

# THE IMPACT OF INDONESIAN CHRONIC DISEASE MANAGEMENT PROGRAM (PROLANIS) ON METABOLIC CONTROL AND RENAL FUNCTION OF TYPE 2 DIABETES MELLITUS PATIENTS IN PUBLIC HEALTH CENTER

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## ABSTRACT

The Chronic Disease Management Program (Prolanis) is a program that synergizes the involvement of participants, health facilities, and Healthcare and Social Security Agency (BPJS Kesehatan). Health Center has not been effective in treating Non-Communicable Diseases (NCDs). This requires special efforts to prevent and control NCDs so as not to burden national health insurance program. The purpose of this study was to find out the impact of prolanis on referral control and efficiency chronic disease services. Exploratory research design was used to determine the application of prolanis policy. The population is Prolanis participants who were held at the Bengkulu City Health Center. The sample was obtained by convenience sampling with 211 subjects participated in Prolanis activities. The selected sample was prolanis participants who suffered from diabetes mellitus and hypertension. Based on correlation and regression tests, healthy living adherence with patient referral frequency indicated a weak relationship ( $r=0.155$ ) and positive pattern. It means the higher compliance of participants, the lower referral frequency. The result showed that there was relationship between the compliance of healthy living participants with patient referrals in Bengkulu City ( $p=0.024$ ). This means that there is significant difference between FKTL referrals before and after the participation of prolanis in Bengkulu City. Active prolanis participants can encourage participants with chronic diseases to achieve quality of life and reduce frequency of referral to FKTL. Reducing the frequency of referral FKTL can streamline the cost of health services to FKTL.

**Keywords:** Prolanis, referral control, cost efficiency.

## INTRODUCTION

The prevalence of chronic disease is increasing in low- and middle-income countries. The most prominent diseases are cardiovascular disease, cancer, chronic obstructive pulmonary disease, and diabetes mellitus. These diseases are closely related to common physiological risks and can be prevented by high blood pressure, high blood cholesterol, and overweight as well as major behaviors. Risk factors are such as an unhealthy diet, physical activity, and tobacco use. Efforts to reduce chronic disease should focus on integrated control of key risk factors (1). Prolanis, which is one of the programs is to maintain chronic disease for the health of chronic disease patients for Healthcare and Social Security Agency (BPJS Kesehatan) participants so that the optimal quality of life can be realized with effective and efficient health care costs. Prolanis aims to encourage participants with chronic diseases to achieve optimal quality of life with an indicator of 75% of registered participants who visit the first-level health facilities having good results on specific examinations for type 2 DM and hypertension according to related clinical guidelines so as to prevent disease complications. The target is all the health of chronic disease patients for BPJS Kesehatan participants with

chronic diseases (Type 2 Diabetes Mellitus and Hypertension). Prolanis' activities consist of medical/educational consultations, home visits, reminders, club activities, and health status monitoring. The person in charge of the implementation of prolanis is the the health of chronic disease patients for BPJS Kesehatan Branch Office for the Primary Service Management (2). Public Health Centers, as gate keeper, has the task of implementing health policies to achieve health development goals in their working areas by prioritizing promotive and preventive efforts and controlling referrals in accordance with medical service standards (3). The condition of Public Health Centers in Indonesia has not been effective in treating non-communicable diseases. This requires special efforts to prevent and control non-communicable diseases so as not to burden the national health insurance program (4). The implementation of prolanis in Indonesia varies in activities and services provided. Prolanis activities are carried out by professional health workers. Problems that often occur in Prolanis health services are the availability of funds, the unavailability standard of operating procedures (SOPs), facilities and infrastructure, and limited human resources involved in activities (5). With the application of prolanis activities associated with improvement in

serum TG levels which is one of the control parameters in metabolism. Prolanis is also associated with BMI and kidney function. Serum BUN levels decrease by carrying out routine prolanis activities (6).

