Original article

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The Process Evaluation and Organization Support for Type 2 Diabetes Mellitus and Hypertension in Primary Care Cluster and Non-Primary Care Cluster in Phetchabun Province, Thailand

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Abstract

This cross-sectional descriptive study aimed to determine the management process and supporting system of an organization which provided services for diabetic and hypertensive patients of a family medicine clinic and other service unit in Phetchabun province, Thailand. The study participants were 206 health personnel who worked in family medicine clinic prototype and other service unit. They were recruited by the purposive sampling method. Data was collected using an evaluation form and focus group discussion. Data were analyzed with descriptive statistics (frequency, percentage, standard deviation). Qualitative data were analyzed using content analysis.

The study result revealed that the majority of the participants were female (77.18%), and their average age was 40.53 years old (S.D.=10.49). The evaluation results for the process of service arrangement of service units found that most of the units had a quality in B level (60.68%). The evaluation of service arrangement process in 5 aspects found that the PCC prototype had the highest mean score of 5.59 (S.D.=1.89). The evaluation of organizational support system in service arrangement found that mean score was 6.38 (S.D. =1.55). In summary, work pattern should be adjusted into people-centered care. Integration between different types of work can be achieved by arranging an internal organization into a matrix team. Integration can also be accomplished in an interdepartmental form that includes both hospital and a unit in community.

Keywords: Primary care cluster, Self-management support, Diabetes Mellitus, Hypertension

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Introduction

The health service system is an essential component of health determinants. Health system governance can determine the direction and supervise the health system in the planned direction (Bureau of policy and strategy, ministry of public health, 2016). Constitution of the Kingdom of Thailand 2017, section 258 Chor.(5) states that a primary medical system should be established with a family medicine doctor looking after people in appropriate proportion (constitution of the kingdom of Thailand B.E. 2560, 2017). That makes the ministry of public health define a policy to respond to the constitution in such a section. By developing "family medicine clinic" or "Primary Care Unit (PCU)" to be a health service unit that has a doctor who specializes in family medicine and a multidisciplinary team to look after 10,000 people per team. The goal of developing and establishing the family medicine clinic is to provide health care to all Thai people within ten years. Establish a Primary Care Cluster to create stability for a service system, decrease inequality, and provide holistic care with the concept of service everyone, everything, anytime with the technology and family doctor team, which comprises family medicine doctor. A multidisciplinary team takes care of people's health through the family medicine process, a policy to allocate medical staff into sub-district areas for the first time in Thailand (Office of the Permanent Secretary, Ministry of public health, 2519). The process of family medicine is a medical and public health service to take care of people in the responsible area in a holistic pattern from the beginning, continuously integrating comprehensive health promotion, disease control, disease prevention, diagnosis, treatment, and rehabilitation. The primary care unit or primary care cluster consists of a family medicine doctor and a primary service provider team. It is linked with family, community, medical services, and public health at secondary and tertiary levels. Some Sub-district health-promoting hospitals have been elevated into family medicine clinics that look after people's holistic health, emphasizing non-communication diseases prevention as the primary service, especially for diabetes and hypertension, which is a significant health problem. Services are provided both proactive and passive to reduce risk behaviors, illness, disability, and death from non-communicable diseases. The development of the NCD clinic service system is the heart of the system that affects the process and the quality of the service provided (Health System Research Institute, 2010). The prevalence of people with hypertension in 2014 was 24.7 percent, which increased by 15 percent compared with 2009, or 1.8 million people. Male has a higher prevalence and incidence than females after 2015. The prevalence of diabetes in 2014 was 8.9 percent which increased by 29 percent compared with 2009 or 8.2 hundred thousand people. Female has a higher prevalence and incidence than male after 2015 (Department of Disease Control, Ministry of Public Health, Thailand, 2020).

