Prevalence of Chronic Diseases Risk Factors among Persons Attending Six Administrative Courses in the Army Training Command Area in 2006

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Background: *The chronic diseases prevalence tends to increase worldwide and the risk factors are identified and reduced.*
Objective: *To survey the prevalence of chronic diseases risk factors among persons attending 6 administrative courses in the Army Training Command area in 2006 and compare with results of the former study.*
Material and Method: *All persons attending the 6 courses were asked to answer the questionnaires. The SPSS for Windows version 10 computer program was used for data analysis.*
Results: *There were 445 respondents. Most of them were men (87.2%), married (75.9%), finished a bachelor degree or higher (93.9%), military personnel (97.5%) and the average age was 43.7 $\pm$ 5.6 years. The prevalence percentages of smoking, alcohol drinking, physical inactivity, preferred high fat food, preferred sweet food, preferred salty food, obesity, hypertension, dyslipidemia, diabetes and hyperstress was 18.7, 13.5, 56.6, 41.9, 20.9, 11.0, 35.4, 14.4, 38.5, 4.3 and 18.7, respectively. Most of the prevalence of risk factors, except smoking, was not decreased when compared to the former study in the similar group of persons in 2004.*
Conclusion: *The prevalence of chronic diseases risk factors in this group was high and seemed difficult to reduce. There should be appropriate surveillance and intervention programs to reduce these risks to prevent disease in this special group.*

Keywords: *Prevalence, Chronic diseases, Risk factors, Military personnel*

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Chronic diseases are influenced by individual behaviors and environmental conditions. The common chronic diseases are diabetes, hypertension, cancer, ischemic heart disease (IHD), stroke, chronic obstructive pulmonary disease (COPD) and chronic kidney disease (CKD)[1]. These diseases place a grave economic burden on countries, and this burden will increase if no action is taken[1-4].

The risk factors or causes of chronic diseases have been analyzed in many research studies[5-17] and the results are shown in Table 1. The most important modifiable risk factors are unhealthy diet, physical inactivity, smoking, alcohol drinking and psychological stress. These causes are expressed through the intermediate risk factors of raised blood pressure, raised glucose levels, abnormal blood lipids and obesity. The major modifiable risk factors, in conjunction with the non-modifiable risk factors of age and heredity, explain the majority of new events of chronic diseases. Ageing is an important marker in the accumulation of modifiable risks for chronic disease and the impact of risk factor increases over life's course[1]. Different risk factors may cause the same or different diseases. Some diseases may act as risk factors and also chronic diseases, e.g. hypertension, dyslipidemia and obesity (Table 1).

Some risk factors of metabolic abnormalities, including at least three conditions from the following five components including abdominal obesity, hypertriglyceridemia, low high-density lipoproteinemia, high

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Table 1. Selected risk factors and associated chronic diseases[5-16]

Risk factors	Chronic diseases
Hypertension	IHD, Stroke, Other cardiovascular diseases, CKD
Dyslipidemia	IHD, Stroke, Other cardiovascular diseases
Obesity	IHD, Stroke, Diabetes, Osteoarthritis, Endometrial cancer, Colon cancer, Breast cancer
Physical inactivity	IHD, Breast cancer, Colon cancer, Diabetes
Cigarette smoking	Lung cancer, Other cancers, COPD, IHD, Hypertension
Alcohol drinking	IHD, Stroke, Hypertension, Diabetes, Liver cancer, Mouth and oropharyngeal cancer, Breast cancer, Oesophageal cancer, Liver cirrhosis
High fat diet	Obesity, Dyslipidemia
Sweet diet	Obesity, Diabetes
Salty diet	Hypertension, CKD
Psychogenic stress	IHD, Peptic ulcer

CKD = chronic kidney disease
COPD = chronic obstructive pulmonary disease
IHD = ischemic heart disease

blood pressure and high fasting blood glucose, co-occur in an individual as metabolic syndrome. This condition is associated with increased risk of cardiovascular diseases[18]. A key lesson from many wealthy countries is that it is possible to delay deaths from chronic diseases by several decades, thereby avoiding deaths among middle-aged people. Successful interventions in middle and older age will reap major short-term benefits. In the longer term, interventions early in life have the potential to reduce substantially the chronic disease pandemic[1,19].

In the United States, there was a surveillance program for risk factors of diseases, especially the Behavioral Risk Factor Surveillance System (BRFSS). Data on risk factors, especially health risk behaviors for chronic diseases and use of preventive practices are essential for developing effective health education and intervention programs and policies to prevent morbidity and mortality from chronic diseases. Continuous monitoring of these behaviors and practices at the national and local levels can help public health programs in evaluating progress toward improving their community health[20].