The Health and Social Security Agency (BPJS) Strives to increase the efficiency and effectiveness of the implementation of health insurance by developing a service quality control system through a capitation payment pattern, with the Regulation of the Health Social Security Administering Body No. 2 of 2015 concerning Norms for Determining the Amount of Capitation and Capitation Payments Based on Fulfillment of Service Commitments to Facilities First Level Health (FKTP). The implementation of the capitation payment policy based on the fulfillment of service commitments assign several indicators that must be achieved by the FKTP. One indicator is the visit of chronic disease patients in the chronic disease management program (Prolanis)(7). As of April 2021, Healthcare and Social Security Agency (BPJS Kesehatan) has collaborated with 22.661 FKTPs and 2.546 FKRTLs throughout Indonesia. During 2016-2020, Healthcare and Social Security Agency (BPJS Kesehatan) has spent Rp 75.10 trillion for primary health services and Rp 374.86 trillion for referral health services (8). The need for regular monitoring of process of health authorities in assessing service quality is predisposed by differences in costs (9).

The Indonesian government facilitates chronic disease services in accordance with Presidential Regulation Number 12 of 2013 concerning Health Insurance Article 21 Paragraph 1, one of the benefits obtained by Healthcare and Social Security Agency (BPJS Kesehatan) participants is promotive and preventive health services, one of which is Prolanis (10). Chronic Disease Management Program (Prolanis) is a health care system and proactive approach implemented in an integrated manner involving Participants, Health Facilities and Healthcare and Social Security Agency (BPJS Kesehatan) in the context of health care for Healthcare and Social Security Agency (BPJS Kesehatan) participants who suffer from chronic diseases to achieve optimal quality of life at the cost of health services effective and efficient. The purpose of Prolanis is to encourage participants with chronic diseases to achieve optimal quality of life with an indicator of 75% of registered participants visiting the First Level Health Facilities having good results on specific examinations of Type 2 DM and Hypertension according to the relevant Clinical Guidelines so as to prevent disease complications (11).

Hypertension and type 2 diabetes mellitus are chronic diseases with a high prevalence in Indonesia. According to research, the prevalence of Type 2 DM Based on blood sugar examinations in Indonesia increased from 6.9% in 2013 to 8.5%

in 2018, while the prevalence of hypertension in Indonesia, according to the results of blood pressure measurements, rose from 25.8% in 2013 to 34.1% in 2018 (12). Referrals from health centers throughout the city of Bengkulu decreased from 2014 as many as 113,075 visits and referrals 25,183 (22.27%), in 2015 as many as 149,483 visits and referrals 26,963 (18.04%), in 2016 as many as 226.313 visits and referrals 23.545 (10.40%)(13). Based on the P-Care report from the BPJS Bengkulu Office in 2016, the number of JKN participants in Bengkulu City was 156,854 people and the number of contact rates was 15.726 (10.06%). Sick visits 13.068 (8.33%) and healthy visits 2.658 (1.69%). In Indonesia, referrals in 2016 were 2.2 million, there were around 214.000 non-specialist referrals, the referred disease should have been treated at the FKTP (14).

The failure of health programs is swayed by a poor understanding of community empowerment, limited information, top-down approach, and weak leadership. Public Health Center needs to develop management to realize community empowerment to carry out early detection, prevent and control disease. Chronic disease management program (PROLANIS) is a program to control patients who have been referred back to the Puskesmas so that they can control Hypertension and diabetes mellitus, so that they do not have to be referred for hospital services. Visits Chronic disease management program (PROLANIS) is a patient with Hypertension and diabetes mellitus, the Puskesmas must optimize patient referrals and must routinely follow Prolanis, so that they can control referrals to hospitals

The concept of people who become patients will participate more in improving healthy living behavior. Community empowerment management aims to enable members to live healthy behaviors to prevent and control disease. Public Health Center is required to be able to integrate public health services with basic medical services, efforts to control the number of referrals and community participation have been pursued through the chronic disease management program (Prolanis).

Based on the background, it is necessary to analyze the role of prolanis on referral control. The purpose of the study was to see the effect of prolanis participation with referrals of prolanis participants to Advanced Health Facilities (AHF).

