Chapter 5
Health Status and Health Problems of Thai People

1. Overall Health Status Indicators

Over the past three decades, the overall health status of Thai people has a promising trend of improvement as evidenced by the following indicators:

1.1 Life Expectancy at Birth

In 2008, the life expectancy at birth of Thai people was 70 years. Though higher than that of the people in other developing countries and of the world population, life expectancy of Thais is still lower than that for several other ASEAN countries (Table 5.1). However, during the period 1964–2010, Thais' life expectancy at birth substantially increased from 55.9 years to 70.6 years for males and from 62.0 years to 77.5 years for females. In 2030, it is expected that the life expectancy of Thai citizens will reach 76.0 years for males and 82.7 years for females (Table 5.2).

The World Health Report 2009 also revealed that, Thailand's healthy life expectancy (HALE) was 62 years: 59 for males and 65 for females, which were lower than those for Singapore, Brunei and Malaysia (Table 5.1).

Table 5.1 Life expectancy at birth (in years) of Thai people in comparison with those for other countries

Group and country	Life expectancy at birth						Healthy life expectancy (2002)[4]			Healthy life expectancy (2009)[7]		
	1998[1]	2002[2]	2004[3]	2006[5]	2007[6]	2008[8]	Total	Male	Female	Total	Male	Female
WHO / SEAR												
Sri lanka	73.3	72.5	74.3	72	74.0	69	61.6	59.2	64.0	63	61	65
Thailand	**68.9**	**69.1**	**70.3**	**72**	**68.7**	**70**	**60.1**	**57.7**	**62.4**	**62**	**59**	**65**
Indonesia	65.6	66.6	67.2	68	70.5	67	58.1	57.4	58.9	60	60	61
Maldives	65.0	67.2	67.0	72	71.1	74	57.8	59.0	56.6	64	64	64
India	62.9	63.7	63.6	63	63.4	64	53.5	53.3	53.6	56	56	57
Bhutan	61.2	63.0	63.4	64	65.7	63	52.9	52.9	52.9	55	54	56
Myanmar	60.6	57.2	60.5	60	61.2	54	51.7	49.9	53.5	50	48	52
Bangladesh	58.6	61.1	63.3	63	65.7	65	54.3	55.3	53.3	56	56	55
Nepal	57.8	59.6	62.1	62	66.3	63	51.8	52.5	51.1	55	55	55
ASEAN												
Singapore	77.3	78.0	78.9	80	80.2	81	70.1	68.8	71.3	73	71	75
Brunei	75.7	76.2	76.6	77	77.0	76	65.3	65.1	65.5	66	66	67
Malaysia	72.2	73.0	73.4	72	74.1	73	63.2	61.6	64.8	64	62	66
Thailand	**68.9**	**69.1**	**71.4**	**72**	**68.7**	**70**	**60.1**	**57.7**	**62.4**	**62**	**59**	**65**
Philippines	68.6	69.8	70.7	68	71.6	70	59.3	57.1	61.5	62	59	64
Vietnam	67.8	69.0	70.8	72	74.3	73	61.3	59.8	62.9	64	62	66
Indonesia	65.6	66.6	67.2	68	70.5	67	58.1	57.4	58.9	60	60	61
Myanmar	60.6	57.2	60.5	60	61.2	54	51.7	49.9	53.5	50	48	52
Laos	53.7	54.3	55.1	60	64.6	62	47.0	47.1	47.0	54	53	54
Cambodia	53.5	57.4	56.5	62	60.6	62	47.5	45.6	49.5	53	51	55
High human development index (HDI)												
Japan	80.0	81.5	82.2	83	82.7	53.0	75.0	72.3	77.7	76	73	78
Canada	79.1	79.3	80.2	81	80.6	81.0	72.0	70.1	74.0	73	71	75
Iceland	79.1	79.9	80.9	81	81.7	82	72.8	72.1	73.6	74	71	75
Sweden	78.7	80.0	80.3	81	80.8	81	73.3	71.9	74.8	74	72	75
Switzerland	78.7	79.1	80.7	82	81.7	82	73.2	71.1	75.3	75	73	76
World	**66.9**	**66.9**	**67.3**	**67**	**67.5**	**68**	-	-	-	**59**	**58**	**61**
Very high HDI	**77.0**	**77.4**	**78.0**	**80**	**80.1**	**80**	-	-	-	-	-	-
Medium HDI	**66.9**	**97.2**	**67.3**	**69**	**66.9**	**67**	-	-	-	-	-	-

Source: [1] UNDP, Human Development Report 2000. [2] UNDP, Human Development Report 2004.
[3] UNDP, Human Development Report 2006. [4] WHO, World Health Report 2003.
[5] WHO, World Health Report 2008. [6] UNDP, Human Development Report 2009.
[7] WHO, World Health Statistics 2010. [8] UNDP, Human Development Report 2010.

Note: HDI = human development index.

Table 5.2 Life expectancy at birth (in years) of Thai people

Year	Males	Females	Female-male difference
1964 - 1965[(1)]	55.9	62.0	6.1
1974 - 1976[(1)]	58.0	63.8	5.8
1985 - 1986[(1)]	63.8	68.9	5.1
1989[(1)]	65.6	70.9	5.3
1991[(1)]	67.7	72.4	4.7
1995 - 1996[(1)]	69.9	74.9	5.0
2005 - 2006[(1)]	69.9	77.6	7.7
2005 - 2010[(2)]	70.6	77.5	6.9
2010 - 2015[(2)]	71.9	78.8	6.9
2015 - 2020[(2)]	77.3	80.1	6.8
2020 - 2025[(2)]	74.6	81.4	6.8
2025 - 2030[(2)]	76.0	82.7	6.7

Sources: [(1)] Reports on Population Change Surveys, 1964–1965, 1974–1976, 1985-–1986, 1989, 1991, 1995, 1996 and 2005–2006. National Statistical Office.

[(2)] Population Projection for Thailand, 2000–2030. Office of the National Economic and Social Development Board, 2007.

1.2 Maternal Mortality

The maternal mortality ratio (MMR) in Thailand has declined from 374.3 per 100,000 live births in 1962 to 10.7 per 100,000 live births in 2009 (Figure 5.1). However, MMR estimates from several surveys are higher than the reported figure. For example, the 1995–1996 RAMOS[1] survey on mortality among women of reproductive age revealed a MMR of 44.1, while the Safe Motherhood Project[2] reported the MMR at 16.3 and the 2003 study of Yongjua Laosiritaworn[3] reported a MMR of 52.2 for the same period; and Worawan Chandoevwit and colleaques[4] (2007) reported a MMR of 41.6 for 2006.

