Chapter 1

Introduction

1.1 Background

One of the most important issues of the utilization of mortality data is the high percent of deaths coded as ill-defined. It indicates that the reliability and accuracy of cause-specific mortality data is low (Lozano et al, 2001: Mathers et al, 2005). This problem is common in developing countries with the percent varies considerably across countries ranged from 19% in Albania to 49 % in Thailand (Mathers et al, 2005). In contrast, in developed countries the percent of ill-defined death most are less than 4% such as 0.7% in Australia year 2003, 1.2% in the United States year 2002, 1.4% in Canada year 2003, 2.8% in Sweden year 2002 and 3.4% in Japan year 2004 (Siejel, 2011). The trend of ill-defined deaths in most developed countries declined, especially in England and Wales it droped from 10% in 1911 to 2.5% in 2000 (Griffiths and Brock, 2003). In Japan it droped from 5.3% in 1980 to 3.1% in 2004, in Spain it droped from 3.7% in 1980 to 2.8% in 2004 and in Italy it droped from 2.8% in 1980 to 1.7% in 2004 (Eileen et al, 2010). Most of these decreasing trends resulted from the decreasing use of senility code. In developing countries, the trend of ill-defined death also decreased. For example, in South Africa the trends droped from 12.8% to 9.2% in males and from 15.0% to 11.1% in females in 1997-2007 (Bradshaw et al, 2010). Incorrect or systematic biases in diagnosis, incorrect or incomplete death certificates, misinterpretation of ICD rules for selection of the underlying cause, and variations in the use of coding categories for unknown and ill-

defined lead to the increasing trend of ill-defined (WHO, 2012). Coding practices is also cause of inaccuracy of mortality data, particularly in the use of codes for "ill-defined" and "unknown cause of dead" (WHO, 2010). Thus, the use of codes for ill-defined and unknown causes must be taken into account to validly compare mortality rates for specific causes across countries (WHO, 2004). Incompleteness and inaccuracy of the mortality data due to ill-defined or unknown cause of dead in death certificate in Thailand is still the major problem. There was 40% of death that defined as unclear or unknown in 2005 (Polprasert and Porapakkham, 2005). Therefore, the incompleteness and inaccuracy of mortality data affect the uncertain mortality statistics. In the other word, it leads to overestimate for some diseases and underestimate for other diseases.

This study aimed to examine the distribution and trends of "ill-defined" deaths in Thailand under the period of 2000 to 2009.

1.2 Literature reviews

1.2.1 The quality of vital registration data

The vital registration data in many countries especially in developing countries have poor quality. The high percent of using ill-defined codes indicate the low quality of mortality data. Mather et al (2005) divided the quality of death data to each member state of WHO on death registration data into 3 groups: high, medium and low quality. High quality data defined as the completeness of data is > 90% completeceness and ill-defined codes appear on <10% of registrations. Medium quality data defined as the completeness of data is 70-90% or ill-defined codes appear on 10-20% of

registrations or completeness > 90% and ill-defined codes appear on <10% of registrations. Low quality data defined as the completeness is <70% or ill-defined codes appear on > 20% of registrations. In Thailand, the completeness of death registration in 1996 was 94.8% (Prasartkul and Vapattanawong, 2006) while deaths from ill-defined in 2005 were reported for 40% (Polprasert and Porapkkham, 2005). Mathers et al (2005) identified Thailand as low quality of mortality data. The high percent of miscoding and misclassification of other causes to ill-defined codes in Thailand were reported such as 35% of the 43,000 neoplasm deaths were coded as ill-defined (Ministry of Public Health, 2012), 47% of cardiovascular deaths were due to ill-defined in 1980 in Maxico (Lozano et al, 2001) . The sources of the errors may be due to insufficient knowledge of the disease that caused death, lack of training of the physicians in certification or to superficiality (D'Amico et al, 1999) or the errors from translation of cause of death from English into Thai by physician (Tangcharoensathien et al, 2006). Thus the use of mortality data for setting up public health policies is limited. Before implementing any public health policies, the accurarcy of the data is needed to examine or verify by verbal atopsy data. Rukumnuaykit (2006) suggested that the users can take major causes of death into account for their analysis or larger grouping data would make the analyses more consistent and less prone to possible errors.

1.2.2 Ill-defined mortality and its trend

A study of the global status of cause of death data from 115 countries with the available of death registration data by Mathers et al (2005) estimated that deaths coded to ill-defined between 1950-2001 ranged from 0% to 49%. Thailand had the highest proportion of deaths coded to ill-defined codes with 49% followed by Sri Lanka with 46% and Cyprus with 44%. Most of developed countries had the propotion of ill-defined deaths ranged from 3% to15% (Mather et al, 2005).