## METHODS

Exploratory research design was to find out the implementation of prolanis policy. The Case *study approach employed* qualitative methods to interview the implementation of chronic disease management program policies (prolanis), and quantitative methods to determine efforts to

control disease, cost efficiency of health insurance services. The population of Prolanis participants was carried out at the Bengkulu City Health Center totaling 950 people. The number of samples was determined using the slovin formula with a 10% confidence level. Sampling was carried out by accidental sampling, namely as many as 211 subjects participating in Prolanis activities with a sample size calculation with two population proportions. The sampling locations were all Puskesmas in Bengkulu City. The selected sample is prolanis participants who suffer from diabetes mellitus and hypertension. In this study, researchers went directly to the field to interview Prolanis participants who were assisted by 5 enumerators. For a year, the participation of prolanis participants was observed. The variable of this study was measured by the participation of the elderly in prolanis activities every Friday at the Puskesmas to see changes in sick visits to the

Puskesmas. After looking at the medical records of the elderly, whether there was a decrease in the elderly referral rate before taking prolanis and after participation in prolanis activities. Correlation and regression tests were employed to find out adherence to healthy living with the frequency of referrals. Dependent t test was used to determine the average frequency of referrals before and after taking prolanis. Efficiency analysis was carried out by comparing the operational costs of implementing prolanis with the costs of FKTL referral services.

**RESULTS**

In our study, the mean age of the women was Research result found that the socio demographic of prolanis participants in Bengkulu City can be seen in Table 1

**Table 1: Characteristics of Prolanis Participants in Bengkulu City**

Variable	N	%
<b>Occupation</b>		
Unemployed	3	1.4
Government Employees	4	3.3
Retired	21	13.3
Entrepreneur	45	21.3
Housewife	138	65.4
<b>Sex</b>		
Male	56	26.54
Female	155	73.46
<b>Age</b>		
≤ mean (56.64)	95	45
>mean (56.65)	116	55
<b>Patient</b>		
Diabetes Melitus	75	35.55
Diabetes Melitus & Hipertensi	66	31.27
Hipertensi	70	33.18

The average prolanis participants were housewives by 65.4% or 138 people and unemployed by 1.4% or 3 people. On average, prolanis participants are female by 73.46% or 155 people. The average prolanis participants are over 56.65 years old by 55% or 116 people. Pasien Diabetes Melitus 35.55%.

**Prolanis Implementation**

The average referrals before and after taking Prolanis based on the results of the Public Health Center visit data can be seen in Table 2.

**Table 2: Univariate Analysis of Mean Referrals Before and After Prolanis**

Variabel	Minimal	Maksimal	Mean	Standar Deviation	N
Number of Referrals Before Following Prolanis	0	12	4.83	5.08	211
Number of Referrals After Following Prolanis	0	5	0.39	0.81	211

Based on Table 2 shows a decrease in the average number of referrals before and after taking prolanis at the Bengkulu City Health Center. Bengkulu City, with chronic diseases participants

(Type 2 Diabetes Mellitus and Hypertension). Prolanis activities together with all participants include medical/educational consultation activities, join sports and monitoring of health

status. Based on the results of interviews with participants, they said:

*“Prolanis activities included joint exercise, blood pressure checks, counseling / counseling on hypertension control (Hypertension Patients)...”*

*“Prolanis activities include joined exercises, blood pressure checks. Blood sugar levels, DM control counseling / counseling (DM patients)... “*

Prolanis participants found it useful to participate in prolanis activities organized by the the Public Health Center, based on interviews with all participants said:

*“Body feels healthy, sleeps well, maintains weight, increases knowledge in controlling*

*disease , ...”.*

Based on the results of interviews, most of them said that the results of counseling were applied in life, among others, eating as needed, reducing foods that can trigger disease, doing physical activity every day for at least 30 minutes, taking medication regularly as recommended by a doctor, lots of eats fruit, but sometimes cannot control emotions/stress. The impact of the active participation in the prolanis and implementing the counseling results have fewer participants for treatment/referred outpatient to the hospital. Based on the results of the correlation and regression tests of participant adherence in healthy living behavior according to counseling recommendations on the number of frequency of treatment at the hospital, the results are shown in table 2 below.

