MINISTRY OF TRAINING AND EDUCATION MINISTRY OF HEALTH

**HANOI MEDICAL UNIVERSITY**

**LE QUANG THO**

# COMMUNICATION INTERVENTION EFECTS OF HYPERTENSION MANAGEMENT IN HA HOA DISTRICT, PHU THO PROVINCE

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**LIST OF ANNOUNCED RESEARCH PROJECTS RELATED TO THESIS TOPIC**

1. Le Quang Tho, Ngo Van Toan, Nguyen Bach Yen (2018). Community-based intervention in hypertensive patients: improving knowledge and practices of prevention and control in Ha Hoa district, Phu Tho province. *Journal of Clinical Medicine.* No.2, October, 113-122.
2. Le Quang Tho, Ngo Van Toan, Nguyen Bach Yen (2018). Assessment of intervention effects to improve capacity of commune health stations and district health centre of Ha Hoa on hypertention management, treatment and prevention, and influencing factors, period 2015-2018. *Journal of Community Medicine.* No.5 (46), 112-119.

# INTRODUCTION

Hypertention is one of challenges to the community health worlwide. It is not only for the developpe countries but also for the developing countries. The World Health Organization (WHO) estimated about ¼ the world population facing to hypertensive burden in 2015. Hypertension has impacted and will impact to community health and the social economic development of each country, region and world as well. With the different complication, hypertension contributes a lot of morbidity, disability and mortality as well as quality of life, especially for deveping countries including Vietnam. The most imprtant issues are to improve patient knowledge, attitute and practice of prevention such as changing life styles, increasing physical activities, using appropriate nutrion, following preventive and treatment regimes to keep stable blood pressure as well as prevent complications. In the world and Vietnam there are some community-based intervention programs to manage hypertension. Their effects are very good and proven. However, the intervention at community and district levels were rare and sum up. That's reason many patients are not early detected and proper managed with low cost and easy to access. Based on that, we conducted this study *"Communication intervention effects of hypertension management in Ha Hoa district, Phu Tho province" with below objecvtives:*

1. *To evaluate communication intervention effects to improve hypertention management of district health center and commune health stations of Ha Hoa district in 2015-2018.*
2. *To evaluate intervetion effects of improving knowledge, attitute and practice of hypertensive patients in hypertension management in 2015-2018.*
3. *To describe influencing factors related to intervention effects of hypertention management of district health center and commune health stations of Ha Hoa district in 2015-2018.*

**New thesis findings:** The community-based hypertension intervention seems to be effective in improving the hypertesion management at commune health station and disstric health center. It also improving knowledge, attitude and practices of hypertensive patients in hypertensive management. Our results also shown evidence of reducing overload at upper levels of hospitals, and saving resources for patients

and their families. Our study results provide evidence of hypertensive management for planning and strategies to manage hypertension in province as well as in other provinces.

Thesis included 130 pages, introduction (03 pages), literature review (35 pages), methodology (19 pages), results (35 pages), discussion (35 pages), conclusion (02 pages), recommendation (01pages). The thesis included 19 tables, 11 figures and 1 chart. The thesis included 76 English references and 32 Vietnamese references.

## Chapter 1. LITERATURA REVIEW

### 1.1. Current hypertension situation in the world and in Vietnam

In Great Britain, According to Mindell và William, in 2017 shown that the prevalence of hypertension in population aged 16 and over was 31% in male and 27% in female; there is no change in hypertension prevalence sinec 2003. Hypertension prevalence was lowest in age group of 16-24 (female 2% and male 8%, respectively); highest in age group of 75 and over (female 78% and male 66%, respectively). Percentage of hypertensive patients without treatment reduced significantly as compared to that in 2003 (form 20% down to 16% in male and form 16% down to 11% in female). The prevalence of hypertension among people aged 16 and over in other depening Great Britain is the same. In Scotland (2011), the prevalence of hypertension was 33% in male and female was 32%. In North Ireland (2011), the prevalence of hypertension was 26% in male and female was 27%. In Wale (2013), there was 20% male and 20% female reported to be treated due to hypertension. In South East Asia, Garii estimated about 7.9 million people died due to non-communicable diseases (occupied 55% of total deaths) in 2018, of which 34% deaths before age of 60, (23% early deaths worldwide). The vascular cardiological diseases cause 25% of total deaths in this region. The prevalence of hypertension was 36.6% among adult people and hypertension is cause of 1.5 million people yearly.

In 2008, according to study of Cardiology Institute, Ministry of Health conducted in 8 province/cities, the hypertension prevalence in people aged $\geq 25$ was 25.1%, meaning that there is one person with hypertension among 4 people (male 28.3% and femal 23.1%, respectively); in creased 48% as compared to the national health survey in 2001-2002. The hypertension prevalence in urban is higher than that

in rural areas (32.7% and 17.3%, respectively). In 2015-2016, another study carried out by Cardiology Institute, Ministry of Health in 8 provinces/cities shown that the hypertension prevalence was 25.1%; the hypertension prevalence was not found was 51.6%; the hypertension prevalence of patients was not treated 38.9%, the hypertension prevalence was not managed 63.7%. According to Ministry of Health, the rate of people with non-communicable diseases died was 56.1% in 2015, in which, the cardiological diseases were 30%, cancer diseases were 21%, chronic lung diseases were 6%, diabetes was 3%, and mental diseases were 2%.