In the situation that the trend of diabetes and hypertension prevalence tends to increase, the need for chronic disease cares quality and the need care insufficient level and regularly. So, it is essential to have an in-depth understanding of the efficiency of existing patient care patterns. For example, a hospital that has a higher readiness will achieve the care process and desired clinical goal better, and it can be a cost reduction at the same time (Sieng S, Thinkamrop B, Laohasiriwong and W, Hurst C.,2015 and 5. Sieng S, B Thinkamrop, Hurst C., 2015). Achieving a care process and the clinical goal is crucial there. A study result revealed that it could slow down the complication of microvascular or macrovascular [6 – 8]. Ministry of Public Health has been driven a chronic NCD problem solving by an applied various methods of diabetes and hypertension patient care such as the Chronic care model, expanded chronic care model, innovative care for chronic conditions framework (WHO), integrated people-centered health services (WHO) and value-based health care. All of these lead to the service arrangement adjustment of the family medicine clinic or primary care unit. It provides diabetes and

hypertension service units, creates an interaction between people and family medicine teams, and registers a target group by emphasizing the risk groups and patients who cannot control symptoms to do a home visit and do a care plan with their family or related person. Preparing a patient care and treatment data system, having an appropriate proactive measure with each individual of the target group, have a service connection between service units for continuous care. As well as the coordination and create a working network with a community (sub-district fund) and network partners within the district (District Health Board: DHB) to manage environmental factors for diabetes and hypertension prevention and control. However, the study of the performance result of service provided in the family medicine clinic form and other services toward achieving a care goal. The clinical goal in chronic NCD patients still has a limited. Therefore, the researcher is interested in studying this issue.

Research Methodology

Research objective

To study the process of providing services, the organization support, and the opinions of service providers for diabetes and hypertension patients of primary care cluster and other health promoting hospital in Phetchabun Province.

Study Population and Sample

Population in this study is medical and public health staff that is a primary care provider to diabetes and hypertension patient of Mueang Phetchabun district and Lom Kao district, Phetchabun province. Which is a pilot district in developing primary health care service system of country. Sample has been selected by using purposive sampling method from 2 pilot districts which is 206 individuals.

Study Design

This study is survey research which study in the area of Mueang Phetchabun district and Lom Kao district, Phetchabun province. It is consisting of 1) Khlong Sala Primary care cluster (PCC), Phetchabun Hospital 2) Lom Kao Hospital PCC, Lom Kao district. For the PCC that is not a PCC prototype but has been recruited into this study for the comparison (another PCC) which are Na-Ngua PCC, Mueang district, Phetchabun province and Ban-nern sub-district health promoting hospital (HPH), Lomkao District, Petchaboon province.

Tools

The tools used in this research consisted was assessment form for primary care services for diabetic and hypertension patients the self-report questionnaire is divided into 4 parts. It consists of Part 1, Personal Information of the Contributor, Part 2, Comments on the Service Process, Part 3 Comments on Support Systems, and Part 4 Opinions on Work Improvement. (open-ended question) Sections 2 and 3 feature scoring rubrics, which are formed by a combination of scoring criteria and a rating scale to indicate differences in performance or performance. (Reference) with score values as follows.

1) D = The lowest level. Indicates little to no action or support, 1 score.
2) C =The performed from time to time. Intermittent or defensive service Basic support is provided. Scored 2-4.
3) B = has a systematic operation and management. There is a team work and the service is well connected. There is a good support system. Score 5-7.
4) A = Very good, systematically implemented, covering a score 8-10.

The questionnaire passed the confidence test (Reliability) which was tested in another area in a sample of 30 people with similar characteristics and analyzed for Cronbach's alpha coefficient of 0.80.

Data Analysis

The data were collected by a self-administered questionnaire. The data analysis was performed by using descriptive statistics which is frequency, percentage, and mean for the process evaluation of 5 dimension factors, and the overall organizational support factors.

Ethical Approval

This study was approved by Human Research Ethics Committee, Faculty of Medicine, Ramathibodi Hospital. An Implementation research program on development of Integrated People- centered Primary Care System (IPCPCS) No. COA. MURA2019/1018

Results

General information

In the overview of Phetchabun Province, the majority of sample were female (77.18 percent). In Mueang district 79.73 percent of sample were female and 70.69 percent of sample in Lom Kao district were female as well. For the average age of the sample, the overview of Phetchabun province found that the average age is 40.53 (10.49). Working position aspect found that, in the overview of Phetchabun province 33.01 percent worked as a public health technical officer. For Mueang district the majority of the sample worked as registered nurse 35.14 percent and Lom Kao district 32.76 percent were public health technical officer. The duration of working in family doctor team in the overview of Phetchabun province found that most of the staff has been worked in family doctor team more than 1 year 45.01 percent as well as Mueang district that 56.08 percent has working duration more than 1 year. For Lom Kao district, most of the same people has been worked in family doctor team more than or equal 5 years 39.66 percent. In an aspect of the role in related with providing a service for diabetes/hypertension patient, in the overview of Phetchabun province found that 67.96 percent of the sample were provider/co-provider. Samhis againe as Mueang district and Lom Kao district which is the majority of the sample were provider/co-provider 66.89 and 70.90 percent respectively.

