

**MINISTRY OF EDUCATION  
AND TRAINING**

**MINISTRY OF HEALTH**

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**THE CURRENT SITUATION OF THE CAPACITY OF DETECTION,  
MANAGEMENT AND TREATMENT OF SOME NON-COMMON DISEASES  
OF HANOI'S HEALTH STATIONS AND EFFICIENCY OF SOME  
INTERVENTION SOLUTIONS, 2016 - 2019**

**Major: Social Hygiene and Health Organization**

**Code: 62 72 01 64**

**SUMMARY OF PhD THESIS ON MEDICINE**

**Hanoi, 2020**



## INTRODUCTION

Non-communicable diseases (NCDs) are increasing and developing complicatedly. The World Health Organization has given directions for NCD control, using integrated approach, based on prevention as a foundation, promoting risk factor prevention and control, counseling, management of treatment and strengthen the capacity of monitoring system. In Vietnam, in 2016 WHO estimated that death from NCDs accounted for 77% (44% of NCD deaths before the age of 70). Faced with heavy economic losses, affecting social security of NCDs, on March 20, 2015, the Government issued Decision No. 376 / QĐ-TTg on "Approving the national prevention and control strategy for cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease, bronchial asthma and some other NCDs in the period 2015 - 2025" with the target to detect 50% of hypertension, diabetes cases and to manage, treat 50% of detected cases according to professional instructions, 90% of commune / ward health stations have enough essential medicines and equipment to perform prevention, single-treatment management of some common NCDs.

Hanoi is the capital, and economic center of the country, with high population density and strong population fluctuations. The activities related to NCD prevention and control, therefore face many challenges. Although many activities have been implemented, but unsystematically and not integrated, so they are not sustainable and ineffective.

Under this circumstances, the question arises: How is the detection, management and treatment of the NCD case implementing in Hanoi's health stations? What are effective and practical solutions to improve the quality of NCD detection, management and treatment of the health stations in Hanoi? To answer those questions, this research topic was implemented with the following two objectives:

- 1. To describe the capacity of detection and treatment management of some non-communicable diseases at the commune health stations of Hanoi, in 2017-2019.*
- 2. To evaluate the effectiveness of some intervention solutions to improve the capacity of detection and treatment management of hypertension and diabetes at commune health stations of Thach That district, Hanoi, in 2017 - 2019.*

### **New contributions in science and practical value of the thesis**

The thesis provides a comprehensive picture of the capacity of commune/ward health stations in Hanoi in detection, management and treatment management of NCDs. The thesis also identifies the intervention measures to improve this activity at the commune health stations.

### **The structure of the thesis:**

The thesis consists of 156 pages (excluding references and appendices), of which: 2 pages of Introduction, 38 pages of Literature overview, 25 pages of Subjects and Research methods; 40 pages of Research Results, 38 pages of Discussion, 3 pages of conclusions and 1 page of Recommendations. The thesis has 46 tables, 4 pictures and 1 diagram, 3 charts, used 97 reference scientific articles (including 51 Vietnamese and 46 English articles).

## **Chapter 1. LITERATURE OVERVIEW**

### **1.1 Some related concepts and main content**

Concepts related to research content have been clarified such as Commune Health Station, Non-communicable Diseases, Treatment, Management, Treatment Management, Capacity, Capacity for NCD treatment management, Factor risk. These are the main contains of the thesis.

### **1.1. The burden of non-communicable diseases in the world and in Vietnam**

NCDs are the global challenge and is a huge burden on society and the health system. NCDs are the world's leading cause of death with 41 million deaths each year, accounting for 71% of the death rate, of which up to 15 million deaths occurred prematurely at the age of 30-69 in 2019; 85% of premature deaths were of low-income and middle-income countries. In Vietnam, NCDs continue to have an increasing trend. The death rate from these diseases accounted for more than 69% in 2013, increasing to 77% in 2016. Especially, up to 44% of deaths caused by NCDs were in the group under 70 years old. In 2015, only 43.1% of hypertensive cases were detected and 13.6% received treatment; 31.1% of diabetic patients were detected and 28.9% received treatment.

For prevention and control of NCDs, a number of principles were given as follows: 1) Prevention of NCDs is the responsibility of all sectors of all levels, of each citizen, in which the local government authorities directly lead, the health sector is the principal core; 2) Risk control, proactive monitoring, early detection of disease, continuous and long-term management at primary health care facilities are the effective decisive factors of NCD prevention; 3) Mobilizing many resources for activities, in which the State budget focuses on risk factor control, prevention, surveillance, early detection of diseases.

## **1.2. The role of medical stations in disease prevention is not**

According to the Circular No. 33/2015/TT-BYT dated October 27, 2015 of Ministry of Health on "Guiding functions and tasks of commune, ward and town health stations", in NCD prevention, a number of main tasks that commune health stations need to perform include: 1) Health communication and education, counseling on risk factor control, health promotion; 2) screening/detection of NCDs; 3) management and treatment management of some NCDs (management of hypertension treatment, maintenance treatment of diabetes at degree 1, 2 without complications ...) and 4) statistics and reports on NCDs.

## **1.3 Current capacity in prevention, management and treatment of non-communicable diseases in Vietnam**

Applying components in the health system, the capacity of health stations to perform the task of managing NCD treatment is shown through 3 contents:

- Inputs for treatment management of NCDs include: Systematic management of Human Resources, Finance, Pharmacy, Equipment - Technology, and Health Information Systems.

- Process or implementation of the tasks: CHSs has specific tasks: 1) Screening/early detection; 2) Object management; 3) NCD treatment management.

- Outputs: 1) Increase the detection rate of NCDs cases; 2) Increase the treatment management rate of detected NCDs cases; and 3) Increase the target NCD treatment rate.

### ***1.1.1. Current situation of policy and organization***

On March 20, 2015, the Prime Minister approved the "National Strategy on the prevention and control of cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease (COPD), bronchial asthma and other non-communicable diseases in the period of 2015 - 2025", the strategy emphasized, by 2025 to ensure that 50% of cases with hypertension and diabetes can be detected and 50% of people with disease will be managed and treated according to instructions. Professionally, 90% of commune/ward health stations have sufficient essential medicines and equipment to prevent and manage treatment of some common NCDs....

To focus on management and treatment of NCDs at the primary health care level, Resolution of Central Party No. 20/NQ-TW dated October 25, 2017 on "Strengthening the protection, care and improvement of people's health in the new situation" has given very important targets: 1) By 2025: >90% of the population will be managed in health; 95% of commune health stations perform prevention, management and treatment of some NCDs; 2) By 2030: >95% of the population will be health managed; 100% of commune health stations perform prevention, management and treatment of some NCDs.

Circular 39/2017/TT-BYT dated October 18, 2018 promulgating regulations on basic service packages for grassroots healthcare services, mentioned drugs, equipment and services essential for NCD detection and management at health care facilities of grassroots level.

Decision No. 3756/QĐ-BYT dated June 21, 2018 on the issuance of guidelines for prevention, early detection, diagnosis, treatment and management of some common non-communicable diseases for the basic health sectors.