**1.2. Capacity in hypertension management in district health center and commune health stations**

***Roles of DHC and CHSs in hypertension management:*** Vietnam is facing with the dual burden of diseases (communicable and non-communicable), in which non-communication diseases increased rapidly, especially hypertension and cardiologic diseases, cancers, COPD and asthma. The burden of non-communicable disease occupy more than 2/3 of all diseases in the whole country. Non-communicable diseases are the first causes of deaths in Vietnam. An estimation that in 2012, there were 520,000 deaths, in which, 379,600 (73%) death cases were non-communication diseases, meaning that among 10 cases of deaths there were 7 deaths of non-communicable diseases, vascular cardiologic diseases (33%), cancers (18%), diabetes (3%) and COPD (7%). The number of people with non-communicable in the community is big, about 12.5 million with hypertension, 2.5 million of diabetes, more than 2 million COPD and 125,000 new cases of cancer. Out of deaths, non-communicable diseases cause the disability and quality of life of patients.

**1.3. Hypertension management intervention models**

**National hypertension management program:** The program was approved by Prime Minister in December, 2008 (Decision N0 172/2008). The program was managed by National Institute of Cardiology, Bachmai hospital with MoH supervision. The program covered 474 districts of 63 provinces/cities.

**Program activitiess:** including measures (i) increase knowledge of communities; (ii) Screening and early detection of hypertension; (iii)

Training and human development; (iv) Management and treatment; (v) Provision of drug and equipments; (vi) Survey and supervision.

**Hypertension management at provincial hospital:** This is a model applying to manage hypertension outpatient in provincial hospital with hypertension management unit. Patients registered at provincial hospitals.

## Chapter 2. SUBJECTS AND METHODS

### 2.1. Participants and settings

**2.1.1. Participants**: Including: (1) health staff working with hypertesion management at CHS and DHC (2) DHS and 20 CHSs: equipments, documents, drugs, communication materials, record books to evalate effects of hypertension management (3) Hypertensive patients managed by CHSs and DHC.

**2.1.2. Settings:** Our study was carried out in Ha Hoa district and 20 coomunes (10 controlled and 10 intervened).

**2.2. Study time:** 10/2015-7/2018.

### 2.3. Methods

**2.3.1. Study design**: The community-based controlled intervention design was applied in 2015-2018, together with qualitative study. The intervention effects were evaluated in three subjects: (i) management health staff and physicians dealing with hypertension management; (ii) equipments, documents, register books, at DHC and CHSs (iii) hypertensive patients. The qualitative study was used to describe and explore the factors influencing the intervention effects and explore measures to improve the intervention effects.

**2.3.2. Sampling and sample size**

Sample size in intervetion study includes: (i) health facilities: purposive choosing Ha Hoa district health center and its 20 CHSs (10 intervention communes and 10 controlled communes); (ii) Health staff: Sample size was calculated by using the formula of intervention study. In our study there were 100 health staff (intervention group: 50 and

controlled: 50). Each CHS, we chose all staff working with curative areas; (iii) Hypertensive patients were $n_1 = n_2 = 187$. The simple random sampling method was applied based on the list of hypertensive patients managed by DHC and CHSs. In 20 communes selected, list all hypertensive patients aged 25 and above and chose 18-20 patients a commune.

***2.3.2.2. Sample size in qualitative study:*** 12 health staff working ats CHSs and DHC and 10 patients in Ha Hoa district.

**2.3.3. Indicators and measurement**

***2.3.3.1. Indicators of objective 1:*** % of health staff received training and management in hypertention, % of health staff knowing well the hypertension management (correct answering at least 24/31=75% questions in management of hypertension; % health staff having good practice of hypertensive management (doing well at least 75% steps of hypertensive management); % of health facilities having enough equipments of hypertensive management; % of health facilities having enough drugs for traetment of hypertension listed in guidance; % health facilities having enough communication materials and record books.

***2.3.3.2. Indicators of objective 2***: % of hypertensive patients having enough knowledge of hypertention definition and the way to detect; % of hypertensive patients having enough knowledge of risk factors of hypertension; % of hypertensive patients having enough measures to prevent hypertension; % of hypertensive patients having enough attitude of hypertension prevention; % of hypertensive patients having enough practices to monitor hypertension regularly; % of hypertensive patients receiving treatment and keeping their stable blood pressure.

**2.3.4. Data tools and techniques**: (1) Checklists and observation were used to collect available data in DHC and CHSs; (2) Face to face interview of health staff was used to collect information of their background information, hypertensive knowledge and management; (3) Checklists and observation were used to collect information of health

staff in their practices of hypertensive management; (4) In-depth interview was used with health staff, patients to collect information of barriers of program implementation; (5) Face to face interview of patients and measure their blood pressure.

**2.3.5. Intervention process and activities**

***2.3.5.1. Survey before intervention***: Interview health staff and patients was used by using structured questionnaires. Observation of health staff by using checklists and collect available information at DHC and CHSs.

***2.3.5.2.Implementation of intervention activities*:** (i) Establish the Board of non-coomunicable diseases at province health depertment (ii) Establish *the provincial monitoring and supervision of hypertensive management*; (iii) Establish the Unit of hypertension mangement at district health center; (iv) Provide the training courses in hypertensive management for health staff at DHC and 10 intervetion CHSs; (vi) Implement the activities of hypertensive management in 10 intervetion CHSs.

***2.3.5.3. Survey after intervention*:** All contents of study were similar to study before intervention as described above.

**2.3.6. Data analysis:** Data was entered in Epi Data software (version 3.1). Use of steps to avoid errors in entering data. Data was analyzed in SPSS (Version) 15.0. Results were interpreted and presented in frequencies and %. Test $\chi^2$ and P-value were used to compared between independent and dependent variables. The significant differences were recognized when $p<0.05$. The intervention effects (IFs) were applied to compared between before and after intervention as well as for controlled and intervention groups. The result interpretation were also based Ifs and P value.