Thailand also faced the problems of chronic diseases. The leading burden of disease for priority of health problems of Thailand in 1999, except HIV/AIDS and accidents, were stroke, diabetes, liver cancer, IHD and COPD[21]. In 2004, the common leading causes of death of Thai people were cancer, accidents/poisoning, hypertension/heart diseases and stroke, respectively[22].

There were some studies concerning prevalence of risk factors for chronic diseases in Thailand. The study of the prevalence rate of hypercholesterolemia in a Thai urban population in 1996 revealed that the rate was 75.9%[23]. The data from National Health Examination Survey in 1997 showed that the prevalence of obesity was 22.7 % in men, 42.7 % in women and 35.2 % for both sexes[24]. The study in 2000 showed that the prevalence rate of obesity was 39%[25]. The prevalence of hypercholesterolemia among men and women was 66.8% and 66.0%, respectively[26].

There were a lot of surveys for the prevalence of health problems and risk factors of chronic diseases in military personnel. The study in 1995 showed that the prevalence percentages of smoking and hypertension in officers were 22.6 and 9.8, respectively[27]. The survey in the Royal Thai Air Force personnel in 2003 revealed that the prevalence percentages of smoking, hypertension, dyslipidemia, diabetes, physical inactivity and obesity were 24.9, 14.4, 7.8, 3.5, 38.3 and 33.0, respectively[28]. The surveys in persons attending 3 administrative courses in the Army Training Command area in 2004 revealed that the prevalence percentages of smoking, alcohol drinking, physical inactivity, obesity, hypertension, dyslipidemia, diabetes and hyperstress were 18.3, 9.8, 57.8, 29.0, 13.5, 31.9, 4.7 and 22.0, respectively[29]. The study in 2005 showed that the prevalence percentage of obesity in the Royal Thai Army personnel was 32.0[30].

In the Army Training Command area, there are many schools and a lot of training courses for military personnel which may take time from one month to one year. Some civilians may attend these training courses. The persons attending these courses are representatives of the military units from different

parts of the country. This place is a good area for studying the chronic disease risk factors and implement preventive measures to prevent disease and promote their health. Therefore, the survey for prevalence of selected risk factors, i.e. smoking, alcohol drinking, physical inactivity, preferred high fat food, preferred sweet food, preferred salty food, obesity, hypertension, dyslipidemia, diabetes and hyperstress, was done among persons entering 6 administrative courses in 2006 and compared with the former study.

Material and Method

The self-administered questionnaires containing risk factors and stress symptoms were sent to the total of 520 persons attending 6 administrative courses in 2006. The risk factors in this study included the behaviors of smoking, alcohol drinking, physical inactivity, preferred high fat food, preferred sweet food and preferred salty food; and the diseases of obesity, hypertension, dyslipidemia and diabetes. Hyperstress was also included as a psychological risk factor. Physical inactivity meant having exercise less than 3 times per week. Their body weight and height were calculated as weight/height^2 (kg/m^2) for body mass index (BMI). BMI equal or more than 25 kg/m^2 was signified as obesity[31] and the prevalence of obesity of other studies were adjusted to this standard for comparison. The hypertension, dyslipidemia and diabetes were collected from the results of their health checkups. The standard form of Department of Mental Health of Ministry of Public Health of Thailand, containing stress symptoms questionnaires was used for measuring level of stress. The SPSS for Windows version 10 computer program was used for

Table 2. Number and percentages of respondents classified by courses, sex, marital status, education level, military personnel and health checkup

Categories	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Total	Percentage
Average age	47.8	46.2	38.2	44.4	46.4	43.9	43.7 $\pm$ 5.6	
Sex								
Male	51	84	145	38	48	21	387	87.16
Female	17	15	-	8	10	7	57	12.84
Total	68	99	145	46	58	28	444	100.00
Marital status								
Single	9	12	44	8	7	3	83	19.08
Married	49	82	96	33	47	23	330	75.86
Widowed	8	4	2	3	4	1	22	5.06
Total	66	98	142	44	58	27	435	100.00
Education level								
Bachelor	52	56	124	35	37	21	325	74.37
Master	10	37	14	9	12	1	83	18.99
Doctoral	-	5	3	1	2	-	11	2.52
Others	6	-	-	-	6	6	18	4.12
Total	68	98	141	46	57	28	437	100.00
Military personnel								
Yes	66	91	145	45	57	26	429	97.50
No	1	8	-	1	1	-	11	2.50
Total	67	99	145	46	58	26	440	100.00
Health checkup								
Yes	65	99	134	44	53	27	422	95.91
No	2	-	9	2	4	1	18	4.09
Total	67	99	143	46	57	28	440	100.00

Course 1 = Logistics Management Advanced Course
Course 2 = Army War College Course
Course 3 = Command and General Staff Officer Course
Course 4 = Administrative Comptroller Course
Course 5 = Army Senior Officer Course
Course 6 = Civic Affairs Officer Advanced Course

data entry and analysis. The results were compared to the survey of the prevalence of risk factors of persons entering 3 administrative courses in the Army Training Command area in 2004.