To focus on the management and treatment of NCDs at the grassroots level, the Government and the Ministry of Health have also issued Decision No. 5904/QĐ - BYT dated December 20, 2019 to enhance public efficiency diagnosis, treatment and management of NCDs at CHSs; standardizing and updating professional guidelines on NCDs for CHSs. This is the first guide to treatment management of some common NCDs for commune health stations.

### ***1.1.2. Human resource situation***

According to the report of the Ministry of Health, as of 2014, the country has an average of 7.8 doctors per 10,000 people, 78% of commune health stations have doctors operating and 95% of villages have health staff. However, the reality shows that the allocation of human resources is not equal, the shortage of human resources, especially doctors at the grassroots level, remains a problem, especially in the Northern midlands and mountainous areas. In addition, the quality of health workforce, especially in the primary health care level for first aid, diagnosis and treatment of diseases is still very limited.

### ***1.1.3 Actual situation of drug (pharmaceutical) and medical equipment response***

Report on the implementation results of the project on hypertension prevention by the end of 2015 said that: drugs to treat hypertension at the commune/ward health stations were inadequate. The groups of hypertension control drugs included in the list of drugs covered by health insurance in provincial and district health facilities (i.e., hospitals of special grade to grade IV) were quite adequate, but limited at the commune level.

### ***1.1.2. Current situation of health information system***

The health information system has been designed to collect, analyze and provide reliable and timely information to assist in policy making and managing health system operations. However, at present, the policy for health information system was found inadequate, the ability to meet the need to use data was limited, and the analysis and use of statistics was rather weak.

### ***1.1.3. Current state of budget allocation***

The ensuring funding nowadays is always a challenge for the health system in Vietnam when the funding source for public health is still low, the distribution and use of financing for health is still limited. Health insurance coverage is not high and medical care cost remains difficult to control. Recent data all show that the percentage of public spending on total health

expenditure tends to decrease, from 49.4% in 2010 to 44.1% in 2012. The rate of state budget spending on health has not reached 10% of total state budget expenditure due to the difficulties of the macro economy. Health insurance coverage only contributed 15.8% of total health expenditure in 2012. International aid decreased from 4% in 2010 to 2% in 2015.

### **1.5 Introduction of the research site**

Hanoi includes 30 districts, towns (12 districts, 1 town, 17 districts)/584 commune/ward stations with a population of over 8.5 million people. Thach That district is selected purposefully as an intervention suburban district, Quoc Oai is a control district because these two suburban districts have nearly the same characteristics in terms of economic, cultural and social conditions.

## **Chapter 2. SUBJECTS AND STUDY METHODS**

### **2.1. Subjects and study methods for Objective 1**

#### **2.1.1. Study subjects**

- Available documents: electronic or paper documents of Central and Hanoi on current documents related to strategies and guidelines for NCD prevention.
- Subjects: Leaders in managing NCD prevention activities at Hanoi Department of Health, Hanoi CDC, Health Center, CHS and village health workers.
- Commune health station: equipment, drugs and reporting documents.

**Study site:** All commune/ward station of Hanoi.

**Study time frame:** From July, 2016 to December, 2018.

#### **2.1.2. Study design:**

Cross-sectional descriptive study, combining quantitative and qualitative research.

#### **2.1.3. Study sample size**

*With quantitative research:*

- Sample size for interview: surveyed through self-filled questionnaires sent to 584 CHSs in Hanoi.
- Sample size for direct survey at the CHSs: Apply the formula to calculate the sample size of single rate, the sample size for direct observe was 100 CHSs.

**Sample selection method:** divided the CHSs into 2 urban and suburban groups, the ratio of suburban CHSs: urban CHSs = 2:1, 66 commune health stations and 34 ward/town health stations were selected.

*With qualitative research:* 30 in-depth interviews and 21 group discussions were conducted with leaders and staff implementing NCD control at all levels.

#### **2.1.4. Information/data collection methods**

- Interview through self-filled questionnaires send to CHSs. Interview combined with observations document and reports to identify evidence for the implementation of prevention activities, detection and management of NCD treatment at CHSs.

- *Qualitative research*: through in-depth interview and group discussion.

**2.1.5. Main study variables:** Current policy, human resource, drugs-equipment, finance and statistic-reports.

## **2.2. Subjects and study methods for 2nd target**

### **2.2.1. Study subjects**

- Leaders of Health Center and District Health Office, Head of CHSs.
- Health service providers: staff of CHSs, village health workers; At CHSs: equipment, essential kits and drugs for the detection and treatment of some NCDs and implementation activities.
- Service users at CHS: Hypertension patients managed and treated at CHS.

### **2.2.2. Study site**

- Select purposely Thach That district as an intervention district;
- Select purposely Quoc Oai district as control district due to its similar population, geographic and socio-cultural characteristics with Thach That district.

**2.2.3. Study time frame:** From October, 2017 till October, 2019.

### **2.2.4. Study design**

A controlled intervention study in the community. Evaluation results were compared horizontally between the intervention group and the control group before and after the intervention.

### **2.2.5. Sample size**

Sample size for intervention: All 23 CHSs in Thach That district were included for intervention. Correspondingly, all CHSs were used for control.

### **2.2.6. Intervention activities**

Based on the regulations on the functions and tasks of the CHS and the outcome of Objective 1, the intervention content measures include: i) organization and management; ii) capacity building for staff; iii) reviewing and providing some equipment and drugs; iv) improving capacity to provide technical services; v) provide forms and guidance for statistics reporting.

### **2.2.7. Evaluation of model's effectiveness**

Applying cross-section descriptive research method, combining quantitative and qualitative to evaluate the intervention and control groups before and after intervention.

Due to many practical reasons, the actual sample size to evaluate the model's effectiveness is as follows:

No	Subjects	Intervention group	Control group
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		Before	After	Before	After
1	CHSs (entire sample size)	23	23	21	21
2	All commune health staff involved in NCD prevention and control	69	69	58	62
3	Village health workers (entire sample size)	196	194	105	104
4	Hypertension patients managed at CHSs	253	257	252	254

- *Sample size for qualitative research:* 18 in-depth interviews with health leaders of district health centers and commune health stations and 11 group discussions with staff of the health station and village health station were conducted.
- Evaluation criteria:
  - Assessment of availability of drugs and equipment based on the list of essential drugs and equipment provided by Ministry of Health; assessment, assessment of health care and technical services in complying with the Circular of the Ministry of Health regulations; evaluation of activity implementation: total 100 points and correspondingly assigned to the tasks. Performance results = total score for the tasks performed by CHS.
  - Goode knowledge/practice: The correct answers to questions about knowledge reaching 50% or more of the total score.

## 2.4. Data analysis

### 2.4.1. For quantitative research

- Data collection and analysis: After being cleaned, data were entered using Epi Data 3.1 software and processed by Stata 14.0 software.
- Determine the rates, mean values and evaluate the results of the intervention by compare the results before - after the intervention based on the classic method of comparing 2 rates, using  $\chi^2$  test.
- Evaluate the effectiveness of the intervention using the efficiency index (EI) and difference in difference (DID).

### 2.4.1. For qualitative research:

Analyze encoded information according to the topics, models and problems.

## 2.5 Error control in research

The probable errors were mentioned and limited solutions to control appropriately were reported.