**2.3.7. Research ethics:** Thesis proposal was approved by Research Ethic Committee of Hanoi Medical University and Phu Tho Provincial Department. Participants (hypertensive patients) were informed and voluntary agreed to participated. Participant's information was kept confidentially through the coding.

# Chapter 3
# STUDY RESULTS

## 3.1. Effects of improving health facility capacities in hypertensive managements

### 3.1.1. At commune health stations

Participant's information such as age, sex, levels of professional, working time and so on were no signicant between conttrolled and intervention groups.

**Table 3.1. Effects of improving knowledge of hypertensive management among staff in commune health stations**

| Effects of improving knowledge | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* | IE I/C (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Good hypertensive management knowledge | 10 (23.8) | 12 (28.6) | 14 (26.9) | 40 (76.9) | 20.1 | 185,8 | <0,05 | 165,7 |
| | >0.05 | | <0.05 | | | | | |
| Good knowledge of hypertensive diagnosis and treatment | 7 (16.7) | 8 (19.0) | 8 (19.0) | 36 (69.2) | 13.8 | 264,2 | <0,05 | 245,2 |
| | >0.05 | | <0.05 | | | | | |
| Good hypertensive knowledge of prevention | 10 (23.8) | 9 (21.4) | 11 (21.1) | 41 (78.8) | 10.0 | 273,5 | <0,05 | 263,5 |
| | >0.05 | | <0.05 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

As compared to controlled group as well as intervention group before intervention, percentage of health staff having good knowledge of hypertensive management, diagnosis, traetment and management (>75%) increased significantly as compared to that before intervention (p <0.05 and IEs increased from 165.7% to 245.2%).

**Table 3.2. Effects of improving practices of hypertensive management among staff in commune health stations**

| Effects of improving hypertensive management practices | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* | IE I/C (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Good practice of hypertensive diagnosis | 10 (23.8) | 12 (28.6) | 14 (26.9) | 40 (76.9) | 20.1 | 185,8 | <0,05 | 165,7 |
| | >0.05 | | <0.05 | | | | | |
| Good practice of hypertensive treatment | 7 (16.7) | 8 (19.0) | 8 (19.0) | 36 (69.2) | 13.8 | 264,2 | <0,05 | 245,2 |
| | >0.05 | | <0.05 | | | | | |
| Good practice of hypertensive prevention | 10 (23.8) | 9 (21.4) | 11 (21.1) | 41 (78.8) | 10.0 | 273,5 | <0,05 | 263,5 |
| | >0.05 | | <0.05 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

As compared to controlled group as well as intervention group before intervention, percentage of health staff pratices hypertensive management, dagnosis, treatment and prevention (>75%) increased significantly as compared to before intervention p <0.05 and IFs from 73.4% to 191.2%. In intervention communescommunes, before intervention, only 4 CHSs (40%) had enough 15 equipments for management of hypertension and after intervention, 9 CHSs (90%) had enough equipment for hypertension management. In intervention communes, before intervention, only 5 CHSs (50%) had enough 1essential drugs for management of hypertension and after intervention, all 10 CHSs had enough druga for hypertension management. In intervention communes, before intervention, only 2 CHSs (20%) had enough register books, A1/YTCS book, for management of hypertension and after intervention, all CHSs (100%) had enough these matrials and books for hypertension management. In intervention communescommunes, before intervention, only 2 CHSs (20%) had enough communication material for management of hypertension and after intervention, all CHSs (100%) had enough these matrials for hypertension management. In intervention communescommunes, before intervention, only 3 CHSs (30%) had posters, maaseges, leaflefts for management of hypertension and after intervention, all CHSs (100%) had enough these matrials and books for hypertension management.

### 3.1.2. At district health center

At DHC, 22 health staff in Unit of Hypertensive Management and Prevention received training in disgnosis, treatment, prevention and management as well as supervision. Drugs and equipments, communication materials for hypertension disgnosis, prevention, screening, treatment and management avaible after intervention. The supervision of the Unit is regular monthly.

## 3.2. Effects improving knowledge, attitute and practice in hypertension management among patients

### 3.2.2. Effects improving knowledge, attitude and practice in obey hypertension treatment among patients

#### *3.2.2.1. Effects improving knowledge of hypertension management*

**Table 3.3. Effects improving knowledge of hypertension definition and diagnosis**

| **Knowledge of hypertension definition and diagnosis** | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Knowledge of definition | 76 (40.6) | 83 (44.0) | 81 (43.3) | 167 (89.3) | 8,8 | 106,2 | <0,01 | 97.4 |
| | p>0.05 | | p<0.01 | | | | | |
| Knowledge of hypertension diagnosis | 94 (50.3) | 97 (51.9) | 87 (46.5) | 152 (81.3) | 3,2 | 74,8 | <0,01 | 71.6 |
| | p>0.05 | | p<0.01 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

In intervetion group, after intervention, in intervetion groups, percentage of patients understand the hypertensive definition increased significantly (89.3% after intervention as compared to 43.3% before intervetion; p<0.01). Compared to controlled group, after intervention, percentage of patients understand hypertensive definition increased significantly (p<0.01 and IF increased 94.7%). Similarly, In intervetion group, after intervention, percentage of patients understand the way to hypertensive diagnosis increased significantly (81.3% after intervention as compared to 46.5% before intervetion; p<0.01). Compared to controlled group, after intervention, percentage of patients understand the way to diagnosis of hypertensive definition increased significantly (p<0.01 and IF increased 71.6%).