The process evaluation of 5 dimension

From the evaluation of service arrangement process in all 5 dimensions, in the overview found that quality is in a B level 60.68 percent (mean score 6.00±1.61). Found that the interaction between people and family doctor, mostly has a quality in C level 62.12 percent (mean score 4.03±1.93). In the aspect of preparing a shared care plan participative found that 49.02 percent has a quality in B level 49.02 percent (mean score 5.20±1.80). The aspect of health information system found that 59.22 percent has a quality in B level (mean score 5.94±1.74). The aspect of self-management support system of NCD patient found that 54.15 percent has a quality in B level (mean score 5.39±1.67). The aspect of continuity of care and coordination found that 47.09 percent has a quality in B level (mean score 5.42±1.96). (Table 1.)

Table 1. The process evaluation of 5 dimensions

The process evaluation	Level of quality				Mean	S.D.
	D (1 score)	C (2-4 score)	B (5-7 score)	A (8-10 score)		
1) Relationship	15(7.58)	123(62.12)	50(25.25)	10(5.05)	4.03	1.93
2) Shared Care Plan	8(3.92)	76(37.25)	100(49.02)	20(9.80)	5.20	1.80
3) Health Information System	2(0.97)	42(20.39)	122(59.22)	40(19.42)	5.94	1.74
4) NCD self-Management supports	1(0.49)	75(36.59)	111(54.15)	18(8.78)	5.39	1.67
5) Continuity of care and coordination	8(3.88)	69(33.50)	97(47.09)	32(15.53)	5.42	1.96

The Process Evaluation of 5 dimensions in each area

The overview of Phetchabun province found that, in the PCC prototype has a highest mean score 5.59 (1.89), next is another PCC (comparison) have a mean score at 4.53 (1.89) and health promoting hospital (HPH) have mean score at 3.65 (1.78) respectively. In Mueang district found that, in the PCC prototype has a highest mean score 5.38 (2.16), next is another PCC (comparison) have a mean score at 4.31 (2.02) and HPH have mean score at 3.15 (1.22) respectively. For Lom Kao district found that, in the PCC prototype has a highest mean score 5.96 (1.34), next is HPH have a mean score at 5.31 (2.24) and another PCC (comparison) have mean score at 4.72 (1.84) respectively.

In the aspect of preparing a shared care plan, the overview of Phetchabun province found that, in the PCC prototype has a highest mean score 5.88 (1.75), next is another PCC (comparison) have a mean score at 5.27 (1.52) and HPH have mean score at 3.15 (1.22) respectively. In Mueang district found that, in the PCC prototype has a highest mean score 6.33 (1.90), next is another PCC (comparison) have a mean score at 5.29(2.13) and HPH have mean score at 4.97 (1.80) respectively. For Lom Kao district found that, in the HPH has a highest mean score 5.31 (1.84), next is another PCC (comparison) have a mean score at 5.26 (0.80) and PCC prototype have mean score at 5.11 (1.16) respectively.

In the aspect of preparing a health information system, the overview of Phetchabun province found that, in the PCC prototype has a highest mean score 6.17 (1.59), next is HPH have a mean score at 5.90 (1.81) and another PCC (comparison) have mean score at 5.88 (1.45) respectively. In Mueang district found that, in the PCC prototype has a highest mean score 6.33(1.90), next is HPH have a mean score at 5.93 (1.98) and another PCC (comparison) have mean score at 5.81 (1.71) respectively. For Lom Kao district found that, in another PCC (comparison) has a highest mean score 5.94 (1.29), next is PCC prototype have a mean score at 5.92 (0.90) and HPH have mean score at 5.81 (1.06) respectively.

For the self-management support system of the patient, the overview of Phetchabun province found that, in the PCC prototype has a highest mean score 5.78 (1.76), next is HPH have a mean score at 5.32 (1.65) and another PCC (comparison) have mean score at 5.26 (1.67) respectively. In Mueang district found

that, in the PCC prototype has a highest mean score 6.22 (1.83), next is HPH have a mean score at 5.10 (1.63) and another PCC (comparison) have mean score at 4.69 (1.87) respectively. For Lom Kao district found that, in the HPH has a highest mean score 6.04 (1.54), next is another PCC (comparison) have a mean score at 5.78 (1.37) and PCC prototype have mean score at 5.04 (1.42) respectively.