A decreasing trend of ill-defined mortality was observed in many countries such as England, Brazil, Japan, Spain and France (Griffiths and Brock, 2003; Junior et al, 2011; Siejel, 2011). A substantial decreasing trend occurred in Brazil which decreased from 45.7% in 1979 to 8.1% in 2009, from 23% in 1980 to 21% in 1988 among black males and females in the United States (Amstrong et al, 1996). In addition, it showed a decreasing trend in all age groups and both sexes (Junior et al, 2011). In Russia, the proportion of ill-defined deaths increased from 3.8% in 1990 to 8.83% in 2005 for males in working-age and from 1.17% to 3.51% for females in the same age group (Gavrilova, et al, 2008).

Gender of ill-defined deaths

Many countries reported that females had higher deaths coded ill-defined than males. In England in 2002, the incidence of ill-defined coded at discharge among unplanned hospital admissions of older people was 12.4% in females and 9.1% in males (Walsh et al, 2008). Ill-defined deaths in 1996 among males and females in Vietnam were 11.5% and 24.9% (Hoa et al, 2012), 13.2% and 16.7% in South African in 1996

(Bradshaw et al, 2002), 33.1% and 44.7% in Thailand in 2005 (Porapakkham et al, 2010), 6% and 8.3% in 1993 in Bahrain (Al-Mahroos, 2000) and 7.7% and 8.5% in Brazil in 2009 (Junior et al, 2011). Ill-defined conditions were the 5th leading cause of death for males and the 4th for females in Russia (Gavrilova et al, 2008).

Age of ill-defined deaths

The proportion of ill-defined deaths was highest in elderly as reported in many studies (Giffinths and Brock, 2003; Junior et al, 2011). In Brazil, it was 57.1% in aged 60 years and older, 18% in aged less than one year, 4.4% in aged 1-4 years, 2.1% in aged 5-19 years and 18.4% in aged 20 -59 years (Junior et al, 2011). In England, the proportion of ill-defined death increased in aged over 65 years from 3.0 in 1995 to 5.7 in 2003 (Walsh, et al, 2008). In 2007, ill-defined deaths in South Africa was found over 20% among eldery aged 80 years and over (Bradshaw,et al, 2010). Ill-defined deaths among eldery aged 65-74 years in Nepal was 42.3% in 1994 (D'Amico et al, 1999) and 37% in older than 70 years in Bahrain in 2006 (Abulfatih and Hamadeh, 2010). However, ill-defined deaths in Russia were highest in working age group (20-59 years) with the increasing trend in all age groups from 1991 to 2005 (Gavrilova, et al, 2008). The proportion due to ill-defined death rates in all age groups decreased from 67% in 1979 to 3.9% in 2009 in Brazil (Junior et al, 2011).

Places of ill-defined deaths

In Brazil, the capital cities had the lower rates of Ill-defined deaths than other regions. However, the great reduction in rates was observed in the countryside (Junior et al, 2011), 11.1% in Centre-Wast and 30.5% in Northest in 2000 to 2004 (França et al, 2008), 89-100% of working-age in Kirov and Smolensk regions of Russia (Gavrilova, et al, 2008). Ill-defined deaths were found 75% outside hospital (Choprapawan, 2005), 62.7% in homes in Bahrain (Abulfatih and Hamadeh, 2010) and deaths in Thailand 80% outside hospital in 1980 in the United States (Amstrong et al, 1996). The proportion ill-defined death rates in the Northeast region increased 2.6% between 1979 and 1985 (Junior et al, 2011) whereas in the District of Columbia had the highest overall rate (21.7 per 100,000).

1.3 Objectives

The objectives of this study are as follows:

1.3.1 To investigate the trends of death rate for ill-defined mortality in Thailand from 2000 to 2009.

1.3.2 To develop the model for estimating death rate for ill-defined mortality in Thailand.

1.4 Expected advantages

1.4.1 Information of the distribution of ill-defined death rate in Thailand is revealed and the magnitude of the problem on the quality of mortality data is obtained.

1.4.2 Statistical model for estimating ill-defined death rate in Thailand is obtained.

1.4.3 The results from this study can be used to indicate the quality of death certificate data in Thailand and these data are needed to validate by other reliable data sources such as verbal autopsy before making any decision for setting up public health policies.