**Table 3.4. Effects of improving symptoms of hypertension**

| **Knowledge of hypertension** | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Headache | 182 (97.3) | 171 (91.4) | 177 (94.7) | 180 (96.3) | 6.1 | 1.7 | >0.05 | 4.4** |
| | p>0.05 | | p>0.05 | | | | | |
| Dizzi | 176 (94.1) | 183 (97.9) | 162 (94.7) | 176 (94.1) | 4.0 | 0.6 | >0.05 | 3.4** |
| | p>0.05 | | p>0.05 | | | | | |
| Ear problem | 86 (46.0) | 124 (66.3) | 89 (47.6) | 163 (87.1) | 44.1 | 84.0 | <0.01 | 39.9 |
| | p>0.05 | | p<0.01 | | | | | |
| Being dazzled | 165 (88.2) | 166 (88.8) | 134 (71.7) | 180 (96.3) | 0.7 | 95.3 | <0.02 | 84.6 |
| | p>0.05 | | p<0.01 | | | | | |
| Flashing out | 95 (50.8) | 90 (48.1) | 99 (52.9) | 135 (72.2) | 2.6 | 36.5 | <0.03 | 33.9 |
| | p>0.05 | | p<0.05 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*
***Reduced IF (between intervention and controlled groups)*

Compared to controlled group, after intervention, percentage of patients understand ear problem, being dazzed, flashing out increased significantly (p<0.01 and IF increased 33.9-84.6%). Percentage of patients understand headache and dizzi did not increased after intervention and slightly reduced (no significant). imilarly, In intervetion group, after intervention, percentage of patients understand all 9 symptoms of hypertension increased significantly (90.4% after intervention as compared to 66.8% before intervetion; p<0.01). Compared to controlled group, after intervention, percentage of patients understand 9 prevention measures increased significantly (p<0.01 and IF increased 82.5%).

**Table 3.5. Effects of improving knowledge of risk factors of hypertension**

| Knowledge of risk factors | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Eating more animal lipid | 148 (79.1) | 161 (86.1) | 155 (82.9) | 185 (98.9) | 8.8 | 19,3 | >0,05 | 10,5 |
| | p>0.05 | | p<0.01 | | | | | |
| Salty eating | 173 (92.5) | 182 (97.3) | 163 (87.2) | 181 (96.8) | 5.2 | 11,0 | >0,05 | 5,8 |
| | p>0.05 | | p<0.05 | | | | | |
| Smoking | 137 (73.3) | 160 (85.6) | 129 (69.0) | 178 (95.2) | 16.8 | 42,3 | <0,05 | 25,5 |
| | p>0.05 | | p<0.01 | | | | | |
| Fat peron | 133 (71.1) | 118 (63.1) | 137 (73.3) | 153 (81.8) | 11.3 | 12,0 | <0,05 | 1,0 |
| | p>0.05 | | p>0.05 | | | | | |
| Beer/alcohol drink a lot | 161 (86.1) | 169 (90.4) | 141 (75.4) | 158 (84.5) | 5.0 | 12,1 | >0,05 | 7,1 |
| | p>0.05 | | p>0.05 | | | | | |
| Sweet eating | 102 (54.5) | 102 (54.5) | 93 (49.7) | 152 (81.3) | 0 | 80,3 | <0,01 | 80,3 |
| | p>0.05 | | p<0.01 | | | | | |
| Few physical activities | 111 (59.4) | 117 (62.6) | 91 (48.7) | 136 (72.7) | 5.4 | 49,3 | <0,05 | 43,9 |
| | p>0.05 | | p<0.01 | | | | | |
| Stress | 122 (65.2) | 141 (75.4) | 93 (49.7) | 172 (92.0) | 15.6 | 91,0 | <0,01 | 75,4 |
| | p>0.05 | | p<0.01 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients understand risk factors such as fat, eating more sweet food, lower lvevel of physical activities, families with hypertention people and stress increased significantly (p<0.01 and IF increased). In intervetion group, after intervention, percentage of patients understand all 8 risk factors of hypertension increased significantly (91.4% after intervention as compared to 69.5% before intervetion; p<0.01). Compared to controlled group, after intervention, percentage of patients

understand 8 prevention measures increased significantly (p<0.01 and IF increased 87.3%).

**Table 3.6. Effects of improving knowledge of prevention hypertension**

| Knowledge of prevention activities | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Do not eat more animal fat food | 150 (80.2) | 163 (87.2) | 161 (86.1) | 185 (98.9) | 6.2 | 14,9 | <0,05 | 8,7 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Do not eat more salty food | 177 (94.7) | 181 (96.8) | 174 (93.0) | 179 (95.7) | 2.2 | 2,9 | >0,05 | 0,7 |
| | p > 0.05 | | p > 0.05 | | | | | |
| Do not smoking | 139 (74.3) | 169 (90.4) | 140 (74.9) | 176 (94.1) | 21.7 | 25,6 | >0,05 | 3,9 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Do not increase weight | 124 (66.3) | 119 (63.6) | 132 (70.6) | 144 (77.0) | 5.0 | 9,1 | <0,05 | 4,1 |
| | p > 0.05 | | p >0.05 | | | | | |
| Limit drink alcohol and beer | 163 (87.2) | 170 (90.9) | 151 (80.7) | 160 (85.6) | 4.2 | 6,2 | >0,05 | |
| | p > 0.05 | | p > 0.05 | | | | | |
| Limit drink sweet fruit | 98 (52.4) | 99 (52.9) | 101 (54.0) | 105 (56.1) | 1.0 | 3,9 | >0,05 | 2,9 |
| | p > 0.05 | | p > 0.05 | | | | | |
| Increase physical activities | 126 (67.4) | 114 (61.0) | 107 (51.3) | 162 (86.6) | 11.0 | 68,8 | <0,01 | 58,8 |
| | p > 0.05 | | p < 0.01 | | | | | |
| Realese stress | 114 (61.0) | 134 (71.7) | 116 (62.0) | 145 (77.5) | 17.5 | 25,0 | <0,05 | 7,5 |
| | p > 0.05 | | p < 0.05 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients understand risk factors prevention such as do not eating more sweet food, control weight, increase physical activities, and realease stress increased significantly (p<0.05-<0.01 and IF increased). In intervetion group, after intervention, percentage of patients understand 6 hypertension complications increased significantly (83.4% after intervention as compared to 56.1% before intervetion; p<0.05).

