



Review Article

INFORMATION USE FOR DIABETES AND HYPERTENSION PREVENTION AND CONTROL AT HEALTH PROMOTING HOSPITAL LEVEL: A REVIEW

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Article Received on: 23/02/19 Approved for publication: 09/04/19

DOI: 10.7897/2230-8407.1004115

ABSTRACT

The Ministry of Public Health has given the importance and assigned the policy to reduce the risk and illness of Non-communicable diseases (NCDs), especially diabetes hypertension since 1997 until the present day, from indicator of disease screening to indicator of reducing the incidence of a new illness case. Results from the Thai National Health Examination Survey V (NHES V); age of 15 years old upwards, in the year 2004, 2009, 2014, informed an increase of diabetes prevalence (6.6%, 6.9% and 8.9%) and hypertension prevalence (22.0%, 21.4% and 24.7%). The targets cover the issues relating to disease control and health service systems. Diabetes and hypertension are also included in 9 global NCDs targets, which are “halt the rise in diabetes and obesity” and “a 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances. Using information of evidence-based science or empirical data, is, at a level, to confirm that the past operation of reducing the risk and illness of diabetes and hypertension by providing risk group screening and health service treatments within the responsible area.

Keywords: Information use, Diabetes, Hypertension, Prevention and Control

INTRODUCTION

In the last 5 years (2009-2014), there has been an increase of 300,000 diabetes patients per year, while an increase of 600,000 hypertension patients per year due to the influence of globalization which affects the changes in the environment and society especially on economic, culture and behavioral life-style of the people in communities. The World Health Organization has a mutual agreement with the member countries in determining 9 global NCDs targets to report, in order to be able to follow up any advancement in solving the problems of NCDs which must be achieved together within the year 2025. The World Health Assembly endorsed the WHO Global Action Plan for the Prevention and Control of NCDs 2013-2020 in May 2013^{1,2,3}. The Global Action Plan provides member states, international partners and WHO with a road map and menu of policy options which, when implemented collectively between 2013 and 2020, will contribute to progress on 9 global NCDs targets to be attained in 2025⁴. Diabetes and hypertension, one of the 9 NCDs global targets, are not only bio-physiological change, but also as a consequence of behavioral health that approach to health risk factors; tobacco use, alcohol drinking, inappropriate of food intake, non-exercise, physical activity insufficiency and stress. The bio-physiological factor is becoming a more intense health problem, because it is not only health risk factor but also disease in itself. Diabetes and hypertension are bio-physiological risk factors that are the underlying cause of cardiovascular disease, especially ischemic heart disease and stroke, which is, at present, Thailand's public health problem. The more the severity of bio-physiological risk factors, the more intensity and severity of illness⁵.

Apart from the role in community operating for the risk and illness reduction of diabetes and hypertension according to the Ministry of Public Health policy, data analysis to inform health problem situation in the forum of community society is another important role for the health responsible person/s in health promotion hospital. In order to find a mutual agreement in solving the health problems, including setting guidelines for joint measures in risk and illness reduction of diabetes and hypertension that suit to society and community context (socioeconomic status, culture and norm).

Using the information of the evidence-based science or empirical data, therefore, is the key to success in operating the risk and illness reduction of diabetes and hypertension. The health responsible person/s in health promotion hospital must have an understanding in the following issues:

1. Nature history of NCDs and characteristics of NCDs
2. Process of bio-physiology inducing diabetes and hypertension
3. Process of prevention and control of diabetes and hypertension
4. Health measurement using for data analysis on diabetes and hypertension

To understand the above mentioned issues is leading to the linkage of the use of information analysis for designing the program/project implementation plan and lay down measures of risk and illness reduction of diabetes and hypertension, according to the context of the community.

NATURE HISTORY OF NCDS AND CHARACTERISTICS OF NCDS

A disease progression is different among NCDs and communicable diseases. To understand, a nature history of NCDs and characteristic of NCDs will enable the analysis of the

information in term of epidemiology that related to the health determinants (host, agent, environment) and distribution (time, place, person) of the NCDs. These will be leaded to solving the problems in public health at the individual and population in the community levels.