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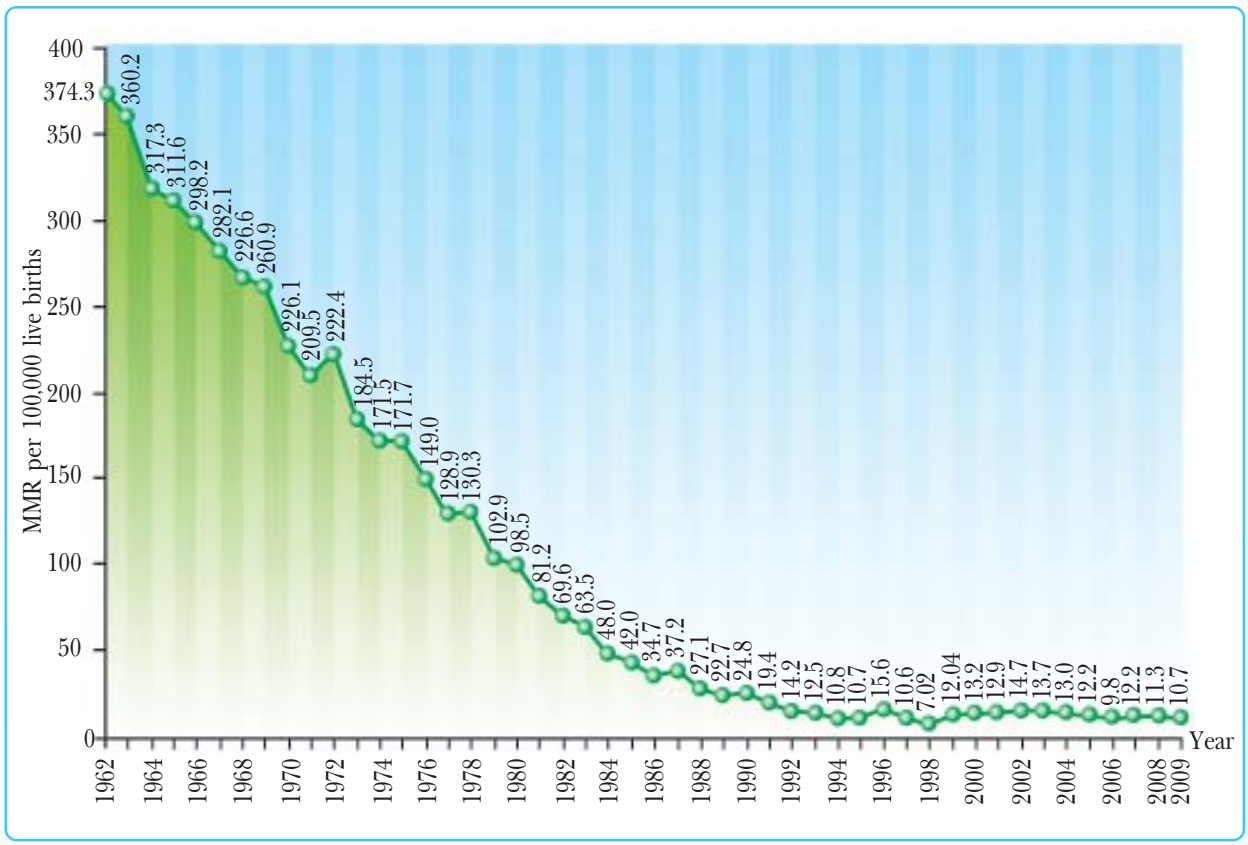
[1] Survey on Mortality among Women of Reproductive Age Using the Reproductive Age Mortality Survey Method. Bureau of Health Promotion, Department of Health, MoPH.

[2] Bureau of Health Promotion, Department of Health. Report on Maternal Mortality in Thailand. Safe Motherhood Project, 1995-1996.

[3] Yongjua Laosiritaworn. Situation and Report on Maternal Mortality Resulting from Pregnancy and Childbirth in Thailand, 1995-1996, 2003.

[4]. Worawan Chandoevwit et al. Using Multiple Data for Calculating the Maternal Mortality Ratio in Thailand, TDRI, 2007.

Figure 5.1 Maternal mortality ratio, Thailand, 1962–2009



Sources: Civil Registration Database, Ministry of Interior, and Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

1.3 Infant Mortality

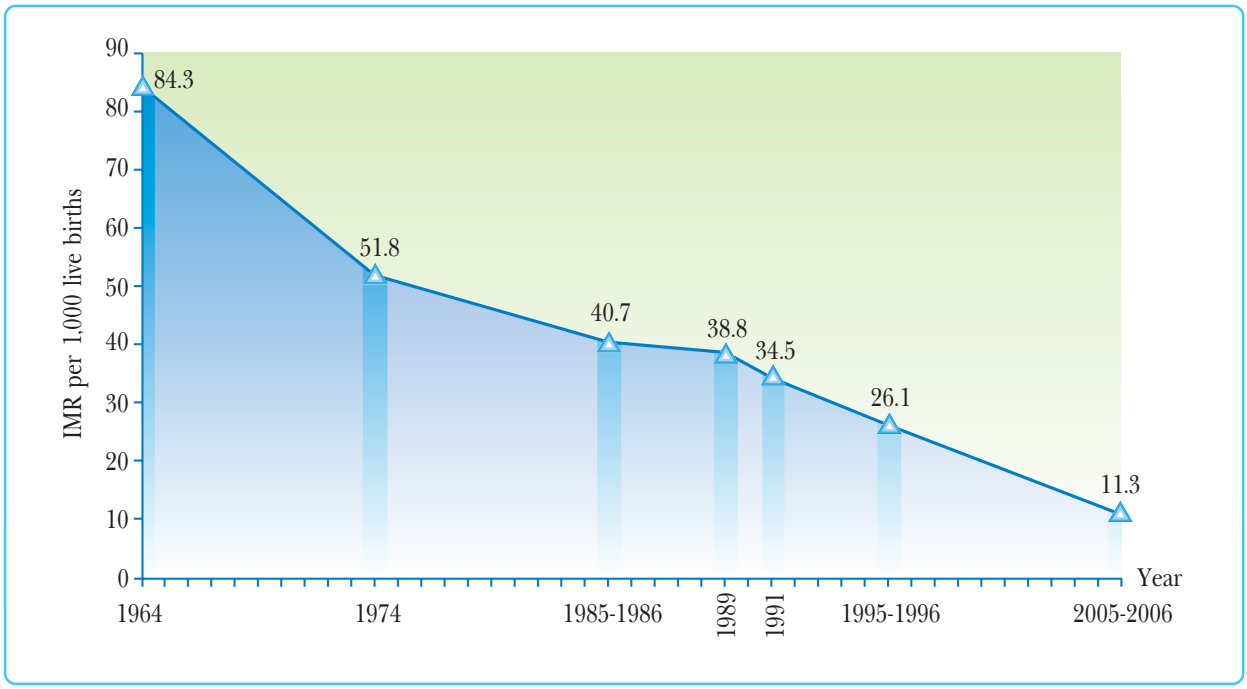
In Thailand, the infant mortality rate (IMR, per 1,000 live births) constantly declined from 84.3 in 1964 to 40.7 in 1985–1986 and to 11.3 in 2005–2006 (Figure 5.2). However, although the IMR for Thailand is lower than the global average, it is still higher than that for some other countries in the same region such as Singapore and Malaysia (Table 5.3).

Table 5.3 Infant mortality rate and child mortality rate for Thailand in comparison with those for other countries, 1980, 2001, 2003, 2004, 2006, 2007 and 2008

Group and country	IMR Per 1,000 live birth							CMR per 1,000 live birth						
	1980	2001	2003	2004	2006	2007	2008	1980	2001	2003	2004	2006	2007	2008
WHO / SEAR														
North Korea	32	42	42	42	42	-	42	43	55	55	55	55	-	65
Sri lanka	34	17	13	12	11	17	13	48	19	15	14	13	21	15
Thailand	**49**	**24**	**23**	**18**	**7**	**6**	**13**	**58**	**28**	**26**	**21**	**8**	**7**	**14**
Indonesia	90	33	31	30	26	25	31	125	45	41	38	34	31	41
Myanmar	109	77	76	76	74	79	71	134	109	107	106	104	113	98
India	115	67	63	62	57	54	52	173	93	87	85	76	72	69
Nepal	132	66	61	59	46	43	41	195	91	82	76	59	55	51
Bangladesh	132	51	46	56	52	47	43	205	77	69	77	62	61	54
ASEAN														
Singapore	12	3	3	3	3	2	2	13	4	5	3	3	3	3
Malaysia	30	8	7	10	10	10	6	42	8	7	12	12	11	6
Thailand	**49**	**24**	**23**	**18**	**7**	**6**	**13**	**58**	**28**	**26**	**21**	**8**	**7**	**14**
Philippines	52	29	27	26	24	23	26	81	38	36	34	32	28	32
Vietnam	57	30	19	17	15	13	12	70	38	23	23	17	15	14
Indonesia	90	33	31	30	26	25	31	125	45	41	38	34	31	41
Myanmar	109	77	76	76	74	79	71	134	109	107	106	104	113	98
Laos	127	87	82	65	59	56	48	200	100	91	83	75	70	61
High income														
Sweden	7	3	3	3	3	2	2	8	3	4	4	4	3	3
Japan	8	3	3	3	3	3	3	10	5	5	4	4	4	4
Switzerland	9	5	4	5	4	4	4	11	6	6	5	5	5	5
Canada	10	5	5	5	5	5	6	13	7	7	6	6	6	6
Iceland	11	6	5	5	4	3	3	14	6	7	6	4	4	4
World	**80**	**56**	**57**	**54**	**49**	**46**	**44**	**121**	**81**	**86**	**79**	**71**	**67**	**63**
High income	**13**	**5**	**5**	**6**	**6**	**6**	**5**	**15**	**7**	**7**	**7**	**7**	**7**	**6**
Middle income	**57**	**31**	**30**	**30**	**27**	**19**	**38**	**80**	**38**	**37**	**37**	**35**	**22**	**49**
Low income	**116**	**80**	**80**	**79**	**73**	**80**	**79**	**171**	**121**	**123**	**122**	**110**	**126**	**83**

Sources:
1. World Bank, World Development Indicators, 1999, 2000/2001, 2003, 2004, 2005, 2006.
2. WHO, World Health Statistics, 2008.
3. WHO, World Health Statistics, 2009.
4. UNDP, Human Development Report 2010.