Compared to controlled group, after intervention, percentage of patients understand 6 complications increased significantly (p<0.05 and IF increased 80.6%).

**Table 3.7. Effects of improving knowledge of each complication of hypertension**

| **Knowledge of each hypertention complication** | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Strock | 184 (98.4) | 184 (98.4) | 182 (97.3) | 184 (98.4) | 0 | 1.1 | >0.05 | 1.1 |
| | p > 0.05 | | p > 0.05 | | | | | |
| Heart attach | 129 (69.0) | 130 (69.5) | 150 (80.2) | 145 (77.5) | 0.7 | 3.6 | >0.05 | 2.9 |
| | p > 0.05 | | p > 0.05 | | | | | |
| Heart failure | 83 (44.4) | 101 (54.0) | 96 (51.3) | 156 (83.4) | 21.6 | 43.1 | <0.01 | 21.5 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Kidney failure | 58 (31.0) | 58 (31.0) | 69 (36.9) | 107 (57.2) | 0 | 55.0 | <0.01 | 55.0 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Blind | 64 (34.2) | 54 (28.9) | 58 (31.0) | 115 (61.5) | 15.5 | 98.4 | <0.01 | 82.9 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Death | 140 (74.9) | 145 (77.5) | 137 (73.3) | 172 (92.0) | | | | |
| | p > 0,05 | | p < 0,05 | | 3.5 | 25.6 | <0.05 | 22.1 |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients understand hypertension complication as risk factors prevention such as heart failure, kidney failure, blind, and death increased significantly (p<0.05-<0.01 and IF increased). In intervetion group, after intervention, percentage of patients understand 6 hypertension complications increased significantly (83.4% after intervention as compared to 56.1% before intervetion; p<0.05). Compared to controlled group, after intervention, percentage of patients understand 6 complications increased significantly (p<0.05 and IF increased 80.6%).

**Table 3.8. Effects of improving knowledge in hypertension treatment**

| **Knowledge of hypertention treatment** | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Drugs of reducing hypertension | 140 (74.9) | 151 (80.7) | 135 (72.1) | 184 (98.4) | 7.7 | 37.7 | <0,05 | 30,0 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Drugs of urinate | 58 (31.0) | 70 (37.4) | 60 (32.1) | 65 (34.8) | 20.7 | 11.5 | >0,05 | 9,2* |
| | p > 0.05 | | p >0.05 | | | | | |
| Limit salty food | 150 (80.2) | 171 (91.4) | 169 (90.4) | 175 (93.6) | 14.0 | 3.5 | >0,05 | 10,5* |
| | p > 0.05 | | p > 0.05 | | | | | |
| Limit eating animal fat food | 120 (64.2) | 135 (72.2) | 149 (79.7) | 176 (94.1) | 12.5 | 93.1 | <0,05 | 80,6 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Eating more vegetables | 139 (74.3) | 153 (81.8) | 138 (73.8) | 178 (95.2) | 10.1 | 94.2 | <0,01 | 84,1 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Quit smoking | 88 (47.1) | 102 (54.5) | 110 (58.8) | 138 (73.8) | 15.7 | 72.8 | <0,05 | 57,1 |
| | p > 0.05 | | p < 0.05 | | | | | |
| Limit drink beer/alcohol | 88 (47.1) | 91 (48.7) | 110 (58.8) | 167 (93.8) | 3.4 | 59.5 | <0,01 | 56,1 |
| | p > 0.05 | | p < 0.01 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients understand hypertension complication such as using drugs of reducing hypertension, limit eating animal fat food, eating more vegetables, stop smoking, and limit drinking beer/alcohol increased significantly ($p<0.05$-$<0.01$ and IF increased). In intervetion group, after intervention, percentage of patients understand all 8 above measures increased significantly (88.8% after intervention as compared to 68.5% before intervetion; $p<0.05$).

### *3.2.2.2. Effects of improving attitude of hypertension management*

**Table 3.9. Effects of improving attitude of hypertension management**

| Attitude of hypertension management | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Hypertension is dangerous | 118 (63.1) | 125 (66.8) | 112 (59.8) | 165 (88.2) | 9.1 | 47.5 | <0.05 | 38.4 |
| | >0.05 | | >0.05 | | | | | |
| Hypertension could be treated | 121 (64.7) | 129 (69.9) | 119 (63.6) | 177 (94.7) | 8.0 | 49.0 | <0.01 | 41.0 |
| | >0.05 | | <0.01 | | | | | |
| Need to seek care at health facilities | 129 (68.9) | 121 (64.7) | 115 (61.5) | 175 (93.6) | 6.1 | 52.2 | <0.01 | 46.1 |
| | >0.05 | | <0.01 | | | | | |
| Need to use drugs of doctor | 115 (61.5) | 121 (64.7) | 117 (62.6) | 180 (96.3) | 5.2 | 53.8 | <0.01 | 48.6 |
| | >0.05 | | <0.01 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients had good attitude of hypertension prevention such as hypertension is dangerous, it could be treated, need to seek care at health facilities and need to use drugs of doctors increased significantly ($p<0.05-<0.01$ and IF increased). In intervetion group, after intervention, percentage of patients had good attitude of all 8 above treatment measures increased significantly (93.6% after intervention as compared to 63.1% before intervetion; $p<0.05$).