COMPARING THE NATURAL HISTORY AND CHARACTERISTICS OF NON-COMMUNICABLE DISEASE AND COMMUNICABLE DISEASE^{6,7,8}

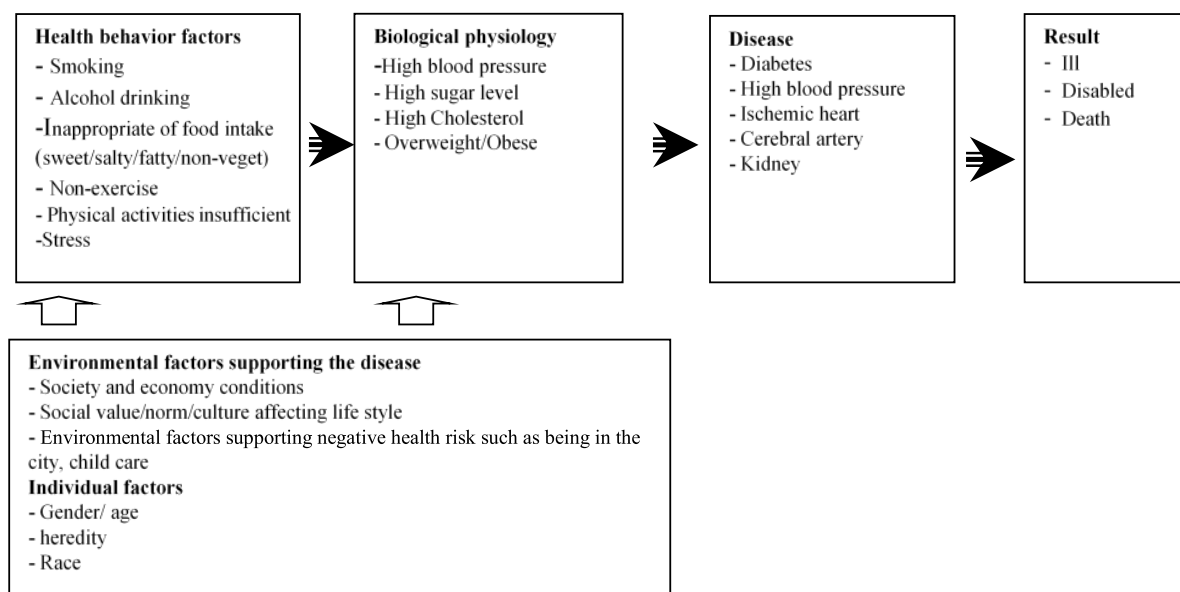
	Non-Communicable disease	Communicable disease
Cause of the disease	Complex etiology cause with multiple risk factors (from many health risk factors and from related bio-physiological risk factors).	Single necessary agent, usually one etiology cause and cause are relatively well understood.
Relationship between the duration of disease and exposure to risk factors	Long latent period and prolong course of illness, sign and symptom occur more or less 10 years.	Short incubation period and illness; sign and symptom occur in day, week or month.
Disease co-morbidity	Usually two or more than two illness, such as diabetes and ischemic heart disease, high blood pressure and strokes.	Specific agent-disease relationship, except in some cases such as HIV patient with pulmonary tuberculosis infection.
Response to disease treatment	Use variety and methods of treatment, slowly response to disease treatment, recurrence of the disease from time to time, and not recovered from illness.	Specify and clearly treatment, properly to disease treatment and recovered from illness.
Public health measures at the community level	Using multiple measures to solve problems at the community level, intervention based on risk factor to prevent and control at the population level rather than individual level.	Usually one main measure, resulting in a good impact on individual and population control such as the immunization.
Surveillance	Focusing on the disease changing trends	Focusing on the case and outbreak investigation.
Report	Annually	Daily, weekly, monthly
information source	Using many sources of information for analysis such as - Data on medical and health, Ministry of Public Health (43 files) - National Health Examination Survey Thai population, Health System Research Institute - Health Welfare Survey, National Statistical Office	Data on medical and health (43 files), Ministry of Public Health, case report
Data collection	Event-based oriented	Person-based oriented
Data analysis	Disease rate analysis or magnitude of problem in population, such as prevalence of disease	Disease rate analysis per case and patients count
Rules and Law	No rules and law to support on community disease management.	Has rule and law to support on community disease management, such as 2015 Communicable Diseases Act.

PROCESS OF BIO-PHYSIOLOGY INDUCING DIABETES AND HYPERTENSION

The World Health Organization has set up a Comprehensive Global Monitoring Framework, including indicators, and a set of Voluntary Global Targets for the member countries. It is used to be a framework for monitoring, for surveillance and for evaluation on the advancement NCDs prevention and control in member countries. A set of 23 indicators and 9 voluntary global targets are classified by the 3 main groups: (1) target on mortality and morbidity (2) target on behavioral risk factors and bio-physiological risk factors (3) target on national health service response system⁹.