In the aspect of continuity & coordination of the care, the overview of Phetchabun province found that the PCC prototype had the highest mean score (5.67). (1.83), next is another PCC (comparison) have a mean score at 5.59 (1.67) and HPH have mean score at 5.35 (2.01) respectively. In Mueang district found that, in the PCC prototype has a highest mean score 5.88 (1.97), next is HPH have a mean score at 5.08 (2.01) and another PCC (comparison) have mean score at 4.69 (1.75) respectively. For Lom Kao district found that, in another PCC (comparison) has a highest mean score 6.39 (1.17), next is HPH have a mean score at 6.20 (1.81) and PCC prototype have mean score at 5.33 (1.59) respectively. (Table 2.)

Table 2. The process evaluation 5 dimensions

Study setting	Mean (Standard deviation) (Process Evaluation)				
	(relationship)	(share care plan)	(Health information system)	(self-management support)	(continuity & coordination)
Overall					
PCC (Prototype)	5.59(1.89)	5.88(1.75)	6.17(1.59)	5.78(1.76)	5.67(1.83)
PCC (Comparison)	4.53(1.89)	5.27(1.52)	5.88(1.45)	5.26(1.67)	5.59(1.67)
HPH	3.65(1.78)	5.05(1.81)	5.90(1.81)	5.32(1.65)	5.35(2.01)
Muang District, Phetchabun Province					
PCC (Prototype)	5.38(2.16)	6.33(1.90)	6.33(1.90)	6.22(1.83)	5.88(1.97)
PCC (Comparison)	4.31(2.02)	5.29(2.13)	5.81(1.71)	4.69(1.87)	4.69(1.75)
HPH	3.15(1.22)	4.97(1.80)	5.93(1.98)	5.10(1.63)	5.08(2.01)
Lom Kao District, Phetchabun Province					
PCC (Prototype)	5.96(1.34)	5.11(1.16)	5.92(0.90)	5.04(1.42)	5.33(1.59)
PCC (Comparison)	4.72(1.84)	5.26(0.80)	5.94(1.29)	5.78(1.37)	6.39(1.17)
HPH	5.31(2.24)	5.31(1.84)	5.81(1.06)	6.04(1.54)	6.20(1.81)

The overall organizational supports

For the evaluation of organizational support system in the service arrangement in the overview, the mean score at 6.38 (1.55). The support system in the aspect of family doctor team and multidisciplinary team of community hospital in the NCD patient care. When classified according to the service unit found that PCC prototype has a highest mean score at 6.31 (1.64) next is another PCC (comparison) has a mean score at 5.88 (1.36). In the aspect of continuing of service quality development process found that PCC

prototype has a highest mean score at 6.81 (1.45) next is another PCC (comparison) has a mean score at 6.18 (1.70). In the aspect of the understanding toward the principle of service providing of all 5 compositions, we found that another PCC (comparison) has a highest mean score at 6.76 (2.17) next is PCC prototype has a mean score at 6.16 (1.85). And in the aspect of the confidence of the team toward the free to allocate working time for the patient as they deem necessary found that another PCC (comparison) has a highest mean score at 6.35 (1.37) next is PCC prototype has a mean score at 6.25 (2.34). (Table 3)

Table 3. The overall scores for organizational supports

The organization supports	Mean (S.D.) (10 score)		
	PCC (Prototype)	PCC (Comparison)	HPH
1. Family doctor team and multidisciplinary team of community hospital in the NCD patient care	6.31(1.64)	5.88(1.36)	5.85(1.86)
2. Continuing of service quality development process	6.81(1.45)	6.18(1.70)	5.74(1.80)
3. Understanding toward the principle of service providing of all 5 compositions	6.16(1.85)	6.76(2.17)	5.90(1.85)
4. The confidence of the team toward the free to allocate working time for the patient as they deem necessary	6.25(2.34)	6.35(1.37)	6.06(1.77)
Overall	6.38(1.55)	6.29(1.46)	5.88(1.63)

The organization supports in each area

The study result revealed that, in the overview of Phetchabun province PCC prototype has a highest mean score at 6.31 (1.64) next is another PCC (comparison) has a mean score at 5.88 (1.36) and HPH has a mean score at 5.85 (1.86) respectively. In Mueang district found that PCC prototype has a highest mean score at 6.55 (1.82) next is another PCC (comparison) has a mean score at 5.54 (1.87) and HPH has a mean score at 5.38 (1.30) respectively. For Lom Kao district found that HPH has a highest mean score at 6.84 (1.42) next is another PCC (comparison) has a mean score at 6.33 (1.32) and PCC prototype has a mean score at 5.92 (1.24) respectively.