**Table 3.10. Effects of improving attitude of hypertension prevention**

| Attitude of hypertension prevention | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Need to use hypertension drugs | 186 (99.5) | 185 (98.9) | 176 (94.1) | 178 (95.2) | 0.06 | 1,1 | >0,05 | 0,5 |
| | >0.05 | | >0.05 | | | | | |
| Need to use urinate drugs | 52 (27.8) | 45 (24.1) | 62 (33.2) | 96 (51.3) | 0.8 | 54,5 | <0,05 | 53,7 |
| | >0.05 | | <0.05 | | | | | |
| Need to limit salty food | 174 (93.0) | 176 (94.1) | 170 (90.9) | 181 (96.8) | 1.2 | 6,5 | >0,05 | 5,3 |
| | >0.05 | | >0.05 | | | | | |
| Need to limit animal fat food | 144 (77.0) | 155 (82.9) | 146 (78.1) | 180 (96.3) | 7.7 | 23,3 | <0,05 | 15,6 |
| | >0.05 | | <0.05 | | | | | |
| Need to eat more vegetables | 155 (82.9) | 165 (88.2) | 145 (77.5) | 135 (72.2) | 6.4 | 6,8 | >0,05 | 0,4 |
| | >0.05 | | >0.05 | | | | | |
| Need to increase physical activities | 134 (71.7) | 138 (73.8) | 126 (67.4) | 182 (97.3) | 2.9 | 44,5 | <0,01 | 41,6 |
| | >0.05 | | <0.01 | | | | | |
| Need to quit smoking | 107 (57.2) | 112 (59.9) | 111 (54.9) | 168 (89.8) | 4.5 | 63,6 | <0,01 | 58,9 |
| | >0.05 | | <0.01 | | | | | |
| Need to control weight | 98 (52.4) | 90 (48.1) | 101 (54.0) | 136 (72.7) | 7.1 | 34,6 | <0,05 | 27,5 |
| | >0.05 | | <0.05 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients had good attitude of hypertension prevention such as use of urinate drugs, limit eating animal fat food, increase physical activities, quit smoking and control body weight increased significantly (p<0.05-<0.01 and IF increased). In intervetion group, after intervention, percentage of patients had good attitude of all 8 above treatment measures increased significantly (93.6% after intervention as compared to 63.1% before intervetion; p<0.05).

### *3.2.2.3. Effects of improving practice of hypertension management*

**Table 3.11. Effects of improving hypertension check up and treatment**

| Practice of hypertension monitor and treatment | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Check up blood pressure regularly | 113 (60.4) | 121 (64.7) | 122 (65.2) | 172 (92.0) | 7.1 | 41,1 | <0,01 | 34,0 |
| | >0.05 | | <0.01 | | | | | |
| Use of drugs an doctor's advice | 106 (56.7) | 115 (61.5) | 110 (58.8) | 174 (93.1) | 8.5 | 58,3 | <0,01 | 49,8 |
| | >0.05 | | <0.01 | | | | | |
| Use of anti-hypertension | 156 (83.4) | 164 (87.7) | 125 (66.8) | 179 (95.7) | 4.0 | 43,3 | <0,01 | 39,3 |
| | >0.05 | | <0.01 | | | | | |
| Joint in program of hypertension management | 119 (63.6) | 125 (66.8) | 123 (65.8) | 179 (95.7) | 5.0 | 45,4 | <0,05 | 40,4 |
| | >0.05 | | <0.01 | | | | | |

**I/C: Intervention/Controlled groups; I: intervention; C: controlled*

Compared to controlled group, after intervention, percentage of patients had good practices of blood pressure, use of drugs, anti-hypertension drugs, and participating in the hypertension management program increased significantly (p<0.05-<0.01 and IF increased from 34-49.8%). In intervetion group, after intervention, percentage of patients had good practices of all 9 above treatment measures increased significantly (p<0.05 and IF increase 59.5%).

**Table 3.12. Effects of improving practice of hypertension treatment adherence**

| Adherence practice | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Adherence of anti-hypertension drug use | 160 (85.6) | 168 (89.8) | 135 (72.2) | 182 (97.3) | 4.9 | 34,8 | <0,05 | 29,9 |
| | >0.05 | | <0.01 | | | | | |
| Adherence of urinate drug use | 131 (70.1) | 139 (74.3) | 102 (54.5) | 175 (93.6) | 6.0 | 71,7 | <0,01 | 65,7 |
| | >0.05 | | <0.01 | | | | | |
| Adherence of limiting salty food | 129 (68.9) | 125 (66.8) | 121 (64.7) | 176 (94.1) | 3.0 | 45,4 | <0,01 | 42,4 |
| | >0.05 | | <0.01 | | | | | |
| Adherence of limiting animal fat food | 136 (77.2) | 114 (61.0) | 117 (62.6) | 178 (95.2) | 17.1 | 52,1 | <0,01 | 35,0 |
| | >0.05 | | <0.01 | | | | | |
| Adherence of eating more vagetables | 127 (67.9) | 113 (60.4) | 108 (57.8) | 156 (83.4) | 11.0 | 44,3 | <0,05 | 33,3 |
| | >0.05 | | <0.05 | | | | | |
| Adherence of more physical activities | 106 (56.7) | 93 (49.7) | 98 (52.4) | 179 (95.7) | 12.3 | 82,6 | <0,01 | 70,3 |
| | >0.05 | | <0.05 | | | | | |
| Adherence of quiting smoking | 80 (42.7) | 76 (40.6) | 70 (37.4) | 165 (88.2) | 4.9 | 135,8 | <0,01 | 130,9 |
| | >0.05 | | <0.05 | | | | | |
| Adherence of limiting drink beer/alcohol | 92 (49.9) | 88 (47.1) | 89 (47.6) | 179 (95.7) | 5.6 | 101,1 | <0,01 | 95,5 |
| | >0.05 | | <0.05 | | | | | |

