IMPACT OF SOCIOECONOMICS DISPARITIES ON CARDIOVASCULAR DISEASES IN THAI POPULATION: THE NATIONAL SOCIOECONOMICS STUDY

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Abstract

Cardiovascular diseases (CVDs) was one of the three leading cause of death in Thai population. Whether socioeconomics (SES) determinates are associated with CVDs is unclear. This study aimed to determine the association between socioeconomics factors and CVDs prevalence.

The study used the data form the NationalSocioeconomics Survey that was a cross-sectional study conducted by the National Statistical Office in 2012 The 16,905 sampleswere multi stages randomly selectedfrom all 77 provinces in Thailand to response to a structure questionnaire. The association between SES and CVDs was modeling by multiple logistic regression with controlling the covariates.

Most of the samples were female (53.21%) with the average age of 44.38 (S.D.=18.16) years old. The prevalence of CVDs was 10.64% (95% CI: 0.10% To 0.11%.).The result of multivariate analysis indicated that, SES that were risk factors of CVDs were female (OR_{adj}=1.59, 95% CI=1.36 to 1.85), aged ≥ 62 years old (OR_{adj}=83.53, 95% CI=38.25 to 182.44) and were the government officer/state enterprise (OR_{adj}=1.43, 95% CI=1.04 to 2.00). On the other hand the SES that were protective factors of CVDs were living in non-municipalities area(OR_{adj}=0.75;95%CI=0.63 to 0.88; p-value=0.001), had higher education(OR_{adj}=0.51; 95% CI=0.35 to 0.75; p-value=0.001), and living in the Northeast region(OR_{adj}= 0.54, 95% CI=0.41 to 0.71; p-value<0.001).

SES disparities had influences on CVDs prevalence. The vulnerable groups were female, elderly, government, state enterprise officers, low education, urban residents and specific regions.

Keywords: Cardiovascular diseases, socioeconomic, disparities, national survey, impact Thailand

A. Introduction

From the report of World Health Organization (WHO), each year 17.5 million people die from CVDs and it was 31% of all deaths worldwide. More than 75 % of CVDs death was occur in low – income and middle – income country. Thailand is the one country in this group, we also facing with the high death rate because of CVDs. It is the one of five leading causes of death in Thai population, in 2013 there were 54,530 death (84.38 per 100,000 population) from CVDs (number from Bureau of Policy and Strategy, Office of Permanent Secretary). The government had to allocate budget of 10% or more for treatment and do the health promotion every year (number from Bureau of the Budget, Prime minister's Office). Although, Thai researchers have conducted a lot of research concerning CVDs, there are mainly focuses on the relationship between health behavior and CVDs. Only a few research that explore their association with socioeconomic status. This study was conducted using the nationwide population database of Thailand.

B. Method

This study examined the relationship between the socioeconomic status and CVDs using the data set of a cross-sectional study conducted by the National Statistical Office (NSO). A Stratified Two–stage Sampling was adopted for the survey. Provinces were considered to be constituted strata. There were altogether 76 strata; each stratum was divided into two parts according to the type of local administration, namely, municipal areas, and non-municipal areas. Next step was selection of primary sampling units. The sample selection of blocks/villages was performed separately and independently in each part by using probability proportional to the total number of households in that block or village. The last step of sampling was selection of secondary sampling units. In this stage, private households were the ultimate sampling units. Households in every sample block and village were listed to serve as the sampling frame then the set of households was rearranged by size of household (classified by number of household members) and type of economic household (determined on the basis of the occupational type which produces the highest income in the household). Finally, private sampled households were selected by using the systematic method in each type of local administration.

Data was analyzed by using STATA (Version 13, Stata Corporation, and College Station TX). Bivariate analysis was performed to explore the crude relationship of one individual independent with the outcome variable without considering the effect from other variables. The independent variables from crude analysis that have a p-value ≤ 0.25 were included in the multivariate model by using multiple logistic regressions to explore the association between cardiovascular disease (CVDs) that were presented with adjusted OR and 95% confident interval. The best modeling was constructed using the backward elimination that excluded the variable that had p-value $\geq$ 0.05 until cannot exclude any variables. This model was used to determine the association between the factors and CVDs.

C. Result and discussion

Majority the respondents were female

(53.21%). Age variable was categorized in groups with the range of 15 years that were 15-30 years old (26.23%), 31-46 years old (28.45%), 47-62 years old (27.97%) > 62 years old (17.34%). Most of the samples were married (62.07%), lived in the non-municipalities area (56.39%). Almost half finished primary education (49.79%). The highest proportion was from the Northeast of Thailand (29.69%). More than half of population said that they have no current liabilities 75.86% and most of them have a career as an agriculturist or fisherman 37.55%.

The result form bivariate analysis indicated that female (OR_{adj} = 1.8, 95% CI = 1.59 to 1.95, p-value<0.001), people who were older than 62 years old (OR_{adj} = 136.8, 95% CI = 81.92 to 228.49, p-value<0.001), had widow status (OR_{adj}= 14.7, 95% CI = 11.87 to 18.29, p-value<0.001), lived in North (OR_{adj} = 1.2, 95 % CI = 1.07 to 1.43, p-value<0.001) and working as personnel/employee in private sector (OR_{adj}= 4.5, 95% CI = 0.38 to 0.56, p-value<0.001) had higher oods of having CVDs. High education (OR_{adj} = 0.2, 95% CI = 0.15 to 0.22, p-value<0.001), lived in non-municipalities area (OR_{adj} = 0.8, 95% CI = 0.70 to 0.84, p3value<0.001), live in the Northeast of Thailand (OR_{adj} = 0.5, 95% CI = 0.42 to 0.57, p-value<0.001) general contractors/labor (OR_{adj} = 0.5, 95% CI = 0.38 to 0.86, p-value<0.001) were the protective factors.