In the aspect of having continuing of service quality development process, in the overview of Phetchabun province we found that PCC prototype had a highest mean score at 6.81 (1.45). The next highest score was another PCC (comparison) with a mean score at 6.18 (1.70) and HPH with a mean score at 5.74 (1.80). In Mueang district found that PCC prototype has a highest mean score at 6.85 (1.63) next is HPH has a mean score at 5.51 (1.85) and another PCC (comparison) has a mean score at 5.25 (1.39) respectively. For Lom Kao district found that another PCC (comparison) has a highest mean score at 7.00 (1.58) next is PCC prototype has a mean score at 6.75 (1.14) and HPH has a mean score at 6.49 (1.41) respectively.

In the aspect of understanding toward the principle of service providing of all 5 compositions, in the overview of Phetchabun province found that another PCC (comparison) has a highest mean score at 6.16 (2.17) next is PCC prototype has a mean score

at 6.16 (1.85) and HPH has a mean score at 5.90 (1.85) respectively. In Mueang district found that PCC prototype has a highest mean score at 6.20 (2.12) next is HPH has a mean score at 5.77 (1.89) and another PCC (comparison) has a mean score at 5.50 (2.14) respectively. For Lom Kao district found that another PCC (comparison) has a highest mean score at 7.89 (1.54) next is HPH has a mean score at 6.32 (1.68) and PCC prototype has a mean score at 6.08 (1.38) respectively.

In the aspect of the confidence of the team toward the free to allocate working time for the patient as they deem necessary, in the overview of Phetchabun province found that another PCC (comparison) has a highest mean score at 6.35(1.37) next is PCC prototype has a mean score at 6.25(2.34) and HPH has a mean score at 6.06(1.77) respectively. In Mueang district found that another PCC (comparison) has a highest mean score at 5.88 (1.64) next is PCC prototype has a mean score at 5.85 (2.85) and HPH has a mean score at 5.82 (2.78) respectively. For Lom Kao district found that PCC prototype has a highest mean score at 6.92 (0.79) next is HPH has a mean score at 6.86 (1.51) and another PCC (comparison) has a mean score at 6.78 (1.97) respectively. (Table 4.)

Table 4. The organization supports in each area

The organizational supports	Mean (Standard deviation) The organizational supports			
	1.Team	2.Continuity of care	3. Understand	4. Confidence
Overview of Phetchabun Province				
PCC (Prototype)	6.31(1.64)	6.81(1.45)	6.16(1.85)	6.25(2.34)
PCC (Comparison)	5.88(1.36)	6.18(1.70)	6.76(2.17)	6.35(1.37)
HPH	5.85(1.86)	5.74(1.80)	5.90(1.85)	6.06(1.77)
Muang District				
PCC (Prototype)	6.55(1.82)	6.85(1.63)	6.20(2.12)	5.85(2.85)
PCC (Comparison)	5.38(1.30)	5.25(1.39)	5.50(2.14)	5.88(1.64)
HPH	5.54(1.87)	5.51(1.85)	5.77(1.89)	5.82(1.78)
Lom Kao District				
PCC (Prototype)	5.92(1.24)	6.75(1.14)	6.08(1.38)	6.92(0.79)
PCC (Comparison)	6.33(1.32)	7.00(1.58)	7.89(1.54)	6.78(0.97)
HPH	6.84(1.42)	6.49(1.41)	6.32(1.68)	6.86(1.51)

Discussion

The process in service arrangement for diabetes and hypertension patient of family medicine clinic and other service unit in Phetchabun province.