Figure 5.2 Infant mortality rate for Thailand, 1964 – 2006

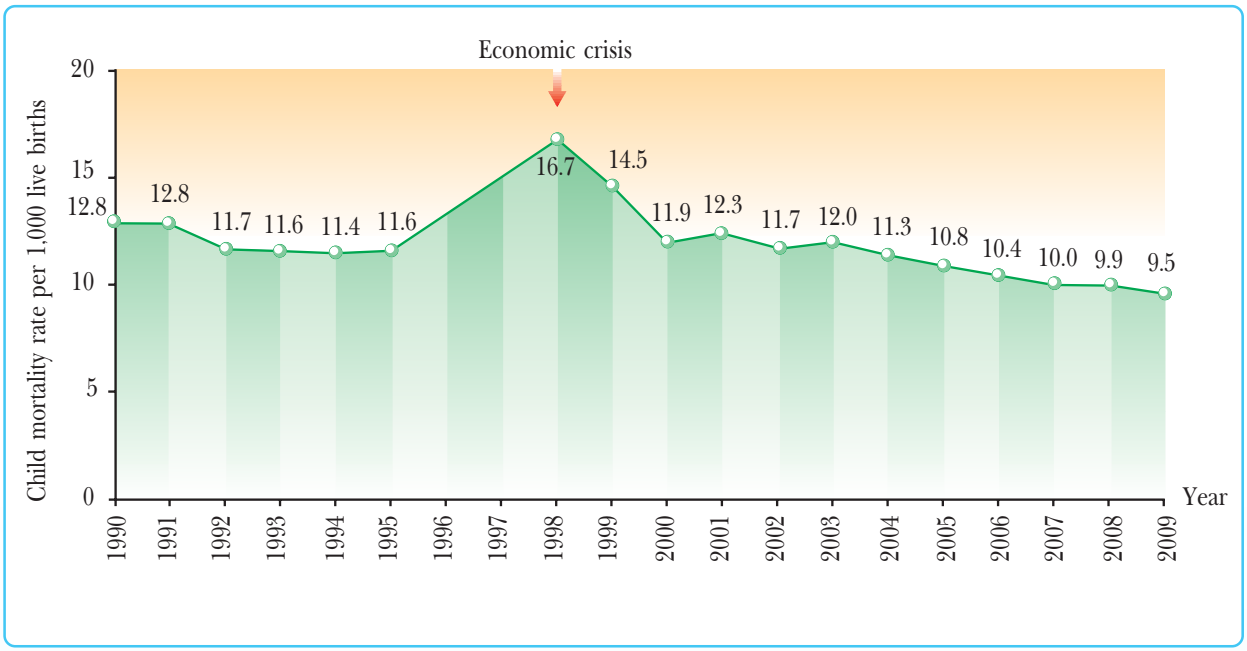


Source: Calculated by the Institute of Population and Social Research, Mahidol University, based on the data from the Population Changes Survey. National Statistical Office.

1.4 Child Mortality Rate

The child mortality rate (CMR among children aged under 5 years per 1,000 live births) dropped slightly from 12.8 in 1990 to 9.5 in 2009. It is noteworthy that, during the first stage of the economic crisis, the rate rose to 16.7 in 1998 and has had a tendency to drop further since 1999 (Figure 5.3). However, even though the Thai CMR is lower than the global average, it is still higher than that for other countries in this region such as Singapore and Malaysia (Table 5.3). It is also noted that the rate reported by the Registration Administration Bureau of the Ministry of Interior tends to be lower than reality, whereas the rate of 15.7 was derived from the 2006 population change survey.

Figure 5.3 Child mortality rate in Thailand, 1990–2009



Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Note: In 1996–1997, there was some adjustment in the data processing system of the Registration Administration Bureau of the Ministry of Interior and, as a result, there was no child death data processing for those years, possibly resulting in the higher CMR for 1998.

1.5 Causes of Death

The causes of death analysis for 2005–2008 under the Setting Priorities using Information on Cost-Effectiveness Spice 2004-–2009 Project, using verbal autopsy from of the database of the Bureau of Policy and Strategy, MoPH, and the review of data from hospitals' medical records, reveals that the number one cause of death was cerebrovascular disease, almost equal numbers of deaths for males and females at 23,741 and 21,546, respectively. Among males, the next 5 causes of death (in descending order) were road traffic accidents (20,458 deaths), AIDS (19,953 deaths), ischemic heart disease (16,164 deaths), chronic obstructive pulmonary disease (14,396 deaths) and cirrhosis (12,628 deaths), while in females, the causes were diabetes (15,254 deaths), ischemic health disease (14,300 deaths), AIDS (10,868 deaths), chronic kidney failure (7,627 deaths) and pneumonia (6,483 deaths). It is noteworthy that AIDS is still a health problem for males, whose number of deaths was almost twice that for females. Besides, road traffic accident remains a severe health problem among males.

For cancers, they were among the top 12 leading causes of death for males (liver and lung cancers) and females (cervical and liver cancers) (Table 5.4).

Table 5.4 Number and percentage of deaths among Thai people, estimated for the top 12 causes, by sex, 2005

Cause of death	Males		Cause of death	Females	
	No.	Percent		No.	Percent
Cerebrovascular disease	23,741	9.4	Cerebrovascular disease	21,546	11.3
Road traffic accidents	20,458	8.1	Diabetes	15,254	8.0
AIDS	19,953	7.9	Ischemic heart disease	14,300	7.5
Ischemic heart disease	16,164	6.4	Undefined cause	13,728	7.2
Pulmonary disease	14,396	5.7	AIDS	10,868	5.7
Cirrhosis	12,628	5.0	Chronic kidney failure	7,627	4.0
Liver cancer	11,365	4.5	Pneumonia	6,483	3.4
Undefined cause	9,598	3.8	Cervical cancer	5,720	3.0
Lung cancer	9,345	3.7	Liver cancer	5,339	2.8
Diabetes	8,082	3.2	Hypertension	5,339	2.8
Pneumonia	7,072	2.8	Chronic obstructive pulmonary disease	4,957	2.6
Suicide	6,819	2.7	Other heart diseases	4,767	2.5
Other diseases	92,944	36.8	Other diseases	74,743	39.2
Total	**252,566**	**100**	**Total**	**190,670**	**100**

By age group and sex, **the causes of death** are as shown in the table below:

Age group (years)	Major causes of death	
	Males	Females
0 - 14	← Perinatal asphyxia /birth trauma /road traffic accidents /accidental drowning →	
15 - 49	HIV/AIDS, road traffic accidents	HIV/AIDS, road traffic accidents
50 - 74	Cerebrovascular diseases, ischemic heart disease	Diabetes, cerebrovascular diseases,
75 +	Cerebrovascular diseases, chronic obstructive pulmonary disease	Cerebrovascular diseases, ischemic heart disease

Source: Cause of Death Quality Development Project, Thailand, 2005-2008.

1.6 Causes of Illness

Surveys on people's illnesses conducted by the National Statistical Office between 1991 and 2007 revealed that the most prevalent illness was diseases of the respiratory tract, followed by musculoskeletal diseases and gastrointestional diseases. However, when considering the trends in illnesses, it was found that the prevalence of cardiovascular diseases, endocrine system diseases, allergies and neuropsychiatric diseases were on the rise (Table 5.5).