Diabetes and hypertension are not only a bio-physiological risk factor (high blood sugar, high blood pressure), but also a disease (diabetes and hypertension) which are leading to cardiovascular disease (ischemic heart disease, stroke) and other diseases such as kidney disease, diabetic retinopathy, etc. The important issue is that high blood sugar and high blood pressure usually occur with the other aspects of bio-physiological risk such as, overweight and obese, hyperlipidaemia. It will increase the likelihood of disease and the severity of the disease^{5,9}. High blood sugar and high blood pressure are caused from inappropriate of behavioral health (smoking, drinking alcohol, inappropriate of food intake, non-exercise, physical activity insufficiency and stress). They also cause from the changing on environment and society that impact on socioeconomic, education, income, culture and norm, as shown in the picture:

PROCESS OF BIO-PHYSIOLOGY INDUCING DIABETES AND HYPERTENSION^{9,10,11,12}



PROCESS OF PREVENTION AND CONTROL OF DIABETES AND HYPERTENSION

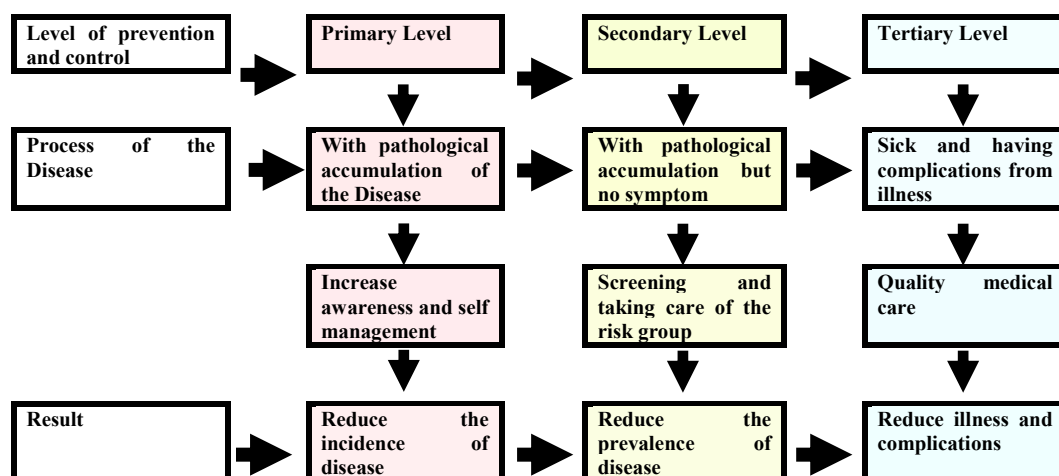
Prevention and controlling for risk and illness reduction of diabetes and hypertension focus on the management of risk behaviors at the population level, especially in the primary and secondary levels, because it saves cost when comparing with treatment^{2,3,4,13}. A result in each level is;

The result of prevention and controlling in the primary level is to reduce an incidence of diabetes and hypertension, by promoting knowledge and awareness of the people and community, to have the potential and skills in self-care management to prevent and control of diabetes and hypertension.

The result of prevention and controlling in the secondary level is to reduce disease prevalence by screening, in order to delay the occurrence of diabetes and hypertension. In this level is also included an increasing of knowledge and awareness in the risk group of people, to have the potential and skills in self-care management to control blood sugar level and blood pressure level.

The result of prevention and controlling in the tertiary level is to reduce morbidity of illness and complication/disability from diabetes and hypertension. Medical treatment, knowledge and awareness should provide in health service for diabetes and hypertension patients, in order to have their potential and skills in self-care management to control blood sugar level and blood pressure level.

PROCESS OF PREVENTION AND CONTROL OF DIABETES AND HYPERTENSION¹³



HEALTH MEASUREMENT USING FOR DATA ANALYSIS ON DIABETES AND HYPERTENSION

This article is aimed to use information for analysis to monitor and evaluation the progression of diabetes and hypertension intervention program in community that takes care by health promotion hospital. Besides, an information can be used for decision making on project/program planning and for determine on intervention for implementation. Information about health care and referral system (43 files)¹⁴ is available on provincial health data center and can be used for the analysis. This information is provided as specific and single health measurement that can represent, such as, percentage of diabetes and hypertension screening, diabetes and hypertension mortality rate, etc. A consideration when using 43 files for analysis is quality of health information¹⁵ as following:

1. **Meaningful:** Have a clear operational definition of what is being measured and what data need to be collected. Represent important information about the program for stakeholders.
2. **Validity:** Closely measure the intended change and information.
3. **Specific:** Can clarify measure, closely measure the intended change and operationally defined in clear terms.
4. **Relevant:** Reflect the intervention's intended activities, outputs, and outcomes.
5. **Sensitive to change:** Adequate and can measure change over time and progress toward performance or outcomes.
6. **Reliable:** Consistently measured across time and different data collectors.
7. **Useful:** Can be used for program improvement and to demonstrate program outcomes.
8. **Acceptable:** Agreement of definition from stakeholders.
9. **Understandable:** Easy to comprehend and interpret.
10. **Practical/feasible:** The data for the indicator should not be too burdensome to collect. The indicator should be reasonable in terms of the data collection cost, frequency, and timeliness for inclusion in the decision-making process.

Provincial health data center, although the quality of health data cannot represent all of the good health measurement, but it acted as health big data. All of health information from Ministry of Public Health services are regularly collected and analyzed here. Health promoting hospital also has health information in its community. The more community health information is used, the more improving of coverage and quality of community health information that bring to the improvement of strategic implementation and the development of program and project planning in community. Information of diabetes and hypertension can be used in term of;

Describe of epidemiology

- Situation and trend of diabetes and hypertension over time change, such as, mortality rate of diabetes and hypertension in community during 2013-2019.
- Problem magnitude of diabetes and hypertension in sex, such as, mortality of diabetes and hypertension classify by sex in community during 2013-2019.
- Problem magnitude of diabetes and hypertension in age, such as, mortality of diabetes and hypertension classify by age group in community during 2013-2019.
- Problem magnitude of diabetes and hypertension in sex and age, such as, mortality of diabetes and hypertension classify by sex and age group in community during 2013-2019.
- Situation and trend of diabetes and hypertension by place, such as, mortality rate of diabetes and hypertension in each community during 2013-2019.

Describe of monitoring and evaluation on disease prevention and control

- Coverage situation of diabetes and hypertension, such as, percentage of coverage on diabetes and hypertension screening in population age over 15 years in community during 2013-2019.
- Result of diabetes screening, such as, percentage of normal group, risk group, illness group from diabetes screening in population age over 15 years in community during 2013-2019.
- Result of hypertension screening, such as, percentage of normal group, risk group, illness group from hypertension screening in population age over 15 years in community during 2013-2019.
- Comparing result of diabetes screening, such as, percentage of normal group, risk group, illness group from diabetes screening by sex and age group in community during 2013-2019.
- Comparing result of hypertension screening, such as, percentage of normal group, risk group, illness group from hypertension screening by sex and age group in community during 2013-2019.
- Comparing result of obesity in risk group from diabetes screening, such as, percentage of obesity in risk group from diabetes screening, classified by sex and age group in community during 2013-2019.
- Comparing result of smoking in risk group from hypertension screening, such as, percentage of smoking in risk group from hypertension screening, classified by sex and age group in community during 2013-2019.
- Comparing result of self-management in diabetes patient, such as,
 - percentage of fasting blood sugar control in diabetes patient receiving care from health promotion hospital, classified by sex and age group during 2013-2019.
 - percentage of weight control according to criteria in diabetes patient receiving care from health promotion hospital, classified by sex and age group during 2013-2019.
- Comparing result of self-management in hypertension patient, such as,
 - percentage of blood pressure control in hypertension patient receiving care from health promotion hospital, classified by sex and age group during 2013-2019.
 - percentage of stop smoking in hypertension patient receiving care from health promotion hospital, classified by sex and age group during 2013-2019.

Using the information to reduce risk and illness in diabetes and hypertension at health promoting hospital with regularly and continuity is not only monitoring and evaluate the implementation of disease prevention and control program, but also improving of health information data-base system in health promoting hospital and also in provincial health data center. Need of nutraceuticals, ayurvedic products and awareness on prescription of drugs information will create an impact on diabetic and hypertension prevention^{16, 17}. These will affect and impact on the validity and value of evidence-based science of diabetes and hypertension prevention and control that inform the fact of present health situation in community.

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Cite this article as:

Supawan Manosoontorn and Jitrapun Pusapukdepob. Information use for diabetes and hypertension prevention and control at health promoting hospital level: A review. Int. Res. J. Pharm. 2019;10(4):9-13 <http://dx.doi.org/10.7897/2230-8407.1004115>

Source of support: Nil, Conflict of interest: None Declared

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