**Table 3: Correlation and Regression Analysis of Prolanis Participants Compliance with Referrals in Bengkulu City**

Variabel	R	R <sup>2</sup>	Line Equation	P value
Patient Referral	0.155	0.024	Patient Referral = -0.181 + 0.06 compliance healthy living	0.024

Based on the correlation test and regression table 3, the relationship between adherence to healthy living and the frequency of patient referrals showed a weak relationship (r=0.155) and has a positive pattern. It means that the higher the compliance of participants, the lower the referral frequency. The results of the statistical test showed that there was a relationship between the compliance of healthy living participants with

patient referrals in Bengkulu City (p = 0.024).

**Service Efficiency**

The participation of prolanis participants for 1 (one) year has an impact on the control of referrals/treatment at advanced health facilities (AHF). Based on the results of the dependent t-test, it can be seen in table 4.

**Table 4: Prolanis Participation in Referrals to Advanced Health Facilities (AHF) in Bengkulu City**

Variable	Mean	Standard Deviation	Standard Error	p value	N
Patient Referral					
Before Prolanis	4.83	5.08	0.350	0.000	211
After Prolanis	0.39	0.818	0.056		

The average FKTL referrals before taking prolanis was 4.83 referrals per year, while after taking prolanis the average FKTP referrals sickness was 0.39 referrals per year. The mean difference between before and after taking prolanis was 4.44. The statistical test results obtained a value of 0.001. It can be meant that there was a significant difference between AHF referrals before and after participating in prolanis in Bengkulu City.

**DISCUSSION**

**Prolanis Implementation**

The Chronic Disease Management Program (Prolanis) has been implemented at every Public Health Centre for chronic disease patients Type 2 Diabetes Mellitus and Hypertension (Table 1). Participants experience the benefits of following Prolanis and applying the advice from the counseling results for a healthy life. The results of the study indicated that community involvement investment showed that when patients were enabled to take a greater part and control in managing their own condition(15).

According to WHO (2015) that integrated health services are health services that are managed and ensure continuous services, including health promotion, disease prevention, diagnosis, treatment, disease management, and rehabilitation at different levels in the health system, as needed(16). As for what affects the activity of Prolanis participants are internal factors, meaning that the awareness of Prolanis participants is indeed low to participate in existing activities(17).

Prolanis' activities include conducting outreach/counseling activities, health checks such as measuring blood pressure/tension. Periodic health checks can control diseases such as diabetes mellitus and hypertension. Providing information on a regular basis will remind you of the causes of increasing disease and quickly find out the causes that can be used for control efforts. Individuals are most likely to follow a particular health action if they believe that the benefits outweigh the costs of the action taken to counter the health threat(18). Participants who actively come to take part in Prolanis activities can increase knowledge about preventing, controlling, and the impact of non-communicable diseases, so that it takes the form of behavior to control hypertension or DM (In Table 2). *The Health Belief model* is most often applied to preventative and asymptomatic health problems, such as early detection of cancer and hypertension, and is relevant to interventions to reduce risk factors for cardiovascular disease(19). The patient's physical activity can help reduce blood sugar levels and strengthen the work of the heart, so that it can control or stabilize physical health.

Prolanis activities are fraught with providing counseling/education on hypertension and DM, or special counseling for participants in detail on efforts to control hypertension/DM. Prolanis activities are carried out every month with blood pressure measurement and education activities. The purpose of early detection, prevention and control of hypertension/DM is to reduce the frequency of referrals/treatment to hospitals. The liveliness of Prolanis activities is related to nutritional knowledge and the level of dietary compliance of DM patients. More active participation has an effect on better dietary knowledge and adherence(20). Adequate knowledge about diabetes and hypertension will motivate sufferers to try to actively control the disease. The activeness of the participants has an impact on adherence to the results of counseling/counseling recommendations, taking medication regularly, can improve quality of life, and reduces the frequency of treatment/referrals to hospitals (in Table 3). Counseling can help the patient's memory to carry out and improve adherence to what should be done and avoided by patients with hypertension and diabetes mellitus. Control of blood sugar levels and hypertension

routinely carried out in daily life will greatly help reduce the severity of the condition, so that you do not have to be referred for hospital services.