Table 5.5 Percentage of people with illnesses by major group of diseases, 1991–2007

Group of diseases	1991	1996	2001	2003	2004	2005	2006	2007
Respiratory tract diseases	38.1	45.7	39.6	40.2	44.8	45.0	44.3	40.9
Musculoskeletal diseases	15.7	13.2	14.0	14.9	11.8	12.2	11.4	11.4
Gastrointestinal diseases	15.4	11.3	10.0	10.3	9.1	9.3	9.4	9.4
Cardiovascular diseases	3.0	6.6	6.6	6.3	5.2	5.9	6.3	4.1
Endocrine system diseases	1.4	3.3	4.7	4.4	3.1	4.4	4.1	5.1
Oral ear, throat, nose, eye and dental diseases	4.7	3.2	3.6	2.6	3.3	3.2	2.7	2.2
Infectious diseases	2.2	2.1	1.8	1.3	2.1	1.7	0.9	1.0
Urinary tract diseases	1.4	1.8	1.3	1.3	1.1	0.9	1.0	1.2
Allergies	0.7	1.5	1.8	2.1	1.8	1.9	2.3	2.2
Neuropsychiatric diseases	0.8	1.3	1.5	1.7	1.6	1.9	2.1	1.8
Skin diseases	3.2	1.2	1.5	1.1	1.0	1.2	1.4	1.8
Female genital diseases	1.4	0.8	0.9	0.9	0.8	0.8	0.7	0.9

Source: Reports on Health and Welfare Surveys, 1991, 1996, 2001, 2003, 2004, 2005 2006 and 2007. National Statistical Office.

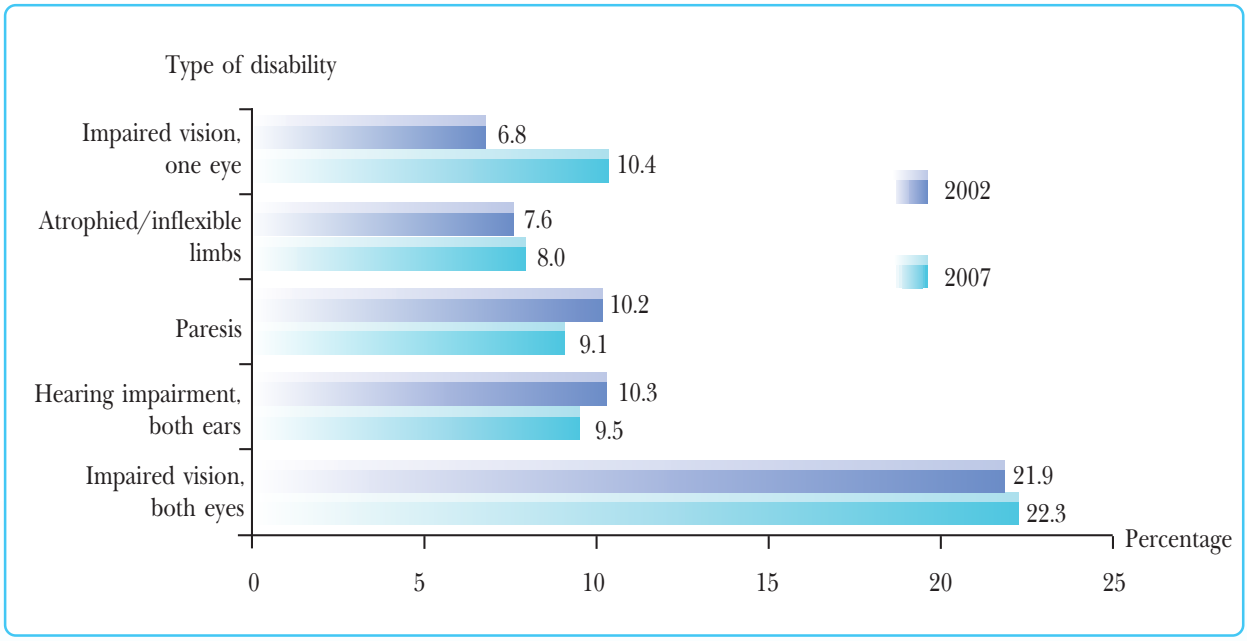
1.7 Disabilities

A survey conducted by the National Statistical Office revealed that the proportion of people with disabilities was rising from 0.5% in 1974 to 1.7% in 2002 and rose to 2.9% in 2007 (Table 5.6). However, other surveys have reported higher prevalence, compared with that reported by NSO. For example, the 1991-1992 health examination survey on the Thai population revealed a 6.3% disability prevalence (excluding mental/intellectual disabilities); and if all kinds of disabilities are taken into account, the overall prevalence of disabilities will be 8.1% of the total population.

Besides, Suwit Wibulpolprasert and colleagues (1997) projected that the prevalence of people with disabilities had increased at a rate higher than that of the population growth. The physical and movement disabilities were most commonly found, which is associated with the socio-economic changes and the country's epidemiological transition.[5] Regarding the characteristics of disability, for 2007, the top 5 disabilities and crippling conditions were impaired vision in both eyes, impaired vision in one eye, hearing impairment in both ears, paresis, and atrophied/inflexible limbs, which are similar to those reported in 2002, except for hearing impairment in both ears and paresis which slightly declined (Figure 5.4).

[5] Suwit Wibulpolprasert et al. Medical Rehabilitation Service System for the Disabled, 1997.

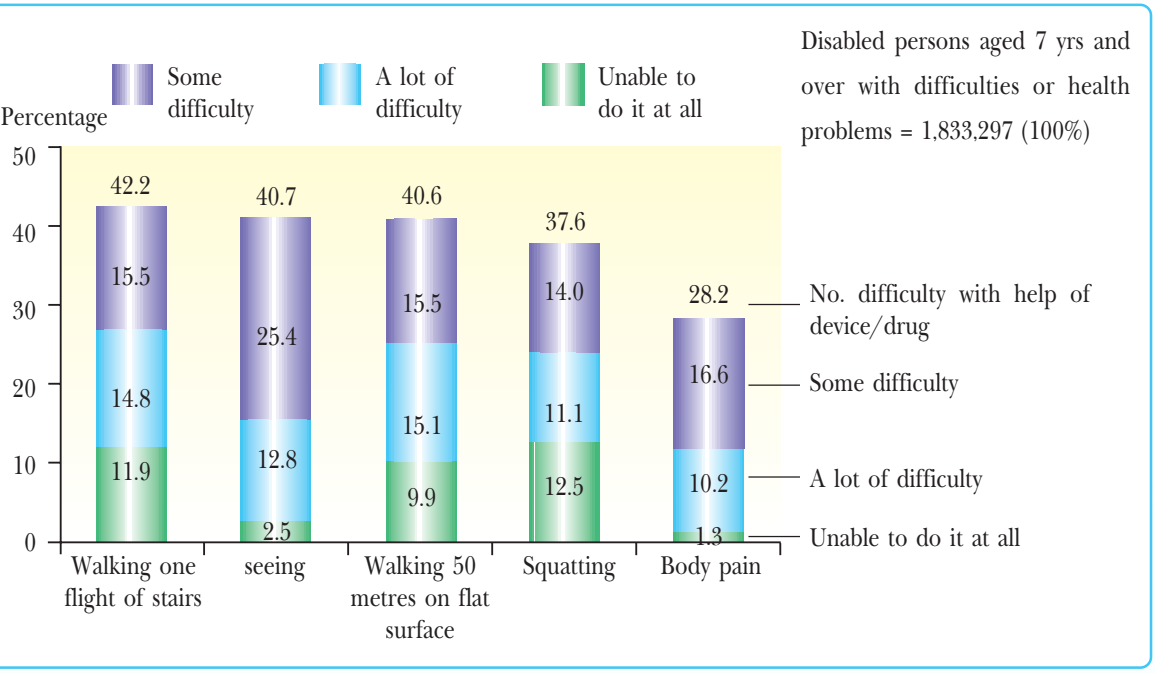
Figure 5.4 Proportion of people with disabilities (first five major types), 2002 and 2007



Sources: 1. Report on Disabilities and Crippling Conditions Survey, 2002. National Statistical Office.
2. Disability Survey, 2007. National Statistical Office.

Besides, a survey on people's difficulties or health problems of at least 6 months in 2007 found that the top 5 difficulties among the disabled persons were walking up one flight of stairs (to another floor, seeing, walking 50 metres on a flat surface, squatting, and body pain with a prevalence of 42.2%, 40.7%, 40.6%, 37.6% and 28.2%, respectively (Table 5.5).

Figure 5.5 Percentage of disabled people aged 7 years and over with top 5 difficulties by type of difficulties and degree of difficulty, 2007



Source: Disability Survey, 2007, National Statistical Office.

Notes: 1. Responses can be made to more than one type.