## 2.6 Ethics of the research

The design of the study was approved by the Ethical Council in Biomedical Research of the National Institute of Hygiene and Epidemiology (No. IRB-VN01057-29/2017 dated December 15, 2017) and approved by the authority of research site

## Chapter 3. RESULTS

### 3.1 Capacity of detection and treatment management of some non-communicable diseases at the commune health stations of Hanoi in 2016

#### 3.1.1. Organization and policy situation

The organizational structure of NCD prevention and control system is still scattered and sporadic without a permanent focal point. In addition, many clues organized each activity individually, without coherence and unification, may cause difficulties in direction and overlap, but also omit activities.

*“...The system’s direction is not yet consistent: at the city level, cancer is managed by the Hanoi Oncology Hospital, COPD is managed by the Tuberculosis Hospital. At the district level, the Faculty of Public Health is in charge and the commune level has its own responsible staff...(In-depth interview with leader of Health Center)*

In addition to organizational issues, the current NCD prevention and control policies also encounter certain problems. That is the lack of supportive policy on funding, essential equipment, as well as a prerequisite policy for coordination among the units involved in NCD prevention and control system. The agencies have been and are approaching policies related to NCD prevention and control, but the recent policy is considered having many shortcomings.

*“...Gaps in policy environment: How is the settlement in health insurance like? How is drug dispensing at the grassroots level, because if we want to manage this appropriately, we need to be given the function and condition of providing health care properly.... (In-depth interview with leader of Health Center)*

#### 3.1.1. Current situation of the personnel

**Table 3.1. Average number of staff/ health station involved in prevention of non-communicable diseases**

Health staff Mean (Min-max)	By zone			By region		Total (n=584)
	Zone 1 (n=227)	Zone 2 (n=332)	Zone 3 (n=25)	Urban (n=168)	Suburban (n=416)	

<b><i>Number of staff currently working</i></b>						
Total health staff at CHS	7.31 (2-11)	6.43 (1-12)	6.36 (4-8)	7.6 (2-11)	6.43 (1-12)	6.77 (1-12)
Doctors	0.94 (0-4)	0.92 (0-2)	0.8 (0-1)	1 (0-2)	0.9 (0-4)	0.93(0-4)
Physicians	2.42(0-7)	2.99(0-8)	3.08(1-7)	2.11(0-7)	3.03(0-8)	2.77(0-8)
<b><i>Number of staff involved in NCD prevention</i></b>						
Total number of HS participated	3.85 (0-11)	4.6 (0-11)	4.84 (0-8)	3.49 (0-11)	4.65 (0-11)	4.32 (0-11)
Doctors	0.94 (0-2)	1(0-2)	1(1-1)	1(0-2)	1(0-2)	1(0-2)
Physicians	1.93(0-7)	2.44(0-8)	2.77(1-4)	1.48(0-4)	2.52(0-8)	2.29(0-8)

Each health station in Hanoi has an average of about 7 health workers, mainly physicians and nurses. The number of doctors at CHSs is quite low. There were about 4 staff participating in NCD prevention and control, with the main workforce being physicians (2.3 staff /station).

Qualitative research also shows the needs and willing of health workers in terms of training and capacity building for them and for village health workers on NCD management.

*“One should organize training for health workers more on the management of non-communicable diseases, especially management by software. Provide continuous and regular training for village health workers to consolidate their knowledge,.... ” (In group disc of CHWs)*

*“I hope it can be organized the activities, training courses for staff that in charge in NCDs management and treatment management ...” – In-depth interview with CHWs-*

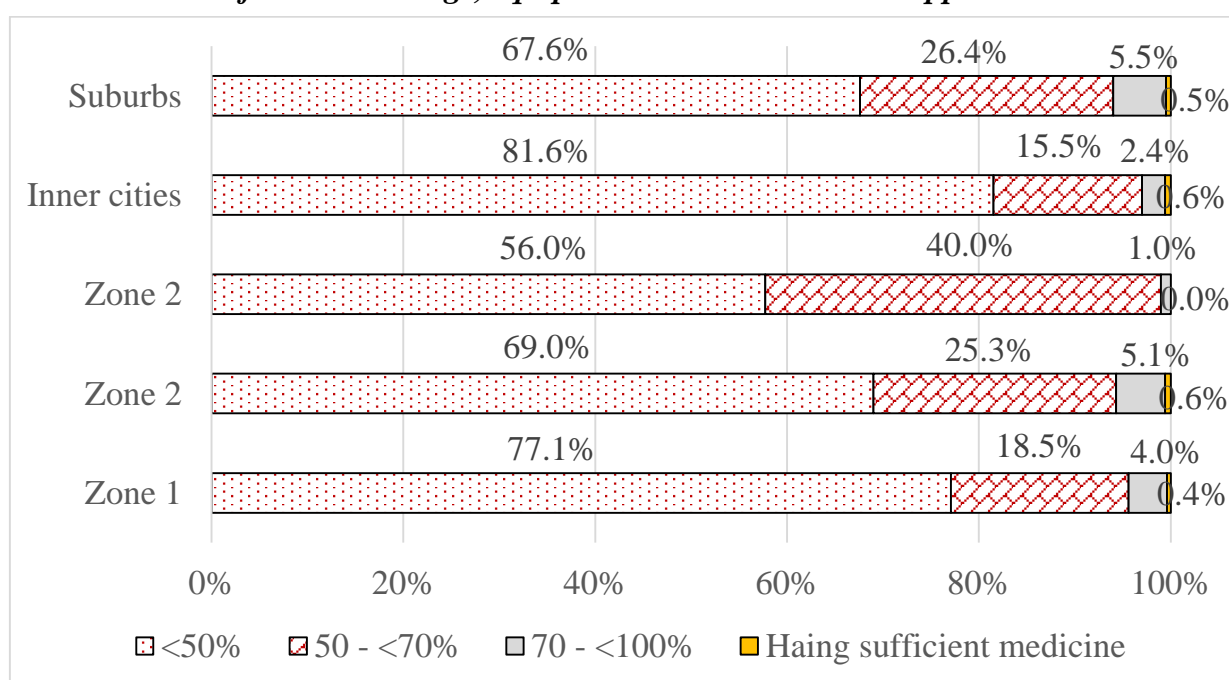
**Table 3.2. “Team Number of village health workers / collaborators participating in NCD prevention and control**

<b>Staff</b>	<b>By zone</b>			<b>By region</b>		<b>Total (n=584)</b>
	<b>Zone 1 (n=227)</b>	<b>Zone 2 (n=332)</b>	<b>Zone 3 (n=25)</b>	<b>Urban (n=168)</b>	<b>Suburban (n=416)</b>	
<b><i>Number of staff currently working</i></b>						
Total health staff at CHS	14.6 (0-62)	10.0 (0-40)	10.6 (0-36)	16.4 (0-56)	10 (0-62)	11.9 (0-62)
Village health workers	2.5 (0-19)	6.4 (0-22)	7.9 (0-18)	1.4 (0-19)	6.3 (0-22)	5.0 (0-22)
Collaborators	14.27 (0-62)	4.35 (0-34)	4.18 (0-23)	17.95 (0-50)	4.39 (0-62)	8.13 (0-62)
<b><i>Number of staff involved in NCD prevention</i></b>						
Total health staff at CHS	3.7 (0-50)	4.6 (0-37)	3.2 (0-13)	3.7 (0-50)	4.4 (0-37)	4.2 (0-50)

Village health workers	1.1 (0-16)	4.6 (0-20)	4.9 (0-13)	0.2 (0-16)	4.6 (0-20)	3.1 (0-20)
Collaborators	4.0 (0-50)	1.8 (0-34)	0.4 (0-7)	5.4 (0-50)	1.6 (0-34)	2.5 (0-50)

According to the assessment, on average, only about 4 out of nearly 12 VHWs/Collaborators were involved in NCD prevention and control. By the region, the suburban health station has higher number of VHWs/collaborators involved in NCD prevention and control, although their total staff number was lower than that of urban health stations. By zone, the CHS of zone 1 has lower mean number of VHWs/Collaborators involved in NCD prevention and control compared with that of other zones although they have the highest number of staff on average.