The better the management function, the higher the indicators of service commitment, one of which is the number of prolanis visits and a decrease in the number of referrals to FKTL(21). Health centers that do not reach the safe zone (red zone), have some obstacles related to supporting facilities and infrastructure for carrying out prolanis, such as limited area for gymnastics, unavailability of counseling room, and people who are still difficult to provide knowledge if they do not visit and participate regularly in promotive and preventive activities. It will become acute and chronic complications. Many people do not comply with this Prolanis and some of them do not realize that they suffer from type 2 DM or hypertension(22).

The chronic disease management approach estimates that from a group of susceptible individuals, there are around 3-5% of patients with chronic conditions that require case management, 15-27% require nursing management, and 70-80% can be managed with individual care support, Jones (2006) in the Australian Government (2009)(23). The results of Study suggest that community-based lifestyle interventions delivered by trained field health workers may be a potential solution to combat hypertension and diabetes mellitus among middle-aged and elderly people in resource-poor urban environment(24).

### Service Cost Efficiency

The average FKTL referral before taking the prolanis was 4.83 referrals per year, after taking the prolanis the average FKTP referral for sick was 0.39 referrals per year. The mean difference between before and after following prolanis was 4.44 (in Table 4). The implementation of the chronic disease management program (Prolanis) for 1 (one) year at 20 Public Health Centre. Implementation of prolanis with the number of participants increasing will intensify the cost efficiency of referral services for diabetes mellitus (DM) and hypertension. Prolanis aims to control referrals by maintaining quality of life. The impact of prolanis activities is increasing the knowledge and attitude of sufferers, and trying healthy living behaviors to control the disease so it doesn't get worse. There are a number of promising interventions that can increase the effectiveness and efficiency of outpatient services, including making it easier for primary care physicians to discuss patients via e-mail or telephone. (24).It is necessary to take a special step to work in the community which may not be cost effective without improving the skills of primary care physicians through education or joint consultation with patients(25).The public health service approach to health promotion policies encourages long-term investment in

health care systems, with a focus on prevention and control, prioritizing cost-effective service-based interventions(26). Health promotion efforts can encourage participants to adopt healthy lifestyle behaviors that can control disease, reduce referrals/treatments to hospitals, and have an impact on service efficiency.

The Chronic Disease Management Program (Prolanis) activities, namely: 1) participant health consultations; 2) group education. This activity is to increase health knowledge in efforts to recover from disease and prevent disease recurrence and improve health status; 3) reminder via SMS Gateway. The reminder in question is an activity to motivate participants to make regular visits to health facilities by reminding them of the consultation schedule; and 4) Home Visits. This is a community service activity visiting the homes of Prolanis participants to provide information/education about personal health and the environment for Prolanis participants and their families.

Limitation of the discussion on the role of prolanis in controlling hypertension and diabetes mellitus so that they are not referred for further services at the hospital prolanis participants who can routinely control the disease not getting worse, and can improve the quality of life as patients with hypertension and diabetes mellitus, because Prolanis activities increase physical activity; improvement of clean and healthy living behavior; provision of healthy food, healthy living education.

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### CONCLUSION

In conclusion, Active prolanis participants can encourage participants with chronic diseases to achieve quality of life thereby reducing the frequency of treatment/referrals to FKTL. Reducing the frequency of treatment/referrals to FKTL can streamline health service costs at FKTL. Prolanis activities will be able to increase the success of Germas which aims to increase awareness, willingness and ability of the community to behave in a healthy life including controlling hypertension and DM in an effort to improve quality of life.

### Conflict of interest

The authors declare no potential conflict of interest.

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