In an aspect of interaction between people and family medicine doctor or family doctor team. The overview of Phetchabun province found that PCC prototype has a highest mean, next is another PCC (comparison) and HPH respectively. The result from group discussion found that the majority of the sample have an opinion that patient is acknowledge that who is their family doctor due to the zone service

arrangement and patient will always get a diagnosis from the same doctor. Except, the family doctor is not available so patient need to get the diagnosis from another doctor. Patient not be able to contact a family doctor personally, they can contact via line group, village health volunteer or central number. For the question about family doctor found that patient did not know who is their family doctor due to not every staff has visited the community. Patient will know and only contact the staff that has visited the community. Once the activity was held, there is no public relation in a villager but only in village health volunteer group. Thus, villager in not close with the staff as it should be. According to Kulwadee Poljeieng (2016), the study found that factors significantly associated with decision making for primary care services utilization were receiving instruction to access primary care services in moderate and high perception level about primary care services and high confidence level concerning primary care services. Therefore, providers should offer public relations regarding policies and services of primary care using various media. Moreover, awareness should be created highlighting primary care service's value. Also, primary care services quality should be improved.

The aspect of preparing a shared care plan participative, in the overview of Phetchabun province found that PCC prototype has a highest mean, next is another PCC (comparison) and HPH respectively. In Mueang district found that PCC prototype has highest mean, next is another PCC (comparison) and HPH respectively. For Lom Kao district found that HPH has highest mean, next is another PCC (comparison) and PCC prototype respectively. The result from group discussion found that, it might be because of the share care plan has been used only in some patient which emphasizing in patient who cannot control blood sugar level and blood pressure. And there is no link with a treatment plan from a specialist. Besides chronic diseases patient, there is a home ward patient such as TB patient and adolescent who has to undergo substance abuse treatment which need to do share care plan in every person. As well as preparing a motivation interview which is a patient behavior modification that need to plan individually. But it still not comprehensive and emphasizing in a group that out of control and has a complication. In the aspect of preparing individual care plan until has an efficiency and comprehensive. From questioning the sample found that the individual plan has been already prepared but, due to the big numbers of patient and has the patient that referral from other health promoting hospital so, it is impossible to do the care plan for all patient. Therefore, it is essential to do the plan by order according to the importance and the severity of the patient. The aspect of the all-around and participation of the patient and their relatives in treatment goal determination. From questioning the sample found that some of patient has a relatives participate in treatment planning and looking for the problem of the patient but still not comprehensive. In the part of network partners, it has a help asking from outer organization in some patient such as patient who won't be able to travel to get a treatment so, they will coordinate with municipality for vehicle support and accompany a patient to a get a treatment. Or patient who was stressed from economic and social problem so, the help from others related organization will be asked. In the group that relatives need to participate in a care providing such as home ward /LTC/ Dementia/ Addict or Abuse. The care plan will prepare together with relatives and has a support from network in community such as caregiver which will provide a care continuously by using resources in community both fund and facility. In the case that need a care beyond their medical benefit, the agreement will be made with patient or relatives for co-paying some service charge. For other group that relative should be participate such as a group of chronic diseases patient which still did not have a participation from relatives clearly, except in the case that has an individual care plan. According to a personalized care plan is

positively associated with better clinical outcomes in the care of patients with type 2 diabetes: a cross-sectional real-life study, they found that patients who had a copy of their care plan had better control of sBP and low-density lipoprotein and were more likely to use statins than patients without a care plan. (Ilona Mikkola, Maria Hagnäs, Jelena Hartsenko, Minna Kaila, and Klas Winell, 2020). And the study of Moser, A., van der Bruggen, H., Widdershoven, G., & Spreeuwenberg, C. (2008), they found that the family care self-management consists of a complex and dynamic set of processes and it is deeply embedded in one's unique life situation. Support from diabetes specialist nurses and family caregivers is a necessity of self-managing diabetes.