### 3.1.2. Situation of essential drugs, equipment and consumable supplies

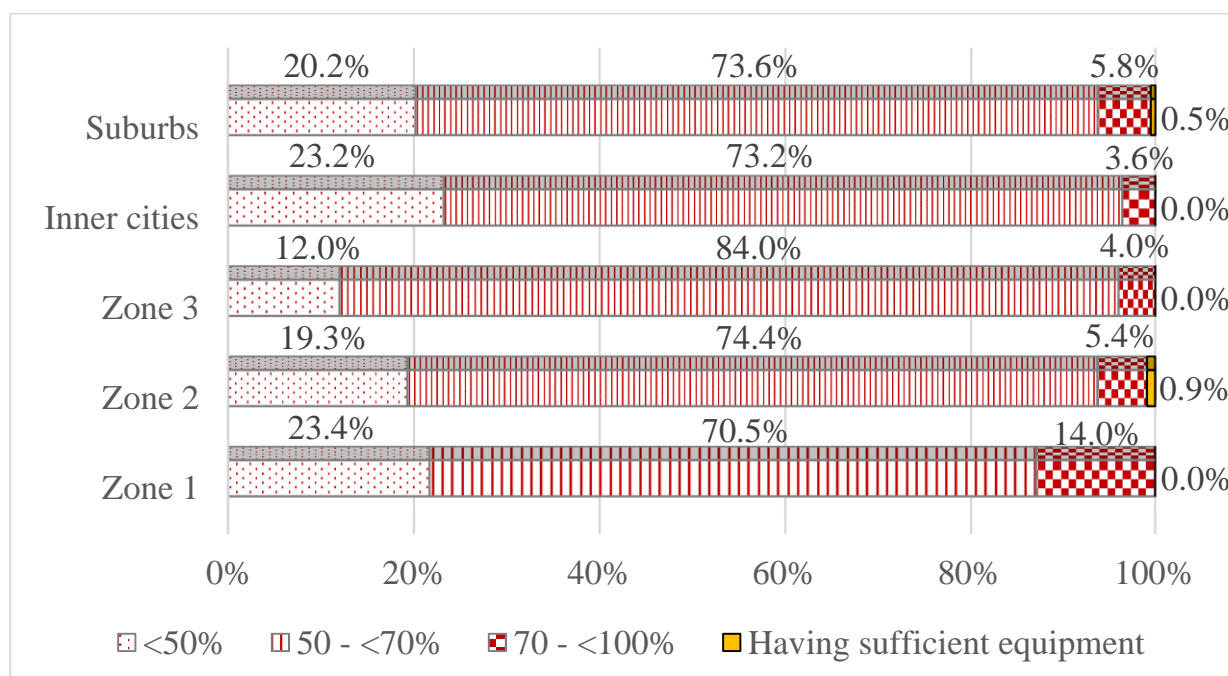


**Chart 3.1. The situation of required essential medicine at health stations by region and by zone**

Most of CHSs have only less than 50% of essential medicines. According to regions, the number of urban health stations that have less than 50% of essential medicines was higher than that in the suburban arear (81.6% compared to 67.6%). Result of zone evaluation showed that in zone 1, 77.1% of CHSs have less than 50% of required essential drugs and only 18.5% of CHSs have them in a range of 70% - <100%. The percentage of CHSs in zones 2 and 3 having about 70 - <100% of essential drugs was higher than that of zone 1, reaching 25.3% and 40.0%, respectively.

All staff involved in the interview have the willing to be supported and provided more essential medicines and medical equipment for better management and treatment of NCDs.

*“We hope that higher levels will have more intervention solutions, activities to support CHSs having enough essential medicine and equipment to perform better work related to the management and treatment of hypertension, diabetes and some other non-communicable diseases in the community”*  
(Group discussion with CHWs)



**Chart 3.1. Situation of equipment at medical station according to region and zones**

According to citywide data, most CHSs have 50 - <70% equipment according to the requirement. By region, 0.5% of CHSs in suburban areas have 100% of equipment, while none in urban health stations have adequate equipment. According to the result analyzed by zone, zone 1 has the highest proportion of CHSs with 70% - <100% of equipment (accounting for 14%), and no CHSs have 100% required equipment, while in the region 2, only 0.9% of CHSs have sufficient equipment for NCD prevention and control.

### 3.1.3. Actual status of statistics, reporting and monitoring

According to the result of assessment, the implementation of statistics, reporting and monitoring of NCDs at CHSs in the city was below average compared to the regulations, especially at CHSs of zone 3.

### 3.1.4. Finance

**Table 3.7. Proportion of Health stations having essential equipment for non-communicable disease prevention and control**

No	Year	From central funding	From city funding	Total budget
1	<b>For NCD prevention and control activity</b>			
	2015	220 millions	1.3 billion	1.520 billion
	2016	60 millions	1.5 billion	1.560 billion

	2017	60 millions	2 billion	2.060 billion
2	<b>For activities to prevent hypertension</b>			
	2015	80 millions	2.2 billion	2.280 billion
	2016	60 millions	2.5 billion	2.560 billion
	2017		2.6 billion	2.6 billion

NCD treatment management is mainly based on the mechanism of health insurance. In 2015, Hanoi had 5,480,163 people participating in health insurance, and as of 2016, there were 5,860,941 people with an increase of 6.9% compared to 2015. By the end of December 31, 2016, more than 5.8 million people participated in health insurance, reaching 82.4% of the population

### 3.1.5. *The capacity to provide technical services*

**Table 3.10. Average score for the implementation of some activities related to prevention, control and treatment of non-communicable diseases at commune health stations**

Activity	By zone			By region		Total
	CHS Zone 1	CSH Zone 2	CSH Zone 3	Urban	Suburban	
	X (min-max)					
Manage, coordinate (max. score= 24)	9.73 (0.5-22)	9.38 (1-18)	9.25 (5-14)	9.73 (0.5-22)	9.37 (1-18)	9.55 (0.5-22)
Risk factor control (max. score = 22)	9.63 (1-18)	7.01 (1-16)	6.82 (0-10)	9.63 (1-18)	6.99 (0-16)	8.31 (0-18)
Detect the case (max score =18)	8.76 (2-16)	8.37 (3-17)	8.43 (4-11)	8.76 (2-16)	8.38 (3-17)	8.57 (2-17)
Management, consultation, treatment (max score =22)	7.99 (1-16)	9.87 (0-18)	8.57 (3-13)	7.99 (1-16)	9.69 (0-18)	8.84 (0-18)
NCD statistics, report and monitor (max score =14)	5.22 (0-13)	5.6 (0-12)	4.5 (1-13)	5.22 (0-13)	5.45 (0-13)	5.34 (0-13)
<b>Total (max score=100)</b>	<b>41.32 (8-76)</b>	<b>40.24 (17-69)</b>	<b>37.57 (23-54)</b>	<b>41.32 (8.5-76)</b>	<b>39.87 (17-69)</b>	<b>40.59 (8.5-76)</b>

In general, the average score of contents related to: Coordination management, risk factor control, detection of NCDs, counseling management, treatment and statistics, reports on NCD monitoring were not achieved 50% compared with the maximum score of each category.