2. For the top 5 health sufferings/problems, less than 0.1% of the disabled persons.

Table 5.6 Number and percentage of Thai people with disabilities, 1974–2007

Year of survey	Population (thousands)	People with disabilities	
		Number (thousands)	Percentage of total population
1974	39,796.9	209.0	0.5
1976	42,066.9	245.0	0.6
1977	44,211.5	296.2	0.7
1978	45,344.2	324.6	0.7
1981	47,621.4	367.5	0.8
1986	51,960.0	385.9	0.7
1991	57,046.5	1,057.0	1.8
1996	59,902.8	1,024.1	1.7
2001	62,871.0	1,100.8	1.8
2002	63,303.0	1,098.0	1.7
2007	65,566.3	1,871.8	2.9

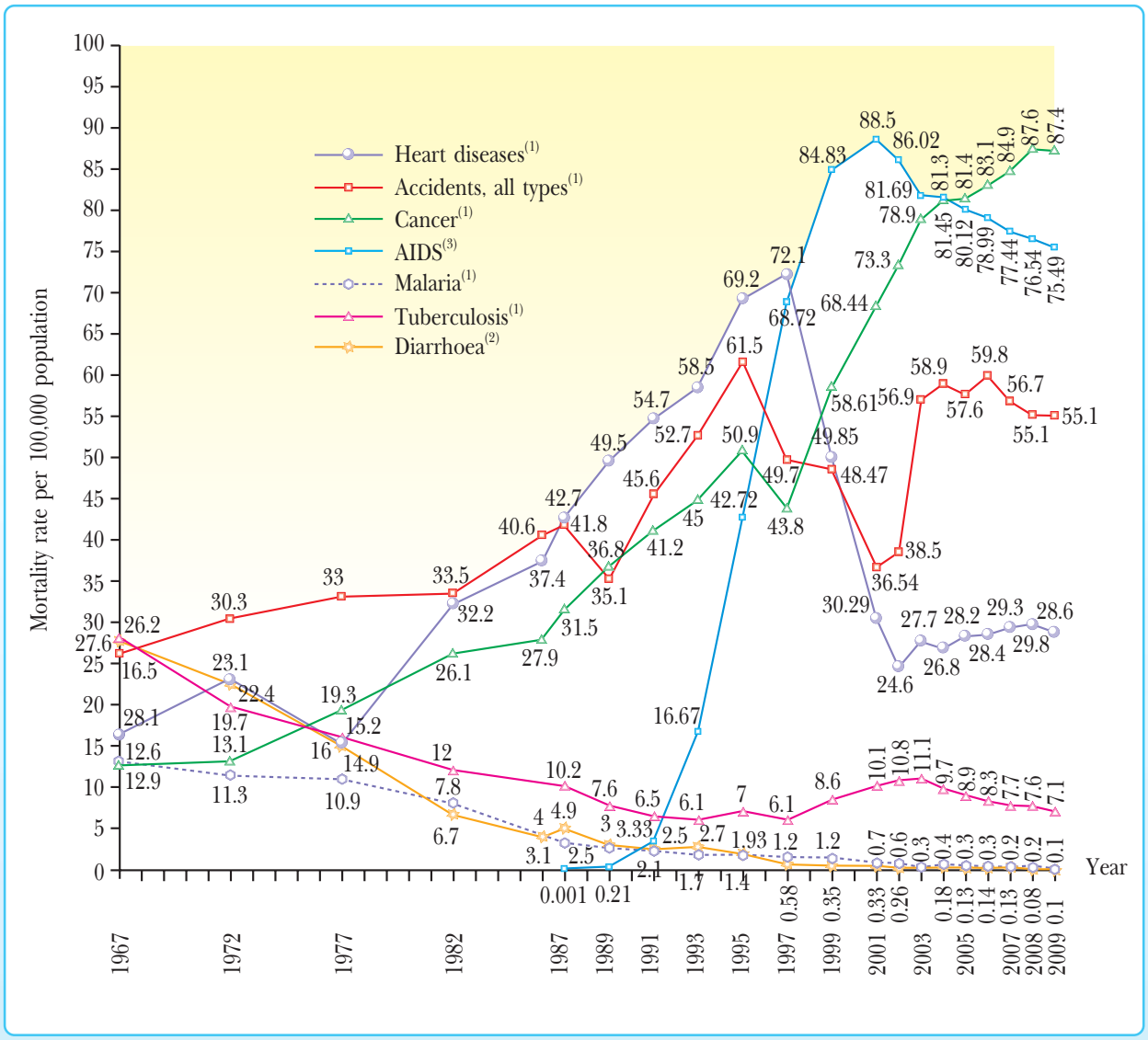
Sources: 1. Health and Welfare Survey Projects, 1974–2002. National Statistical Office.

2. Disability Survey, 2007. National Statistical Office.

1.8 Epidemiological Transition

Overall, according to a death certificates analysis, the major and rising causes of death among Thai citizens are non-communicable diseases, accidents, and HIV/AIDS (which is currently a major health problem of the country). The prevalence rates of communicable diseases, which used to be significant health problems, have been declining except for re-emerging diseases such as tuberculosis that is associated with HIV/AIDS (Figure 5.6). This is consistent with the results of the Burden of Disease Study which revealed that the disease burdens in terms of disability-adjusted life years (DALYs) from non-communicable diseases were three times as much as those from communicable diseases, and that the longer the people live, the greater the tendency for them to have non-communicable diseases (Table 5.7).

Figure 5.6 Mortality rates due to major causes of death, Thailand, 1967–2009



Sources: (1) Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.
(2) Bureau of Epidemiology, Department of Disease Control, MoPH.
(3) Working Group on Forecast of HIV-infected Cases. Forecast of HIV-infected Cases in Thailand, 2000-2020, 2001.

Table 5.7 Percentage of causes of disability-adjusted life years (DALYs) lost among Thai people by age group, 2004

Cause of DALYs lost	Percentage of DALYs lost by age group					
	0 - 4	5 - 14	15 - 44	45 - 59	60 and over	Total
- Communicable diseases	55.3	33.6	25.6	14.6	10.3	20.2
- Non-communicable diseases	32.9	34.7	50.7	73.7	85.8	65.1
- Accidents	11.7	31.6	23.7	11.7	3.9	14.8

Source: Working Group on Burden of Disease and Risk Factors, Thailand. International Health Policy Program, MoPH, 2006.

1.9 Disability-Adjusted Life Years Lost among Thai People

In measuring the health status of Thai people using DALY[6] as the indicator, it was found that **the number one cause of DALYs lost is HIV/AIDS for males, cerebrovascular diseases for females**, the second and third causes were road traffic injuries and alcohol abuse-related diseases respectively among males, and HIV/AIDS and diabetes respectively among females (Table 5.8).

Besides, when considering the health problems by age group, the differences in life-threatening problems are as follows:

- Age group 0–14 years: major health problems are low birth weight and perinatal asphyxia;
- Age group 15–29 years: major health problems are HIV/AIDS, road traffic injuries, drug abuse, schizophrenia, and alcohol abuse;
- Age group 30–59 years: major health problems are HIV/AIDS, road traffic injuries, diabetes, and liver cancer;
- Age group 60 years and over: major health problems are cerebrovascular diseases, emphysema, and diabetes.

[6] Disability-Adjusted Life Year (DALY): One DALY is one lost year of healthy life; calculated from the formula "DALYs = years lost to premature death + years lost to illness or disability".

Table 5.8 Major diseases attributable to disability-adjusted life years (DALYs) lost among Thai people by sex, 2004

No.	Males			Females		
	Disease	DALYs loss	Percent	Disease	DALYs loss	Percent
1	HIV/AIDS	645,426	12.1	Cerebrovascular disease	307,131	7.9
2	Road traffic injuries	600,004	11.3	HIV/AIDS	290,711	7.5
3	Alcohol abuse	329,068	6.2	Diabetes	267,549	6.9
4	Cerebrovascular diseases	305,105	5.7	Depression	191,490	4.9
5	Liver cancer	294,868	5.5	Liver cancer	140,480	3.6
6	Ischemic heart disease	178,011	3.3	Road traffic injuries	135,832	3.5
7	Chronic obstructive pulmonary disease	175,549	3.3	Ischemic heart disease	117,790	3.0
8	Diabetes	168,702	3.2	Knee osteoarthritis	117,042	3.0
9	Depression	136,895	2.6	Chronic obstructive pulmonary disease	112,663	2.9
10	Cirrhosis	133,046	2.5	Cataract	110,572	2.8

Source: Working Group on Burden of Disease and Risk Factors, Thailand. International Health Policy Program, MoPH, 2006.