The aspect of health information system, the overview of Phetchabun province found that PCC prototype has a highest mean, next is HPH and another PCC (comparison) respectively. In Mueang district found that PCC prototype has a highest mean, next is HPH and another PCC (comparison) respectively. For Lom Kao district found that another PCC (comparison) has a highest mean, next is PCC prototype and HPH respectively. The result from group discussion about the health information system that link between each hospital found that there is an information link with hospital via computer network both back and forth. The patient referral between PCC and hospital still using a paper referral form. There is some the problem about the completeness of the data especially for in the part of the patient that the staff has to visit in the community due to they have to input data later. And there is many part of the data that has no space to input. In the part of having a data system supporting an individual care, from questioning the sample found that the data recording in patient book mostly done by a staff. There will be only some patient that need to measure blood pressure by themselves and record the result at home. Every chronic patient will have their own identity book. In general, the recording will be done by a staff. For the good control patient and has been chosen to be a starred patient which is 20% of good control patient. There will be a training an evaluation skill of blood sugar level and blood pressure then record and submit it by the appointment. For a poor control patient which is 75%, they be assigned to do a self-record as an agreement in share care plan. A home ward patient has a family file that recorded by a staff and has a home chart that should be complete by a relatives or CG. Health information system played an important role due to it is an iteration or a motivate system for the medical staff to implement according to a clinic operation guideline. It is an information that medical staff can look back and see the efficiency of chronic patient care according to the indicator index such as HbA_1C level, blood pressure, blood lipid levels and any complication. Also, it is a data register for planning for patient individual care and continuing care. As well as using a surveillance and prevention measure in related population in community further (Health system research Institute, 2010). According the study of Liang, Y.-W., Chang, H.-F., & Lin, Y.-H. (2019), they found that Information technology-based interventions combined with the usual care are associated with improved glycemic control with different efficacy on various clinical outcomes in diabetic patients.

In the aspect of self-management support of NCD patient, the overview of Phetchabun province found that PCC prototype has a highest mean, next is HPH and another PCC (comparison) respectively. In Mueang district found that PCC prototype has a highest mean, next is HPH and another PCC (comparison) respectively. For Lom Kao district found that another PCC (comparison) has a highest mean, next is PCC prototype and HPH respectively. The result from group discussion found that, in the guideline book risk identification criteria that patient be able to control their own risk. In the part of complication risk assessment, the staff is the one who done the assessment and inform the patient. By examining the feet, eyes and teeth

in diabetes patient. From questioning the sample found that, there is a health modification set, food model set, CKD clinic activity which joining by the health promotion educator and nutritionist. From questioning the sample found that, there is a health modification set, food model set, CKD clinic activity which joining by the health promotion educator and nutritionist but the activity it is not continuingly held. Therefore, should be allocated a fundamental budget to help an activity for patient behavior modification in every year. Find out the cause, why the activity won't be able to arrange continuously and should have a service set which called "family care" and prepare a care plan by emphasizing in find out the problem (problem list). There are 3 important issues which are compliance the treatment, this group will be referral to the pharmacist mainly which is 35% approximately. For the behavior they will doing a motivational interviewing and have self- management program which will make a behavior modification happen, this group have approximately 50% of patient. The complicated case has been done in the case with complication which they will get an evaluation from family medicine doctor and referral to a physician or ophthalmologist in some case, this group is approximately 25% of patient. For patient who do not convenient for home visit, the behavior modification will be held at the service unit. By having a MI room and operate by nurse practitioner. Selecting from patient who has behavior problem to do a behavior modification but it still not set as a service set of 2020. Started to set the service set in a regular pattern which are first visit, poor control and complicated case. According to Miranda JJ, Kinra S, Casas JP, Davey Smith G and Ebrahim S. (2008), they found that the need for health system reform to strengthen primary care is highlighted as a major policy to reduce the toll of this rising epidemic. And according to Kritsanee Suwannarat, Tatirat Tachasuksri, and Supit Siriarunrat (2019), they suggested that antenatal nurses should apply this self-management support program in caring for women with gestational diabetes mellitus in order to promote their appropriate self-management behaviors and normal blood sugar levels.

The aspect of continuing of care and the coordinative, the overview of Phetchabun province found that PCC prototype has a highest mean, next is another PCC (comparison) and HPH respectively. In Mueang district found that PCC prototype has a highest mean, next is HPH and another PCC (comparison) respectively. For Lom Kao district found that another PCC (comparison) has a highest mean, next is HPH and PCC prototype respectively. The result from group discussion found that, if there is a home visit and found out that has to do a referral for patient. After referral to the destination hospital already, there will be a visit at the hospital and can access to see the treatment information of Phetchabun hospital. If patient is discharge from hospital, they will contact with the PCC to look after patient further. In the part of community coordination found that if patient need to see the doctor, people in community will contact with the staff to taking care of patient. In the case that patient won't be able to travel to visit the doctor by themselves, there will be a coordinate with the foundation to asking for a vehicle to accompany a patient to see the doctor. Village health volunteer be able to evaluate patient whether they need to see the doctor or the staff in PCC or not. Then they will immediately inform in order to follow the patient. The study of Li Y. C. (2019) found that the continuity of care was associated with favorable health care outcomes and less medical care uses among newly diagnosed diabetic patients. Long- term relationships between patients and health care providers should be enhanced to provide improved continuity of care.