**Table 3.11. Number (rate) of patients detected, managed and treated in the past year at commune health stations in Hanoi in 2016**

	Estimated patient number	Number (rate) of case detection	Number (rate) of case treatment managed at CHSs
<i>Of whole city</i>			
Hypertension	921.148	61.842 (6.71%)	1.388 (0.15%)
Diabetes	209.817	4.481 (2.13%)	1.107 (0.53%)

In 2016, the estimated number of hypertensive patients in Hanoi was more than 921,000 people. However, of which only 0.43% were detected; 6.71% received treatment management (managed by list); rate of case treatment at CHSs was only 0.15%. The estimated number of people with diabetes was more than 209,000 people. But the proportion of cases that were detected, and treatment managed by list at CHSs was also very modest, only 0.83%, 2.13% and 0.53%, respectively. There were no statistics related to COPD and cancer patients.

### **3.1. Evaluate the effectiveness of some interventions to improve the capacity to detect, manage and treat high blood pressure and diabetes at health stations, Thach That district, Hanoi, in 2017 – 2019**

#### **3.2.1. The effectiveness of interventions on the capacity of health workers**

##### **3.2.1.1. The effectiveness of interventions on the capacity of commune health workers**

**Table 3.12 and 3.15. The effectiveness of interventions on improving the capacity of commune health workers in the detection, management and treatment of hypertension and diabetes**

Contain	Intervention group (Thach That) n=138		Control group (Quoc Oai) n=120		p1(*)	p2	p3	p4	IE* (%)
	Before (n=69)	After (n=69)	Before (n=58)	After (n=62)					
Percentage of subjects achieved good knowledge about hypertension (answered all 6 sub-categories)	6 (8.70)	45 (65.22)	6 (10.34)	22 (35.48)	<b>0.001</b>	<b>&lt;0.001</b>	0,752	<b>0.001</b>	<b>406.52</b>
Percentage of those gained good knowledge about diabetes (answered all 6 sub-categories)	3 (4.35)	43 (62.32)	2 (3.45)	23 (37.10)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.795	<b>0.004</b>	<b>357.28</b>

+ Compare the differences:  $p_1$ : control group at the time before - after the intervention;  $p_2$ : intervention group at the time before - after the intervention;  $p_3$ : intervention group and control group before the;  $p_4$ : Post-intervention time of the intervention group and control group. \*IE: Intervention effectiveness

The results show that in the intervention group (Thach That district), the percentage of staff with general knowledge about hypertension in 2019 (after intervention) was significantly higher than that in 2017 (before intervention). Besides, these indicators in the intervention group (Thach That district) were higher than of the control group (Quoc Oai district) after the intervention. This difference was statistically significant with  $p < 0.05$ . Similar to that of diabetes.

**Table 3.14 and 3.17. Difference in difference (DID) multivariable analysis affecting general knowledge about hypertension among health workers**

Evaluation variable	Hypertension			Diabetes		
	SE	OR (CI 95%)	P	SE	OR (CI 95%)	P
Intervention district	0.52	0.83 (0.24 – 2.82)	0.761	1.19	1.27 (0.20 – 7.93)	0.798
Time to conduct intervention	3.76	6.85 (2.34 – 20.09)	<b>&lt;0.001</b>	12.88	16.57 (3.61 – 75.99)	<b>&lt;0.001</b>
District* Time to conduct intervention	3.40	4.64 (1.10 – 19.50)	<b>0.036</b>	2.26	2.26 (0.32 – 16.07)	0.415
Age group of 31-50	0.12	0.26 (0.11 – 0.64)	<b>0.004</b>	0.37	0.76 (0.29 – 1.98)	0.575
Age group from 50 and above	0.16	0.32 (0.12 – 0.88)	<b>0.026</b>	0.50	0.93 (0.33 – 2.64)	0.888
Kinh	0.19	0.28 (0.08 – 1.04)	0.059	0.70	0.93 (0.21 – 4.05)	0.925
Male	0.30	0.83 (0.41 – 1.69)	0.611	0.34	0.90 (0.42 – 1.90)	0.778
Have been trained as village health workers	0.20	0.95 (0.63 – 1.45)	0.821	0.23	1.0 (0.64 – 1.56)	0.997

Result of multivariable analysis showed no relationship between some factors such as ethnicity, sex and trained status of health workers and their general knowledge about hypertension ( $p > 0.05$ ). However, the analysis found an association between the age group of 31-50, of 50 years and older and the knowledge of the subject. As for diabetes, there was no



relationship between some factors as of age group, ethnicity, sex and the training status and the general knowledge on the disease among health workers ( $p>0.05$ ).

### 3.2.1.2. The effectiveness of intervention on capacity of village health workers

**Table 3.18. and 3.21. The effectiveness of interventions on improving the capacity of village health workers in detecting and managing hypertension and diabetes in the community**

Contain	Intervention group (Thach That)		Control group (Quoc Oai)		p <sub>1</sub>	p <sub>2</sub>	p <sub>3</sub>	p <sub>4</sub>	IE* (%)
	Before (n=196)	After (n=194)	Before (n=105)	After (n=104)					
Percentage of VHWs achieved good knowledge about hypertension (answered correctly all 4 sub-categories)	6 (3.06)	95 (48.97)	3 (2.86)	30 (28.85)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.884	<b>0.003</b>	<b>591.59</b>
Percentage of VHWs achieved good knowledge about diabetes (answered correctly all sub-categories)	120 (61.22)	186 (95.88)	68 (64.76)	91 (87.5)	<b>0.001</b>	<b>&lt;0.001</b>	0.569	<b>0.015</b>	<b>21.50</b>

+ Compare the differences: p<sub>1</sub>: control group at the time before - after the intervention; p<sub>2</sub>: intervention group at the time before - after the intervention; p<sub>3</sub>: intervention group and control group before the; p<sub>4</sub>: Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

Results of analysis of intervention effectiveness show that the capacity of the VHWs in detection and management of hypertension and diabetes had significantly improved compared with that obtained before the intervention, the difference was statistically significant with  $p < 0.05$ .