1.10 Chronic Non-Communicable Diseases in Developing Countries

The problem of chronic non-communicable diseases (NCDs) is on the rise in developing countries. According to the 2005 WHO survey on chronic NCDs and their impact in 23 developing countries, including Thailand, the most common NCDs are cardiovascular diseases, diabetes, cancer and chronic respiratory diseases, which account for more than 60% of all deaths (approximately 35 million). Among the deaths, 32% were due to cardiovascular diseases and diabetes, 13% due to cancer, and 7% due to chronic respiratory illnesses. And it is expected that the number of deaths will rise to 41 million in 2015. Moreover, it was found that in 2005 the burden of disease (DALYs lost) due to chronic NCDs was 50% of all diseases, 12% of which was due to diabetes and cardiovascular diseases (including heart and cerebrovascular diseases) and 9% due to cancer and chronic respiratory diseases; and it is expected that in the next 10 years (in 2015), the burden of disease will rise for all groups of illnesses (Table 5.9). Therefore, WHO has set the target to reduce the mortality rate due to chronic NCDs by an additional 2 percentage points each year.

Table 5.9 Proportion of disability adjusted life years (DALYs) lost due to chronic NCDs among peoples in 23 developing countries including Thailand

Group of diseases	Percent of DALYs lost	
	2005	2015
Cardiovascular disease and diabetes	12	13
Cancer	5	6
Chronic respiratory diseases	4	5
All chronic NCDs	50	55

Source: D. Abegunde, C. Mathers, T. Adam, M. Ortegon, & K. Strong (2007). Chronic Diseases 1: The burden and costs of chronic diseases in low-income and middle-income countries. Lancet, 370, 8, 1929-38.

2. Major Health Problems

2.1 Communicable Diseases

2.1.1 Vaccine-preventable Diseases

Since the Ministry of Public Health launched the Expanded Programme on Immunization (EPI) in target population groups, the immunization coverage has remarkably improved (Table 5.10 and Figure 5.7).

Table 5.10 Coverage of immunization against vaccine-preventable diseases in different target groups, 1982–2008

Activity	Coverage (percent) in fiscal year																						
	1982[1]	1983[1]	1984[1]	1985[1]	1986[1]	1987[1]	1988[1]	1989[1]	1990[1]	1991[1]	1992[1]	1993[1]	1994[1]	1995[1]	1996[2]	1997[2]	1998[2]	1999[2]	2000[2]	2001[2]	2002[2]	2003[3]	2006[4]	2008[5]
Children <1 yr																								
BCG (%)	73	75	76	78.4	89.5	87.4	88.6	94.1	96.3	96.8	97.4	98.1	97.9	98.4	98.4	96.9	96.5	95.6	98.8	89.4	98.1	99.5	98.0	99.9
DPT_3 (%)	21	48	53	60.5	73.9	72.8	74.8	84.2	89.4	89.8	91.5	92.2	92.9	93.7	94.3	92.5	95.9	92.1	94.4	89.1	89.8	97.6	97.1	98.7
OPV_3 (%)	34	40	53	59.3	71.8	71.3	73.8	83.2	89.3	89.8	91.5	92.2	92.7	93.7	94.3	92.3	95.8	93.0	94.5	89.3	89.7	97.6	97.6	98.7
Measles(%)	-	-	-	-	-	48.2	51.1	61.4	78.4	81.5	86.3	86.1	86.0	89.8	90.8	73.0	87.2	90.5	83.8	83.1	83.7	96.1	91.4	98.1
HB_3(%)	-	-	-	-	-	-	-	-	-	-	15.4	57.1	65.6	79.3*	90.7	88.5	93.0	90.4	94.9	87.9	88.8	96.0	88.3	98.3
Pregnant women																								
TT_2 + Booster(%)	30	38	40	48	50	53.1	59.6	75.9	81.6	81.6	87.8	86.4	86.9	92.8	93.0	82.5	85.7	80.4	74.0	75.5	74.5	93.3	89.2	96.7

Sources: [1] Data for 1982–1995 were derived from the Department of Communicable Disease Control, MoPH.

[2] Data for 1996–2002 were derived from the Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

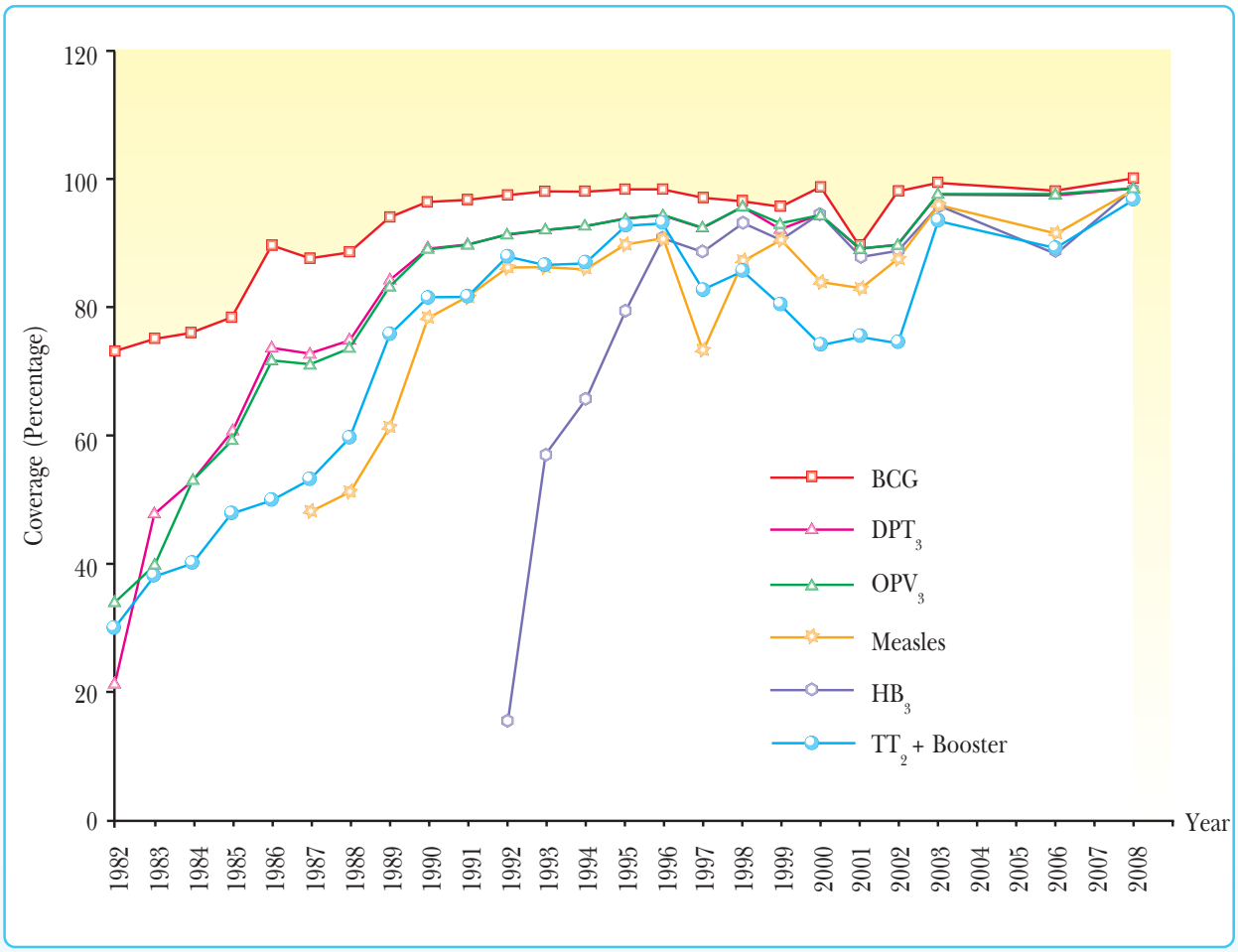
* Data from the 1st Provincial Health Survey (1995).

[3] Data for 2003 were derived from the survey on coverage of the basic immunization program and the polio immunization campaign, 2003. Department of Disease control, MoPH.

[4] Data for 2006 were derived from the child situation survey, Thailand, Dec 2005 – Feb 2006. National Statistical Office.