Compared to controlled group, after intervention, percentage of patients had good practices each measure of hypertension management increased significantly (p<0.05-<0.01 and IF increased from 13.5-130.9%).

**Table 3.13. Effects of keeping stable purposive blood pressure**

| Stable purposive blood pressure | Control (n=42) | | Intervention (n=52) | | Effect index (IEs) | | P I/C* (%) | IE I/C* (%) |
|---|---|---|---|---|---|---|---|---|
| | Before (%) | After (%) | Before (%) | After (%) | C* (%) | I* (%) | | |
| Stable purposive blood pressure kept | 95 (50.8) | 100 (53.5) | 92 (49.2) | 125 (66.8) | 5.3 | 35.8 | <0.05 | 30.5 |
| | >0.05 | | <0.05 | | | | | |

Compared to controlled group, after intervention, percentage of patients had stable purposive blood pressure kept increased significantly (<0.01 and IF increased 30.5%).

### 3.3. Factors influencing intervention program

**Manpower:** Lack of health staff is one of the most important factors of provision of health services in screening, diagnosis and treatment of hypertension in Ha Hoa district. At each CHS, there is only one physician being in charge with hypertension management. However, they are very busy with many activities including management work and hypertension as well as other curative and preventive areas. The other barriers are monitoring and supervision of hypertension management form province level. According to plan, these works should be one a month but infact, these activities were not carried out. The quality of monitoring and supervision are still limited due to quality of health staff. They do not have enough skills to use hypertension management software. Only 2/3 of CHSs having staff who can use this software. These challenges should be solved for staff at CHSs through training and through supervision activities by coaching method.

**Communnication at coomunity:** The communication activities and consultation in hypertension mangement for hypertensive patients are very important for management of hypertension at communities. The most important contents are controling purposive stable blood pressure, control risk factors and complication, adherence of preventive and treatment of hypertension. Barriers of the communication are lacking materials and facilities, communication skills. Community speakers were main way at the communities. Communication masseges were still limited in terms of contents and it's a one way-communication; it effect is not hogh enough.

**Registration and management of new hypertensive patients:** The diagnosis, registration and management of new hypertensive patients have been improved in the intervention communes as compared to controlled communes. The greatest challenge is to find out new hypertensive patients for management. There are patients who were not diagnosed due to not coming for diagnosis and treatment. To overcome this problem, CHSs and DHC organized the screening for these people who have problem with health facility access. Hypertensive patients are found passibly when going to health facilities for checking other diseases.

**Hypertensive patients:** One of barriers is patients who do not know hypertension symptom, prevention, complications, treatment even the community communication are implemented. These difficulties are more in elderly, low education, low economic status and living in the mountainous areas. These groups are target for intervention at the community.

# Chapter 4
# DISCUSSION

## 4.1. Effects of improving health facility capacities in hypertensive managements

### 4.1.1. At commune health stations

Our sudy shown that as compared to the controlled groups as well as compared to intervention group before intervetion, number of health staff received training in hypertension management increased significantly. Some studies in developing countries show the same results as our study. The coaching supervision provided to health staff is one of effective way to have good pracyices of health staff. Katende et al (2014) studied in Uganda showing that after 3 months training and conducting supervision for health staff at clinics of hospitals, all skills of diagnosis, treatment, communication and management of health staff increased significantly. After intervention, practice of measurement of blood pressure increased from 42.9% to 71.4%), use of anti-hypertension drugs increased from 28.6% to 87.5%). A study in Braxin shown that after intervention, the knowledge and skills of health staff in measurement of blood pressure increased from 38.9% to 77.8%; hypertension management increased from 41.2% to 89.5%. Barry et al (2011) reviewed in 92 articles and reports that provide the evidence of role of health staff, health facilities in hypertension management. In

Vietnam, intervention studies of hypertention were not carried out frequently and there were only some current studies. From 2008, there was a joint collaboration project in 63 provinces/cities led by National Institute of Cardiology. The intervetion results are good, however, there is no study about its stability and sustainabilty as well as scaling up of the program.

**4.1.2. At district health center in equipment, drugs and registration**

A meta analysis in 86 publications (Maimaris et al, 2013) in the world shown that the role of health faclities in knowledge, diagnosis, treatment and management of hypertention. It conluded that even in different countries and different health system, the intervention in terms of provision of equipment, drugs and facilities contributes much in effects of hypertension management. Average high blood pressure reduce from 26.5 mmHg (15.5-45.5 mm Hg).