In the final model of the multivariate analysis, the risk factors of CVDs were female (OR_{adj} = 1.59, 95% CI = 1.36 to 1.85), older than 62 years old (OR_{adj} = 83.53, 95% CI = 38.25 to 182.44) and the government officer/state enterprise (OR_{adj} = 1.43, 95% CI = 1.04 to 2.00) e and occupation. On the other hand the protective factors were living in non-municipalities area (OR_{adj} = 0.75, 95% CI = 0.63 to 0.88; p-value = 0.001, graduated with degree or higher (OR_{adj} = 0.51, 95% CI = 0.35 to 0.75; p-value = 0.001) and living in the Northeast), and (OR_{adj} = 0.54, 95% CI = 0.41 to 0.71; p-value < 0.001).

From the multivariate analysis the highest magnitude of association with CVDs was age. Getting older, people organ and function are generally deteriorate. A previous study in America indicated that the first heart attack is happen in the male with average age 64.7 years and female is 72.2 years and the incidence is greatly increase in the 60 – 79 age group (1). This study also found that compared with males, females had higher risk. The study from Saudi Arabia showed that 38% of boys and 52.7% of girls spent 3 hours a day in front of the television, 25.7% of males and 42.9% of female didn't have any physical exercise (2). For the developed country male and female had almost the same CVDs risk of death risk (3). In America one in three women die from having cardiovascular disease that equal to 1 person per minute (4) and the relative risk and event rate of CVDs were increased in female more than male in every age group (5). From the traditional risk factor female were more likely to have the effect from CVDs than male and there were some female-specific risk factor that can found during the pregnancy period (6).

Even though females had a higher risk of having CVDs but the mortality was higher in men than males when adjusted for age (7). Marital status showed a significantly role in the bivariate analysis but there was no significant role in multivariate analysis. The empirical study in US showed that married status had association with CVDs because it was associated with the increasing of BMI among those who were married (8). In japan people who lived alone were more likely to drinking when compare with who were with others as well as the social isolation which can cause depression that is the risk factor for many disease as well as CVDs (9). Married women seem to have lower risk than women who divorced or had widowed status in term of good economic status and psychosocial resources especially for women who were not remarry, this group faced with the worse chronic conditions such as CVDs (10). Higher education level is the protective factor for people who finished high school or higher decreased the chance from having CVDs by when compared with the group that had only primary education or lower. Education variable played the significant role, education is the factor that can improve socioeconomic status that influencing health status of population (11). It was statistical significantly associated with CVDs prevalence (12), people who had low education will have higher risk of having CVDs more than person who has higher education level. The more educational level the more decreasing risk factor with 13% (13) or we know as the protective factor. Education can influence long term health due to have more preventive knowledge, healthy diet, healthy behavior (14) and high educate people were more likely to have more effective communication with the health personnel about health information exchange and proactive in searching for health information (15).

Different educational level is mean different job and different income level but income inequality was not a direct effect of cardiovascular disease mortality. For the occupation, the risk group were people who work as a government officer/state enterprise and production in both craft and industry but for the personnel/employee in private sector and general contractors/labor were the protective factors which decreasing the chance from having CVDs. In contrast there were some previous studies indicated that the prevalence of CVDs were higher in the labor group. The study from Singapore showed the relationship between people who working as the professional driver and CVDs due to the long working hours, traffic jam and low physical activities which had higher risk when compared with other occupations (16). The result from the study in Spanish workers showed the highest prevalence of cardiovascular risks (CVRs) were in the Agriculture and Construction sectors whereas the lowest prevalence was in the industrial workers because in Spain the blue-collar had higher BMI than the white-collar occupation groups as well as the CVRs prevalence (17).

When we focus on the living area people who lived in non-municipalities area (non-municipalities area mean the area in the sub-

rural or rural which is less developed than municipalities' area) is the protective factor that can decrease the risk from CVDs. People who lived in the urban area were more likely to have a higher risk than people who lived in the rural area, since they had different lifestyles and different exposures. The chances of having CVDs in low and middle income countries were lower than those in high income countries. However, the mortality rate of CVDs was higher in low and middle income countries. This might be happen due to the management and treatment that was ineffective (18), **(**19**).** For the major modifiable factors (such as hypertension, smoking, diabetes mellitus and excessive alcohol intake) of cardiovascular disease (CVDs) in adult population were very commonly found in semi-urban area (20). In the boarder view of the region when compared with Bangkok and boundary provinces, people in the North had higher risk, whereas living in the Northeast region had lower risks. This might be the contribution of economic status and lifestyle.

D. Conclusion

Gender (female) and age (older than 62 yrs.) were non-modifying risk factors of CVDs. Concerning modifying factor , working in government officer/ state enterprise was CVDs risk factors whereas lived in non- municipality areas, in the Northeast, had high educational attainment were protective factors of CVDs.

E. References

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