[5] Data for 2008 were derived from the survey on basic immunization coverage for school children in 2008. Department of Disease control, MoPH.

Figure 5.7 Coverage of immunization: BCG, DPT_3, OPV_3, HB_3 measles among children and TT_2+ booster among pregnant women, 1982–2008



Sources: (1) Department of Disease Control, MoPH.

(2) Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

As a result of such high immunization coverage, the morbidity rates of vaccine-preventable diseases have a tendency to decline (Table 5.11 and Figures 5.8 and 5.9)

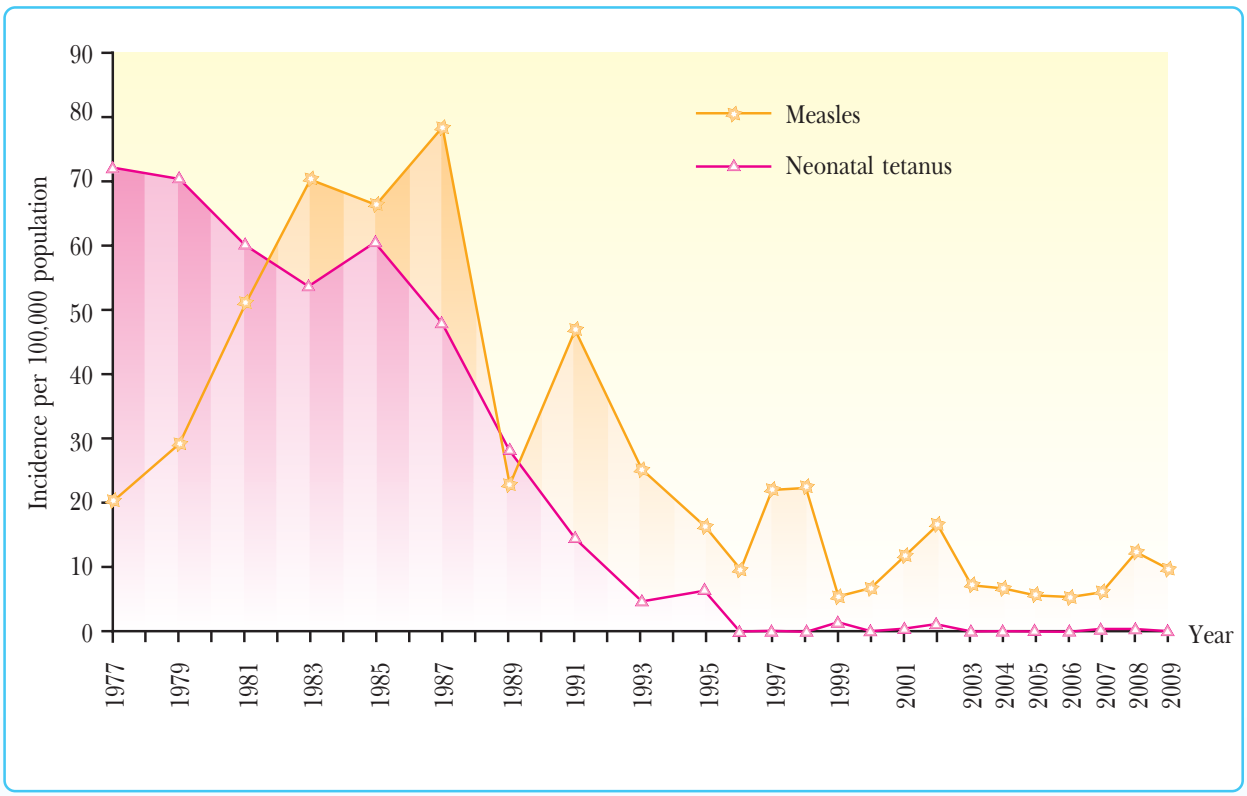
Besides, it was noted that hepatitis B infection had a rising incidence, probably resulting from a more extensive surveillance effort (Figure 5.10).

Table 5.11 Incidence rates of major vaccine-preventable diseases in Thailand, 1977–2009

Incidence of vaccine-preventable diseases per 100,000 population						
Year	**Measles**	**Neonatal tetanus**	**Diphtheria**	**Pertussis**	**Poliomyelitis**	**Hepatitis B**
1977	20.2	72.1	5.2	7.2	2.1	n.a.
1979	28.9	70.0	4.4	11.2	2.3	0.09
1981	51.1	59.8	1.6	6.2	0.5	0.14
1983	70.2	53.6	2.1	9.8	0.3	0.12
1985	66.2	60.4	1.4	4.8	0.1	0.55
1987	78.3	47.9	1.0	2.7	0.04	1.57
1989	22.5	28.1	0.1	2.2	0.03	3.30
1991	46.9	14.5	0.09	0.5	0.009	5.98
1993	25.2	4.7	0.04	0.6	0.015	4.39
1995	16.4	6.4	0.03	0.2	0.003	3.13
1996	9.5	0.05	0.08	0.13	0.03	2.20
1997	22.03	0.04	0.06	0.17	0.00	2.27
1998	22.39	0.03	0.08	0.16	0.00	2.53
1999	5.38	1.55	0.08	0.08	0.00	2.60
2000	6.67	0.03	0.02	0.16	0.00	2.71
2001	11.86	0.36	0.02	0.12	0.00	2.80
2002	16.48	1.14	0.02	0.02	0.00	3.44
2003	7.17	0.01	0.01	0.04	0.00	3.68
2004	6.66	0.02	0.02	0.03	0.00	4.54
2005	5.67	0.01	0.00	0.04	0.00	4.41
2006	5.31	0.00	0.00	0.11	0.00	5.48
2007	6.20	0.50	0.01	0.04	0.00	6.94
2008	12.32	0.38	0.01	0.03	0.00	8.39
2009	9.57	0.13	0.02	0.04	0.00	8.46

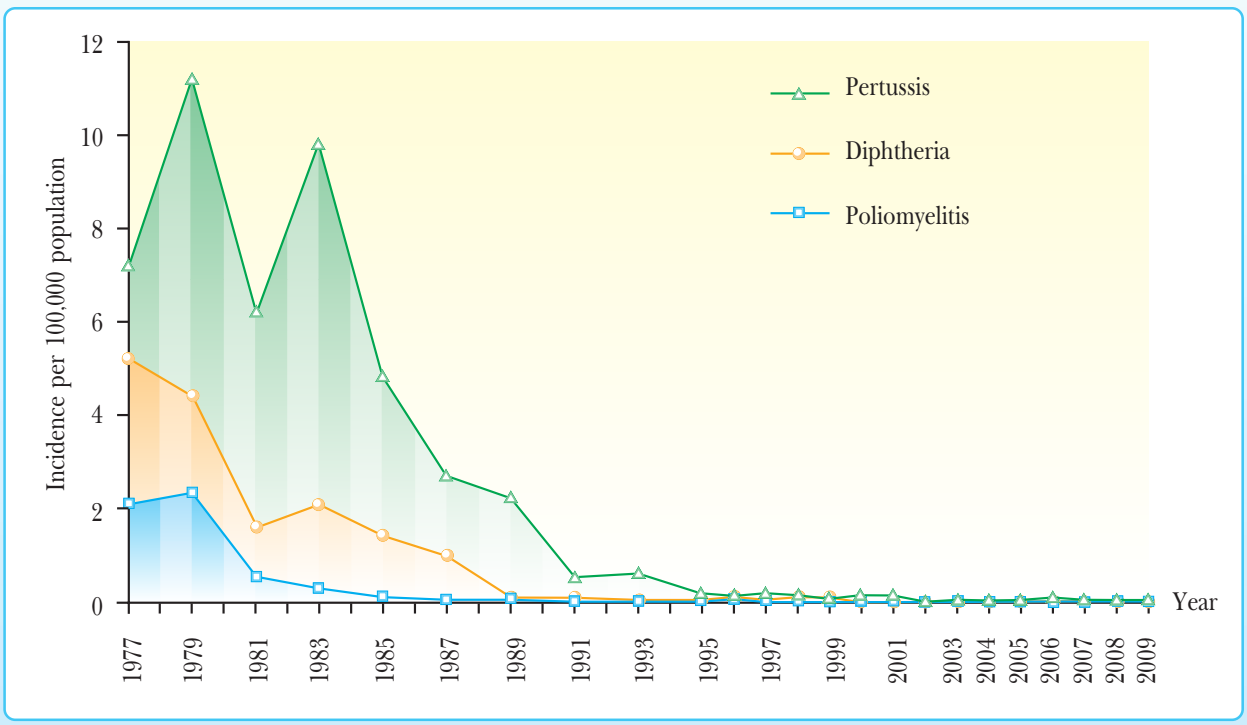
Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Figure 5.8 Incidence of neonatal tetanus and measles in Thailand, 1977–2009