**Table 3.3. and 3.23. DID multivariable analysis affecting general knowledge about hypertension and diabetes among village health workers**

Evaluation variable	Hypertension			Diabetes		
	SE	OR (CI 95%)	p	SE	OR (CI 95%)	p
Intervention district	0.92	1.08 (0.21 – 5.75)	0.931	0.22	0.74 (0.41 – 1.32)	0.301
Time to conduct the intervention	15.57	12.62 (1.12 – 141.73)	<b>0.040</b>	1.49	2.61 (0.86 – 9.97)	0.092
District* Time conducting the intervention	1.98	2.20 (0.38 – 12.83)	0.381	2.50	4.17 (1.29 – 13.47)	<b>0.017</b>
Age group from 31-50	-	-	-	0.30	0.89 (0.46 – 1.73)	0.738
Age group from 51 and above	1.36	1.23 (0.14 – 10.64)	0.848	0.63	1.52 (0.67 – 3.44)	0.314
Kinh	0.59	1.25 (0.50 – 3.15)	0.630	0.63	1.70 (0.82 – 3.51)	0.155
Male	0.35	0.86 (0.39 – 1.91)	0.706	0.19	0.61 (0.33 – 1.12)	0.111
Been trained on village health	0.24	0.83 (0.47 – 1.46)	0.514	0.47	1.56 (0.86 – 2.82)	0.144

Results of multivariable analysis showed in the table above indicate no relationship between some factors such as age group, ethnicity, sex and training among village health workers and their knowledge about hypertension and diabetes ( $p > 0.05$ ).

### 3.2.2. The effectiveness of intervention improves drug availability for detection, treatment of certain non-communicable diseases

**Table 3.24. 3.2.2. The effectiveness of intervention improves drug availability for detection, treatment of certain non-communicable diseases at CHSs**

Contain	Intervention group (n=23)		Control group (n=21)		p <sub>1</sub>	p <sub>2</sub>	p <sub>3</sub>	p <sub>4</sub>	IE* (%)
	Before	After	Before	After					
Have $\geq 2$ groups of antidiabetic drugs	1 (4.35)	8 (34,78)	0 (0.0)	0 (0.0)	-	<b>0.009</b>	0.334	<b>0.003</b>	-
Have $\geq 2$ groups of hypertension control drugs	6 (26.09)	20 (86.96)	7 (33.3)	20 (95.24)	<0.001	<0.001	0.862	0.340	47.62

+ Compare the differences:  $p_1$ : control group at the time before - after the intervention;  $p_2$ : intervention group at the time before - after the intervention;  $p_3$ : intervention group and control group before the;  $p_4$ : Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

Results of data analysis showed that, in an intervention district, the proportion of CHSs that have drugs available for treatment, detection of some NCDs at post-intervention surveillance were higher than that of before the intervention. In which, the percentage of CHSs having 2 or more groups of medicines for diabetes treatment after the intervention was 34.78%, higher than before intervention (4.35%). In addition, the proportion of CHSs having 2 or more groups of hypertension control drugs at the post-intervention time was also significantly higher than before the intervention (86.96% versus 26.09%). The difference was statistically significant with  $p < 0.05$ .

Qualitative research results also showed that drug supply status has also improved according to the opinions of health workers at CHSs.

*"Presently, drugs at the grassroots level are sufficient to treat NCDs. Diabetes has 2 treatment medicine groups, hypertension has 4 groups so the rate of reaching the target in Dong Truc commune - Thach That district is over 90% (Group discussion with commune health staff)*

### 3.2.3. The effectiveness of interventions to improve the capacity of providing technics/services related to the detection and treatment of hypertension and diabetes of CHSs

**Table 3.27. The effectiveness of intervention on CHS's capacity to provide techniques / services related to detection and treatment some NCDs**

Contain	Intervention group (n=23)		Control (n=21)		$p_1$	$p_2$	$p_3$	$p_4$
	Before	After	Before	After				
Average number of technics/services performed by CHSs in hypertension treatment management	4.78± 0.76	5.39± 0.31	4.95± 0.37	5.07± 0.32	0.108	0.105	0.373	0.345

Average number of technics/services performed by CHSs in diabetic treatment management	3,30± 0.42	7,04± 0.39	3,76± 0.60	6,90± 0.28	<0,001	<0,001	>0,05	0,388
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+ Compare the differences:  $p_1$ : control group at the time before - after the intervention;  $p_2$ : intervention group at the time before - after the intervention;  $p_3$ : intervention group and control group before the;  $p_4$ : Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

At the intervention district and control district, the average numbers of technical services provided by CHSs in managing hypertension at the post-intervention time were higher than before the intervention, but the difference was not statistically significant with  $p > 0.05$ . However, concerning the treatment management of diabetes, the average technical/service number performed by the CHSs at the intervention district at the time of intervention ( $7.04 \pm 0.39$ ) was nearly 2 times higher compared with that of before intervention ( $3.30 \pm 0.42$ ); at the control district, the mean score at post-intervention time ( $6.90 \pm 0.28$ ) was higher significantly than before intervention ( $3.76 \pm 0.60$ ) ( $p < 0.05$ ).

When analyzing DID, with the average technical/service performed by CHSs in diabetes treatment management: there was no interaction between the two variables and an average technical/service related to hypertension treatment management performed by CHSs is closely related to the time of intervention ( $p < 0.001$ ).

### 3.2.4. The effectiveness of intervention to improve the screening, detection and treatment management of hypertension and diabetes at CHSs

**Table 3.31. The effectiveness of intervention on the number of patients of hypertension detected and managed at CHSs**

Contain	Intervention gr.		Control group		$p_1$	$p_2$	$p_3$	$p_4$	IE (%)
	Before	After	Before	After					
Number of $\geq 40$ years old people screened for hypertension in the community	0	66491 (97.33)	0	45072 (66.28)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	-	<b>0.004</b>	-
Number (rate) of cases detected in one year	60 (0.21)	2482 (8.93)	1240 (4.86)	2147 (8.18)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>0.0001</b>	<b>0.003</b>	4084.07
Number (rate) of	2698	11319	4326	7265	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.361	0.534	265.17

cases managed	(9.66)	(41.37)	(16.96)	(27.66)					
Number (rate) pf cases managed in treatment at CHSs	999 (3.58)	4153 (14.94)	1345 (5.27)	3548 (13.51)	<0.001	<0.001	0.361	0.424	160.96
Number (rate) of treated cases achieved target	142 (64.56)	190 (86.36)	32 (50.79)	80 (59.26)	0.052	<0.001	0.049	0.0004	17.13

+ Compare the differences:  $p_1$ : control group at the time before - after the intervention;  $p_2$ : intervention group at the time before - after the intervention;  $p_3$ : intervention group and control group before the;  $p_4$ : Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

The capacity of CHS in detection, management and treatment of hypertension in Thach That district has been enhanced statistically significant compared with that of Quoc Oai district (control). In particularly, at the time of intervention, the number of people aged  $\geq 40$  years old screened for hypertension in the community of Thach That district was 66,491 people (equivalent to 97.33%), higher than that of Quoc Oai district (with 45072, equivalent to 66.28%); the number of hypertension patients detected in Thach That district was also higher than in Quoc Oai (2,482 compared to 2,147 patients). In addition, the number of people with hypertension managed at CHSs achieved the goals of Thach That was also higher significantly than in Quoc Oai ( $p < 0.05$ ).

According to the opinion of health staff at CHSs, the interventions have also brought about effectiveness in the detection, management and treatment of hypertension at the CHSs.