The organizational support system evaluation in service arrangement by using diabetes and hypertension as a sample. From organizational support system evaluation in overview of service arrangement found that has a mean score at 6.38 (1.55). The support system in the aspect of family doctor team

and the multidisciplinary team of the community hospital in NCD patient care. When classified according to service unit found that PCC prototype has a highest mean. As well as the aspect of continuing quality development process that PCC prototype has a highest mean. The aspect of the understanding toward the principle of service providing of all 5 compositions and the aspect of the confidence of the team toward the free to allocate working time for the patient as they deem necessary found that another PCC (comparison) has a highest mean. The result from group discussion found that there is no collaborative learning process yet especially for the patient that has a drug resistant or complication. There is a Clinical Practice Guidelines (CPG) of Contracted Unit of Primary care (CUP) at PCC level which has family doctor stationed as a treatment partner. And there is a referral system to consult with a physician and emergency physician clearly. The aspect of continuing quality development process, from questioning the sample found that there is a Continuous Quality Improvement (CQI) system for tracking an operation and service plan preparation. Besides this, there is an operation conclusion between case manager and doctor but, the communication in not made in all team member. Also, the applications have been improving and applied more but, it won't be able to do it as a system clearly due to it is a prototype service unit and the service code is the same code as a hospital. So, they won't be able to determine the exact number of who received treatment at PCC precisely. For the aspect of the understanding toward the principle of service providing of all 5 compositions, due to the number of people in the responsibility is large which makes the communication within the team and between team not thorough. The aspect of team toward the free to allocate the working time for patient found that they have a free to make a decision or plan for their operation. The chief gives an authority for their self-management whether what kind of work they can do. If there is an urgent work, they can make a decision that which work they will do first as appropriate. However, it should have a main responsible person for each job specifically in order to immediately response in the case that any help was needed or emergency or need for the referral. In the same time, some of staff won't be able to join in every job since they have a lot of workloads which make a time allocation harder. An important obstacle is conceptualization into people-centered care due to in the past the system was in a top-down form. Which make most of the staff have to work according to an order more than solving the problem for their job so, they operated in a form of provider centered for a long time. Therefore, creating a command-free area is quite hard. Another thing is, the work that was ordered from the central including the work that has been separated in health promotion, diseases control and rehabilitation. All of this makes a staff working separately. according to the study of Chaowalaksakun, P. , Nantachaipan, P. , Kunaviktikul, W. , Panuthai, S. , Kosachunhanun, N., & Turale, S. (2016), they found that the administrative support was practical, fitted with the situation and context of the hospital, and tended to produce good clinical outcomes in diabetes patients.

Conclusion

1. An interaction between people and family doctor. From the result found that there is a public relation only in village health volunteer group which makes people do not close with the personnel as it should be. Therefore, should have a publicity sign as well as picture and name of the personnel who responsible for each community for people to acknowledge them.
2. The organizational support system evaluation in service arrangement, should have an exchange and learn cooperatively between doctor in the hospital and PCC staff. A team member should have more communication, an executive should be clarification to a staff after finished the meeting for find out the proceed method.

The staff should have more leadership to be more keen to share an opinion and make a decision. As well as should be adjust the working pattern in to integrated people-centered primary care system. Creating an activity that has patient as a partner in every activity. Integrated work between each job by adjust the organization management from internal organization into a matrix team. As well as interdepartmental integrated both with hospital and organization in community. Doing a population management and risk stratification to sort patient and provide a service according to their risk and create a care pathway specific for each group. Then prioritize the work in order to obtain the effectiveness and then expand the care until comprehensive and have the coverage later.

3. The preparation of data system in order to provide a care and treatment for diabetes and hypertension patient, should have the part that patient can record their own treatment result in an identity book. To make patient feel involved in the treatment process.

4. The self-management support system of NCD patient. Patient should be acknowledging about the complication from their diseases in order to get a treatment on time such as educate them about stroke. In the part of having a service set that has an effectiveness in behavior modification and patient network, However, the service set can be arranged in group or individual.

5. Participative individual care plan, if it needs a comprehensive operation, the cooperation of network organization should be increase. The cooperation is depending on the need of each patient such as College of Physical Education to take care of physical activity and nutritionist to look after the nutrition and educate patient etc.

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