Result

There were 445 respondents of the total 520 persons who answered the questionnaires. Most of them were men (87.2 %), married (75.9%), finished bachelor education (74.4 %), military personnel (97.5%) and the average age was 43.7 $\pm$ 5.6 years. The percentage of yearly health checkup of them was 95.9 (Table 2). The prevalence percentages of smoking, alcohol drinking, physical inactivity, preferred high fat food, preferred sweet food, preferred salty food, obesity, hypertension, dyslipidemia, diabetes and hyperstress were 18.7, 13.5, 56.6, 41.9, 20.9, 11.0, 35.4, 14.4, 38.5, 4.3 and 18.7, respectively (Table 3). The prevalence of smoking appeared to decrease from 18.3% to 11.1%. The prevalence of dyslipidemia increased from 31.9% to 47.9%. The prevalence of other risk factors was not changed remarkably when compared with the former study in the similar group of persons attending 3 courses in 2004 (Table 4).

Table 3. Number and percentages of respondents classified by risk factors of chronic diseases

Risk factors	Number	Percent
Smoking (n = 445)	83	18.7
Alcohol drinking (n = 444)	60	13.5
Physical hypoactivity (n = 445)	252	56.6
Preferred high fat food (n = 442)	185	41.9
Preferred sweet food (n = 444)	93	20.9
Preferred salty food (n = 444)	49	11.0
Obesity (n = 437)	145	35.4
Hypertension (n = 445)	64	14.4
Hyperlipidemia (n = 444)	171	38.5
Diabetes mellitus (n = 445)	19	4.3
Hyperstress (n = 443)	83	18.7

Discussion

The Ministry of Public Health of Thailand has initiated a program to promote health for Thai people for more than 60 years. The first National Health Development Plan was set up in 1961. After the Alma-Ata Declaration in 1978, there were a lot of developments and innovations for health promotion activities in Thailand[32], e.g. primary health care, activities derived from Ottawa Charter, National Health Security Act, universal health coverage policy[33], Thai Health Fund, activities from Bangkok Charter[34], Healthy Thailand Policy, etc.

The activities of health promotion and disease prevention in the military personnel are a part of public health service of the country. There are medical authorities, which respond for health services for military personnel. The persons attending administrative courses were selected for the survey of risk factors for chronic diseases because they had several

Table 4. Percentages of respondents of the 3 courses of 2 groups (2004 vs. 2006) and 6 courses of 2006 group classified by risk factors of chronic diseases

Risk factors	Percentages of respondents		
	2004 group* (n = 195)	2006 group* (n = 217)	2006 group (n = 445)
Smoking	18.3	11.1	18.7
Alcohol drinking	9.8	13.4	13.5
Physical hypoactivity	57.8	60.4	56.6
Preferred fat food	40.0	40.6	41.9
Preferred sweet food	14.5	21.2	20.9
Preferred salty food	11.0	9.7	11.0
Obesity	29.0	34.6	35.4
Hypertension	13.5	14.4	14.4
Dyslipidemia	31.9	47.9	38.5
Diabetes mellitus	4.7	5.5	4.3
Hyperstress	22.0	21.2	18.7