“ Before 2016, only 58 hypertension patients were managed, but by the end of 2019, more than 400 cases were detected. The causes of this change were the increased screening at CHSs, household visits and the effectiveness of communication” (Group discussion with commune health workers)

**Table 3.33. The effectiveness of intervention on the number of diabetic patients detected, managed and treated at the CHSs**

Contain	Intervention gr.		Control group		$p_1$	$p_2$	$p_3$	$p_4$	IE* (%)
	Before	After	Before	After					
People aged $\geq 40$ years old screened for diabetes in the community	0	66491 (97.33)	0	43775 (66.28)	<0.001	<0.001	-	0.003	-
Number (rate) of diabetic cases	0	444 (17.85)	16 (0,18)	37 (0.4)	0.005	<0.001	0.466	0.002	-

detected									
Number (rate) of diabetic cases that were managed	751 (7.58)	2438 (24.75)	788 (8,72)	1226 (13.17)	<0.001	<0.001	-	0.015	175.49
Number (rate) of diabetic cases were managed in treatment	0	202 (2.05)	0	0	-	<0.001	-	<0.001	-

+ Compare the differences:  $p_1$ : control group at the time before - after the intervention;  $p_2$ : intervention group at the time before - after the intervention;  $p_3$ : intervention group and control group before the;  $p_4$ : Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

Table above indicated that, at the time of the intervention, the number of diabetic patients detected, managed and treated at CHSs of intervention district has increased significantly compared to that of the control group ( $p < 0.001$ ).

**Table 3.38. The compliance to the instructions on taking medicines of patients with hypertension**

Contain	Intervention gr.		Control gr.		$p_1$	$p_2$	$p_3$	$p_4$	IE* (%)
	Before (n=185)	After (n=211)	Before (n=154)	After (n=161)					
Use correct drug	114 (61.62)	138 (65.40)	81 (52.60)	89 (55.28)	0.633	0.435	0.094	0.047	1.04
Use regularly and at right time	172 (92.97)	207 (98.1)	139 (90.26)	147 (91.30)	0.749	0.012	0.366	0.002	4.37
Used right dose	106 (50,24)	147 (79,46)	89 (57,79)	73 (45,34)	0,027	<0,001	0,089	0,009	43,13
Do not quit / change medicine or reduce the dose without	14 (7.57)	28 (15.14)	11 (7.14)	5 (3.11)	0.103	<0.001	0.822	0.022	131.18

indicatio n of doctor									
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+ Compare the differences:  $p1$ : control group at the time before - after the intervention;  $p2$ : intervention group at the time before - after the intervention;  $p3$ : intervention group and control group before the;  $p4$ : Post-intervention time of the intervention group and control group. \* IE: Intervention effectiveness

The results showed the effectiveness of intervention on improving the rate of patients taking medicines according to the instructions given by health staff in the intervention district in comparison to that of control district. The difference was statistically significant with  $p = 0.012$  (92.97% versus 98%).

## Chapter 4. DISCUSSION

### 4.1. Current status of the capacity to detect, manage and treat some non-communicable diseases at commune health stations in Hanoi, in 2016

#### 4.1.1. Current policy state

Currently, Vietnam has a system of favorable policy documents for the implementation of health programs related to NCD prevention. However, in the process of implementation at health facilities, problems and limitations were still unavoidable in policy and management. That is the situation of too many focal points organizing activity individually, without a cohesive and unified system. This can cause a great difficulty in direction, lead to overlapping activities but can also omit the operation in the same time. In addition, as the current policy does not clearly and specifically stipulate the coordination between departments and mass organizations, this work has not therefore been done well and the policy issues related to settlement in health insurance were not clear and not really satisfactory. Therefore, in the coming time, it is necessary to review relevant policies in order to have more suitable and practical direction to guide the prevention and control of NCDs in the country in general as well as in Hanoi in particular.

#### 4.1.2. Current situation of personnel

CHSs at zone 1 have, on average, lower number of health staff involved in NCD prevention and control than CHSs at other zones, although they have the highest number of health staff. The above results show that, although at the commune health station, the number of staff involved in NCD prevention and control is relatively high, but the reality most of these staff participated part-time or participated when it's necessary (according to the case occurrence), not specialized in charge for NCDs control. Therefore, there might be significant impacts on the effectiveness of disease prevention and control in Hanoi. The participation of village health workers in NCD prevention and control activities was found very limited, especially of the collaborators, on average, only one third of these staff were involved.

#### 4.1.3. Current situation of essential drugs, equipment and consumable supplies

Research results showed that CHSs lacked still a lot of essential drugs, similar to the finding of Nguyen Thi Thi Tho et al. in 2014, when only 7.8% of commune health stations had over 70% of essential drugs required by the Ministry of Health [35]. Similar to drugs, equipment required for NCD prevention and control at the commune health station in Hanoi is now seriously limited. This shows that, at present, CHSs need to pay attention to check the missing or damaged equipment to invest, replace or provide more if possible, to support the NCDs prevention and control effectively.

#### ***4.1.4. Current status of statistics, reporting and monitoring***

Research results showed that the performance scores for statistics, reporting and monitoring NCDs at commune health stations were all below average. There are many reasons caused this situation. Currently, not only Hanoi but in the whole country, the NCD surveillance system is not systematic yet, the focal point for implementing NCD monitoring and reporting activities was also scattered in both curative and preventive medicine system.

#### ***4.1.5. Actual situation of funding allocated for non-communicable disease prevention and control activities in Hanoi***

Many health care services are not covered by health insurance. The general situation is that medical equipment, especially testing equipment, has not been fully covered by health insurance and the budget for NCD prevention is quite limited, thus having a great impact on CHSs in the operating effectively.

In fact, when the central budget was reduced and NCD prevention activities gradually changed from 2016 to now, the NCD prevention system was not unified from the Ministry of Health to localities.

#### ***4.1.6. The capacity to provide technical services related to the management and treatment of non-communicable diseases***

The current NCD prevention services that CHSs can afford to providing are generally limited. The number of services provided by CHSs is very low. On average, only 1/4 (12.47 out of 48 services) of technical services can be performed in NCD prevention and control. This shows that, although it is necessary to improve the capacity of implementing all 3 main services in NCD prevention of all CHSs in Hanoi, but special attention needs to be paid to cancer prevention.

In addition, in terms of implementation results, statistics showed that, in 2016, the estimated number of patients with hypertension in Hanoi was more than 921,000. However, of which, only 0.43% of cases were detected; 6.71% received treatment management (managed by list); rate of treatment at CHSs was only 0.15%. The estimated number of people with diabetes was more than 209,000 people. But the proportion of cases that were detected, treatment managed by list at CHSs was also very modest, only 0.83%, 2.13% and 0.53%, respectively. No data related to COPD and cancer patients has been recorded.



## **4.2. The effectiveness of intervention to improve the capacity of detecting, managing and treating hypertension and diabetes at health stations in Thach That district, Hanoi, 2017-2019**

### ***4.2.1. The effectiveness of intervention on the capacity of health staff and village health workers***

The study results showed that, after the intervention, the capacity building in detecting, managing and monitoring hypertension and diabetes cases among commune health staff and village health workers of an intervention group (Thach That district) has significantly improved. Besides, the double in double (DID) analysis also showed that the improvement in the capacity of health staff and village health workers on hypertension and diabetes was mostly related to duration of intervention and status of being intervened ( $p < 0.05$ ).

