PTM). In implementing the Posbindu PTM empowerment work program, partnerships were made by cadres, namely the village government, PKK, community leaders, and the Singaparna Community Health Center. The implementation of the Posbindu PTM program receives funds from village funds, and human resources (HR) consisting of high school, diploma, and bachelor degrees. Self-management education can alter patients' perceptions and understanding of COVID-19 transmission. In the future, it is vital to do further studies on healthy behaviour awareness and COVID-19 prevention. Also its necessary to improve systems for clinical, pharmacological and medical knowledge for viral infection in societies.³⁴ After the implementation of the work program, the cadres monitor and evaluate the work program which aims to improve the quality of the Posbindu PTM work program. Fatmah and Nasution states that the success of the Posbindu PTM program is that cadres have received cadre training because training can improve cadres' knowledge and skills. Primiyani et al. stated that the success of the Posbindu PTM program involved various cross-sector.³⁵ Lestari et al. states Posbindu plays role in monitoring PTM risk. Therefore cadres must have the capability of PTM surveillance and screening and make the public aware of conducting PTM screening.³⁶ Screening is the early detection of a diseases.³⁷ Especially NCD (PTM) so that cadres can separate the sick and not sick, thus implementing and empowering the community in efforts to overcome PTM.³⁸

CONCLUSION

The PTM Posbindu Empowerment Model is by increasing the role and skills of cadres by combining qualitative and quantitative research to produce a model with stages including the pre-modelling stage (licensing with related agencies, preliminary survey, in-depth interviews with service stakeholders and community leaders, introspective surveys with cadres). The modeling stages include: Training for Posbindu PTM cadres to improve the role and skills of cadres, advocacy to policymakers, education to the community, community regeneration, Establishment of PTM Protectors Community, implementation of work programs by communities and assistance by cadres, monitoring evaluation of the implementation of empowerment work programs

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CONFLICT OF INTEREST

As authors, we highly guarantee that there is no conflict of interest in this research either sponsors or any institution.

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