**4.2. Effects improving knowledge, attitute and practice in hypertension management among patients**

**4.2.1. Effects improving knowledge, attitude and practice in obey hypertension treatment among patients**

***4.2.1.1. Effects improving knowledge of hypertension management***

Cummunity communication is one of the most importance way to improve knowledge of hypertensive patients. One review (2015) and another review (2015) concluded that through the communication intervention, hypertensive patients can understand their disease status, risk factors, then they can adhere preventive and treatment methods to keep their blood pressure and prevent hypertensive complications such as strock, heat attack and death. Similarly, some studies in Vietnam shown the same results. Our results were similar to other studies in other countries. Our study combined two different way of communications (community communication and consultation at health facilities). The diversity of communication ways helps patients to improve their knowledge and practice in hypertensive management. Reasons to increase intervention effects are: (1) Patients have more chance to contact with health staff and receive more consultations through periodic check up and take anti-hypertensive drugs; (2) Patients with hypertension who care more about their disease. Some other studies in the world support the reasons.

***4.2.1.2. Intervention effect of improving attitude***

Attitude is patient's point of view related to hypertention prevention, traetment, changing their life styles, having appropriate food eating and drinking, doing more physical activities and prevent hypertension complication. Studies in attitude sometimes are very difficult in collect data due to combine both qualitative and quantitative data as well as to observe patients. In addition, patients do not open when asking them about their disease status so it's very difficult to measure exacttly their attitude. Studies in China and other developing countries in Africa shown that paients want to keep their diseases. Our results of changing attitude after intervention was improved. Other studies are simlarly to our study. In Vietnam, there are some studies describing changes of attitude and practices of hypertensive patients. Their results are similar to our results. Tran Van Long (2015) and Nguyen Kim Ke (2012) concluded changing attitude after intervention was improved in Nam Dinh and Hung Yen provinces.

***4.2.1.3. Intervention effect of improving practices***

To improve practice of hypertension patients in terms of prevention and treatment need to communication and consultation. Roles of health staff and health facilities are vet important through their advices and consultation. Our results shown that after intervention, patient's practices increased significantly after intervention. Thes findings are relevant to other studies in Vietnam as well as in the world. Lu (2015) studied in China shows that after intervention, patients's physical activities increased significantly as compared to controlled group. Based on these findings from different countries, we conclude that the communication intervention in hypertension management and consultation at health facilities contribute much to hypertension management.

**4.3. Factors influencing the intervention effects**

Lack of health staff is one of the most important factors of provision of health services in screening, diagnosis and treatment of hypertension in Ha Hoa district. At each CHS, there is only one physician being in charge with hypertension management. However, they are very busy with many activities including management work and hypertension as well as other curative and preventive areas. The other barriers are monitoring and supervision of hypertension management form province level. According to plan, these works

should be one a month but infact, these activities were not carried out. The quality of monitoring and supervision are still limited due to quality of health staff. They do not have enough skills to use hypertension management software. Only 2/3 of CHSs having staff who can use this software. These challenges should be solved for staff at CHSs through training and through supervision activities by coaching method.

The communication activities and consultation in hypertension mangement for hypertensive patients are very important for management of hypertension at communities. The most important contents are controling purposive stable blood pressure, control risk factors and complication, adherence of preventive and treatment of hypertension. Barriers of the communication are lacking materials and facilities, communication skills. Community speakers were main way at the communities. Communication masseges were still limited in terms of contents and it's a one way-communication; it effect is not hogh enough.

The diagnosis, registration and management of new hypertensive patients have been improved in the intervention communes as compared to controlled communes. The greatest challenge is to find out new hypertensive patients for management. There are patients who were not diagnosed due to not coming for diagnosis and treatment. To overcome this problem, CHSs and DHC organized the screening for these people who have problem with health facility access. Hypertensive patients are found passibly when going to health facilities for checking other diseases.

One of barriers is patients who do not know hypertension symptom, prevention, complications, treatment even the community communication are implemented. These difficulties are more in elderly, low education, low economic status and living in the mountainous areas. These groups are target for intervention at the community.

## CONCLUSION

**1. Communication intervention effects improving hypertension management of district health center and commune health stations:** Interventions for enhancing health staff capabilities on hypertension management at DHC and CHSs were significantly effective. The percentage of health staff reaching good and accepted knowledge and practice of hypertension management (>75%) increased significantly. Percentages of intervention CHSs getting 15 items of equipment and

essential drugs for HBP management increased from 40% to 90% and from 50% to 100%, respectively.

**2. Communication intervetion effects of improving knowledge, attitute and practice of hypertensive patients in hypertension management: I**nterventions absolutely raised patient's knowledge, attitude and practice of hypertension management. After intervention, there was a statistically significant rise of almost knowledge of hypertension management in patients ($p<0.05-<0.01$ and effective index 71.6%-97.4%); The percentage of patients showing their right attitude of hypertension management increased ($p<0.05-<0.01$; effective index: 38.4%-48.6%); The percentage of patients reaching good practice of hypertension management also rose ($p<0.05-<0.01$; effective index: 34%-59%); and the percentage of patients achieving and maintaining their target blood pressure was improved significantly ($p<0.01$; effective index rose 30.5%).

**3. Influencing factors related to intervention effects of hypertention management:** It was the lack of experienced health staff at CHSs who could effectively conduct hypertension management and use appropriate software. IEC activities, supervision and technical assistance were also limited. Additionally, the access to health care facilities was sometimes inconvenient for the middle-aged and the elderly patients, and patient's KAP on HBP management was still low in some disadvantaged groups such as the minority ethnics or the poorly educated patients in the rural areas.

## RECOMMENDATIONS

It needs to define role, duties of CHSs in management of hypertension including: (i) communication of hypertension at community and risk factors; (ii) screening, diagnosis, management of hypertenssion without complications; (iii) check hypertension complications, refer patients with complications to uper levels; (iv) provision of anti-hypertension; (v) provision of consultation life styles and risk factors; (vi) management of hypertensive patients.

Hypertensive patients need to adherence hypertention treatment and monitor complications. Patients need to have more information and practice in management of hypertension.