* These groups included persons attending Courses 1, 2 and 5 of Table 2

characteristics which were different from other groups. Most of them were men, middle-aged, married, highly educated (74.4% bachelor, 19.0% master, 2.5% doctoral), military personnel and had health checkup (Table 2). Most of them were commanders, staff or experts of military units. They will retire and be changed from aging to aged people in the next one or two decades. They should prepare their old age, especially in health dimension for the quality of life. From the former study, the prevalence of chronic diseases risk factors among them was high. Most prevalence percentages of risk factors were not decreased and some of them appeared to increase when compared with the former study in the similar group of persons attending 3 courses in 2004, i.e. the smoking prevalence decreased from 18.3% in 2004 to 11.1% in 2006, but the dyslipidemia prevalence increased from 31.9% to 47.9% (Table 4). These figures get along with the prevalence of smoking in the Thai population which decreased from 30.1% in 1976 to 17.5% in 2006[35] due to the country campaigns[36], but there were no data for the trend of dyslipidemia in the national level for comparison with this study. After the persons attending the administrative courses participated in the health promotion programs from the national, local and military level, the surveillance of their risk factors should be done for the plan of future health promotion and integrated chronic disease prevention. The combining moderately strong risk factors can substantially improve screening performance[37]. Behavioral risk factor screening tools and interventions should be expanded to cover multiple risks. Controlling these behavioral risk factors and using preventive health services can substantially reduce the morbidity and mortality in the population. Continuous monitoring of these behaviors and implementing appropriate public health measures for prevention and control of chronic diseases[38] or preventive services are essential for developing health promotion, intervention programs, and health policies at all levels.

Conclusion

The prevalence of chronic disease risk factors in these groups was high. There should be regular surveillance and continuous intervention programs and campaigns to reduce these risks to prevent disease and promote good health.

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ความชุกของปัจจัยเสี่ยงต่อโรคเรื้อรังในผู้เข้าศึกษาหลักสูตรบริหาร 6 หลักสูตรในบริเวณกรมยุทธศึกษาทหารบก ในปี พ.ศ. 2549

บุญเติม แสงดิษฐ, ผจงจิต เกษมกิจวัฒนา, หทัยรัตน์ ขาวเอี่ยม

***ภูมิหลัง**: ความชุกของโรคเรื้อรังมีแนวโน้มสูงขึ้นทั่วโลก และมีการศึกษาปัจจัยเสี่ยงของโรคเรื้อรังเพื่อพยายามลดปัจจัยดังกล่าว*

***วัตถุประสงค์**: เพื่อศึกษาปัจจัยเสี่ยงต่อโรคเรื้อรังในผู้เข้าศึกษาหลักสูตรบริหาร 6 หลักสูตร ในบริเวณกรมยุทธศึกษาทหารบกในปี พ.ศ. 2549 และเปรียบเทียบกับการศึกษาที่ผ่านมา*

***วัสดุและวิธีการ**: ผู้เข้ารับการศึกษาทั้งหมด 520 คนได้รับแบบสอบถามที่มีคำถามเกี่ยวกับปัจจัยเสี่ยงและอาการของความเครียด ใช้โปรแกรม SPSS for Window รุ่นที่ 10 ในการประมวลผลและวิเคราะห์ข้อมูล*

***ผลการศึกษา**: มีผู้ตอบแบบสอบถาม 445 คน ส่วนใหญ่เป็นเพศชาย (ร้อยละ 87.2) สถานภาพสมรสคู่ (ร้อยละ 75.9) จบการศึกษาระดับปริญญาตรีขึ้นไป (ร้อยละ 93.9) เป็นบุคลากรทางการทหาร (ร้อยละ 97.5) อายุเฉลี่ย 43.7 $\pm$ 5.6 ปี ได้รับการตรวจสุขภาพประจำปี ร้อยละ 95.9 ความชุกของการสูบบุหรี่ การดื่มสุรา การออกกำลังกายน้อย การรับประทานอาหารที่มีไขมันสูง การรับประทานอาหารหวานจัด การรับประทานอาหารเค็มจัด โรคอ้วน ความดันโลหิตสูง ไขมันในเลือดผิดปกติ เบาหวาน และระดับความเครียดสูงกว่าปกติ พบร้อยละ 18.7, 13.5, 56.6, 41.9, 20.9, 11.0, 35.4, 14.4, 38.5, 4.3 และ 18.7 ตามลำดับ เมื่อเปรียบเทียบกับการศึกษาที่ผ่านมาในกลุ่มที่มีลักษณะใกล้เคียงกัน ในบุคคลที่เข้าศึกษา 3 หลักสูตรในปี พ.ศ. 2549 พบว่าปัจจัยเสี่ยงส่วนใหญ่ยังไม่ลดลง ยกเว้นการสูบบุหรี่*

***สรุป**: ความชุกของปัจจัยเสี่ยงต่อโรคเรื้อรังในกลุ่มนี้ยังอยู่ในระดับสูงและดูเหมือนว่าเป็นการยากที่จะทำให้ลดลง จึงควรมีการเฝ้าระวัง และมีโครงการลดปัจจัยเสี่ยงที่เหมาะสมอย่างต่อเนื่อง เพื่อลดปัจจัยเสี่ยงต่อการเกิดโรคและส่งเสริมสุขภาพและคุณภาพชีวิตในบุคลากรกลุ่มนี้*