### ***4.2.2. The effectiveness of intervention in improving drug availability for detection and treatment of certain non-communicable diseases***

Our research results showed encouraging improvements in the availability of medicines to treat NCDs. In the intervention district (Thach That district), the proportion of CHSs having available drugs for treatment, detection of NCD cases at post-intervention time were higher than before the intervention. Our findings are similar to the results of study conducted by Le Quang Tho et al. at CHSs in the intervention group: before the intervention there was only 5 CHSs (50%) had all the necessary drug groups used for treatment of hypertension, but after intervention, all 10 CHSs (100%) had enough in numbers and types of drugs to meet the treatment requirements for hypertension at the commune level.

### ***4.2.3. The effectiveness of interventions to improve the capacity of providing technical services / services in the detection and treatment of hypertension and diabetes at commune health station***

In both intervention district and control district, the average technical number that performed by the CHS in managing hypertension at the post-intervention time was higher than that of before the intervention, but the difference was not statistically significant ( $p > 0.05$ ). In addition, the average score for performing tasks in detecting and treating non-communicable diseases of CHS at the time of post-intervention was higher than that of before the intervention, the difference was statistically significant ( $p < 0.05$ ). After the intervention, the average achieved score at the intervention district was  $10.96 \pm 0.45$  higher than that of control district ( $9.95 \pm 0.52$  points).

### ***4.2.4. The effectiveness of intervention to improve the ability of commune health stations to conduct screening, detection and treatment management for hypertension and diabetes.***

*Regarding the number of commune health stations that can deploy services and the number of hypertension, diabetes patients screened, detected, and treatment managed*

Research results showed significant improvements in the detection and management of hypertension and diabetes after the intervention. Thereby, providing additional evidence or a

reference to expand to other localities, towards achieving the goals set in NCD prevention and control.

*Frequency of re-examination during stabilization period of the patient*

The results of our study showed that the rate of cases with non-communicable disease in Thach That district (the intervention district) has the frequency of re-checking during the stable treatment period of  $\leq 1$  time/month higher than that of Quoc Oai district (control district) (90.87% versus 78.14%) ( $p < 0.05$ ). This is a good sign. However, because of the above-mentioned reasons, hypertension and diabetes treatment and monitoring need to be operated in a long time, so it is necessary for the authorities at all levels, departments, and unions to step in as well as the self-awareness of each people.

*Take medication as directed by health workers*

There was the effectiveness in improving guidelines for hypertension patient's on-time and regular medication administration conducted by health staff with the statistically significant difference ( $p < 0.05$ ) (For hypertension: before intervention it was 92.97%; after intervention it was increased to more than 98%).

The effect obtained in our study is similar (although the rate of increasing proportion in drug administration according to the instructions was low in comparison to results of some other studies). As stated by Nguyen Thi Kim Ke et al., using drugs is a process that requires perseverance and the effort of patients with hypertension and diabetes. This not only depends on the patient himself, but also on their family members and the commune health staff, the village health workers need to follow and remind regularly in order to overcome the disease together with them.

## CONCLUSION

### **1. Current capacity of detecting, managing and treating some non-communicable diseases at health stations in Hanoi, in 2016**

The commune/ward health stations in Hanoi have certain capacities in implementing NCD prevention and control, although there were several limitations and unevenness such as:

*Concerning policy and organization*, there were still many shortcomings in the current policies and organization such as regulations on coordination among agencies and organizations, policies related to payment in health insurance were not clear and inadequate ...

*Concerning human resources*: Human resources for NCD prevention and control were limited in number and in capacity. On average, about 4/7 health workers per commune health station and 1/3 of the collaborators were involved in NCD prevention and control.

*Regarding the available of required essential drugs, equipment and consumables*: most of the health stations only have less than 50% of essential medicines for management and treatment of non-communicable diseases.

*Statistics and reporting*: The performance of statistics, reporting and monitoring of non-communicable diseases at health stations is below average compared to regulations.

**Funding:** Funding for implementation of activity is mainly from the city budget. The district budget for NCD activities is limited.

**Ability to provide technical services:** The health stations have the capacity to provide less than 50% of techniques/services related to prevention and management of NCDs according to regulations. Currently, about 64.9% of CHSs provide treatment for hypertension; 28.8% perform maintenance therapy for diabetic patients.

## **2. The effectiveness of some interventions solutions in improving the capacity to detect, manage and treat hypertension and diabetes at the health station of Thach That District, Hanoi, 2017-2019**

The intervention was found effective in improving the capacity of detecting, managing and treating a number of non-communicable diseases at commune/ward health stations. In particular:

*Improving knowledge of commune health staff/village health workers:* Interventions have increased the proportion of commune health staff and village health workers having good knowledge on the management and treatment of hypertension and diabetes ( $p < 0.05$ ).

*Improving the availability of essential medicines:* In the intervention district, the proportion of commune health stations having 2 groups or more antidiabetic drug groups and hypertension control drugs has increased and was higher than that of the control district. This improvement was mostly related to the duration of the intervention and the status of being intervened ( $p < 0.05$ ).

*Improving the detection, management and treatment of hypertension and diabetes:* The proportion of commune/ward health stations performed screening for hypertension and diabetes among people aged  $\geq 40$  years old and conducted management and treatment has increased in both districts; the number of cases with hypertension, diabetes being managed and treated at commune health station increased significantly ( $p < 0.05$ ). The improvement in detection, management and treatment of hypertension and diabetes at the health stations in the intervention district was mostly related to the duration of the intervention and the status of being intervened ( $p < 0,05$ );

*Improving patient's treatment compliance:* The rate of cases with hypertension managed and treated at commune health stations of an intervention district that conducted frequent monthly check-ups during treatment was improved after intervention compared to that of the control district (90.87% versus 78.14%) ( $p < 0.05$ ).

## RECOMENDATION

1. The Department of Health should consider replicating the applied interventions to other health stations in the suburbs, including flexible adjustments to suit the conditions of each locality.
2. It is necessary to develop and conduct the research on interventions to improve non-communicable disease prevention and control activities in urban health stations where there are many large medical facilities and people with good economic conditions.

## LIST OF PUBLISHED SCIENTIFIC ARTICLES RELATED TO THIS THESIS

1. Bui Thi Minh Thai, Hoang Duc Hanh, Nguyen Thi Thi Tho (2017), “Implementing situation of non-communicable disease prevention and control activities at commune, ward and town health stations in Hanoi in 2016”, *Journal of Vietnam Preventive Medicine*, No 8(27):126- 136.
2. Bui Thi Minh Thai, Hoang Duc Hanh, Nguyen Thi Thi Tho (2020), “The effectiveness of intervention to improve the detection, management and treatment of hypertension, diabetes at commune health stations in Thach That district, Hanoi, 2018- 2019”, *Journal of Vietnam Preventive Medicine*, No.3 (30): 96- 104.
3. Bui Thi Minh Thai, Hoang Duc Hanh, Nguyen Thi Thi Tho (2020), “Effectiveness of intervention on knowledge about management and treatment of hypertension and diabetes among commune health staff and village health workers at Thach That district of Hanoi” (*This article is confirmed to be published in the Journal of Vietnam Preventive Medicine on August 6, 2020, signed and sealed by Deputy Editor-in-Chief - Editorial Board*).