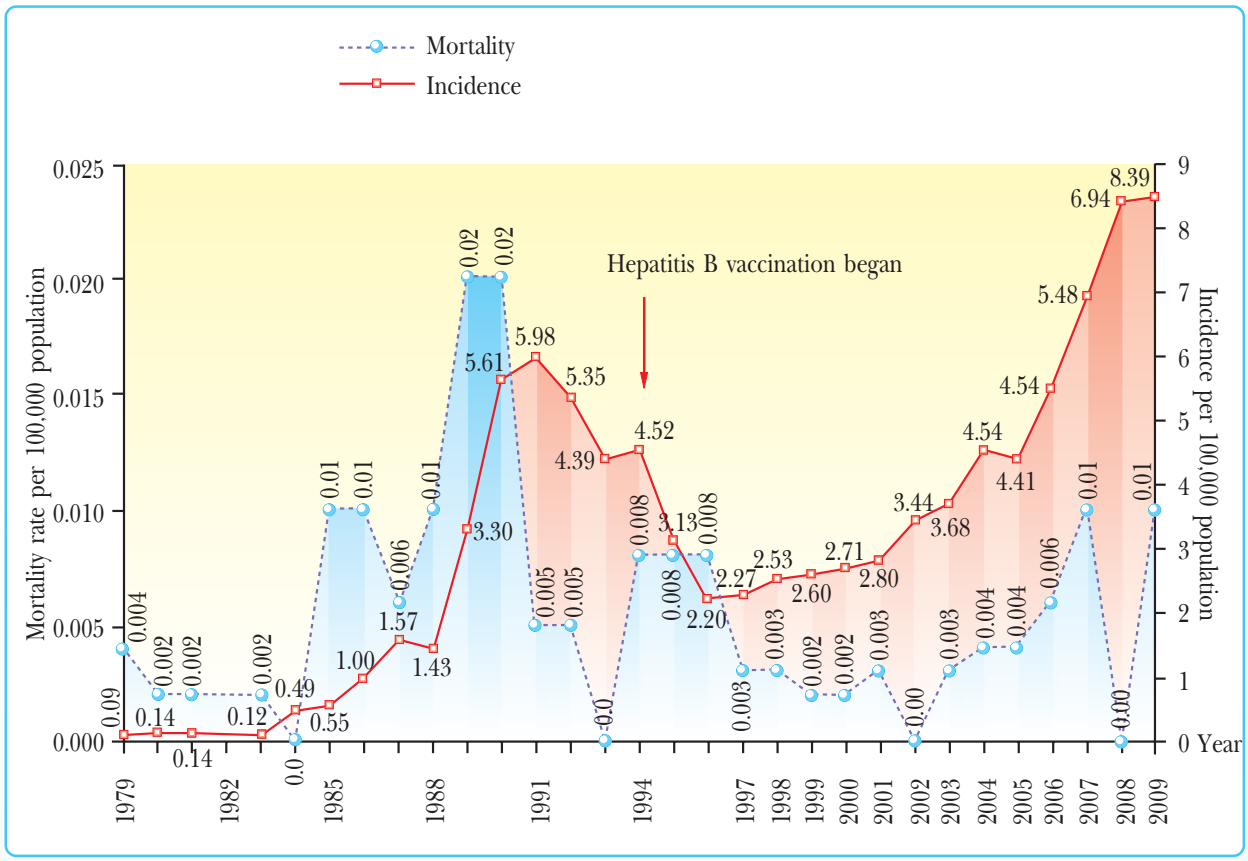
Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Figure 5.9 Incidence of pertussis, diphtheria, and poliomyelitis in Thailand, 1977–2009



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Figure 5.10 Incidence and mortality rates of hepatitis B in Thailand, 1979–2009

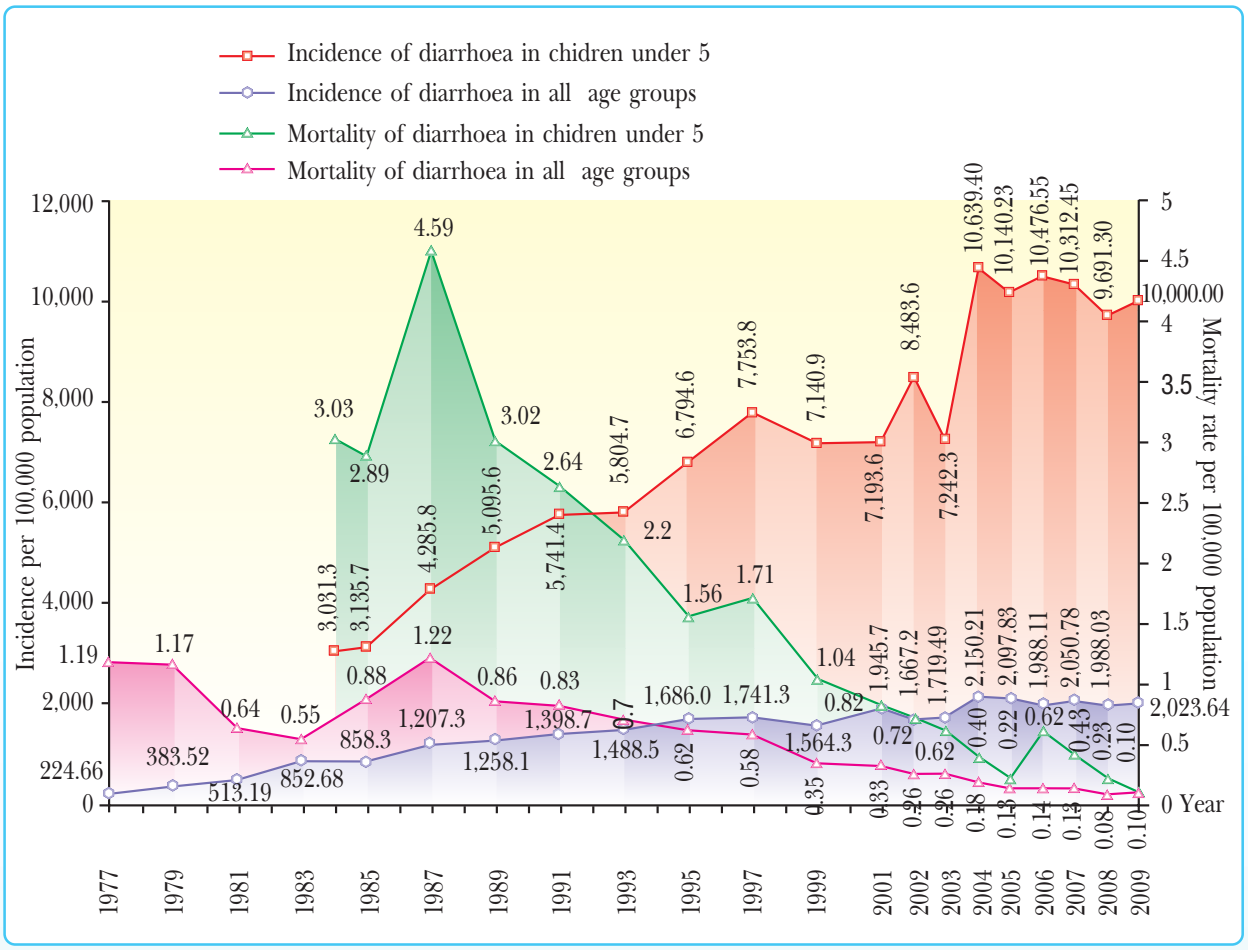


Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.1.2 Diarrhoea

Acute diarrhoea is still a crucial public health problem with a relatively slight change in incidence among children and adults, particularly among children under five years of age whose incidence is higher than that in adults. However, the mortality rate has been declining considerably (Figure 5.11) due to improved and extensive coverage health services as well as the success of the campaign on oral rehydration therapy (ORT).

Figure 5.11 Incidence and mortality rates of diarrhoea in Thailand, 1977–2009

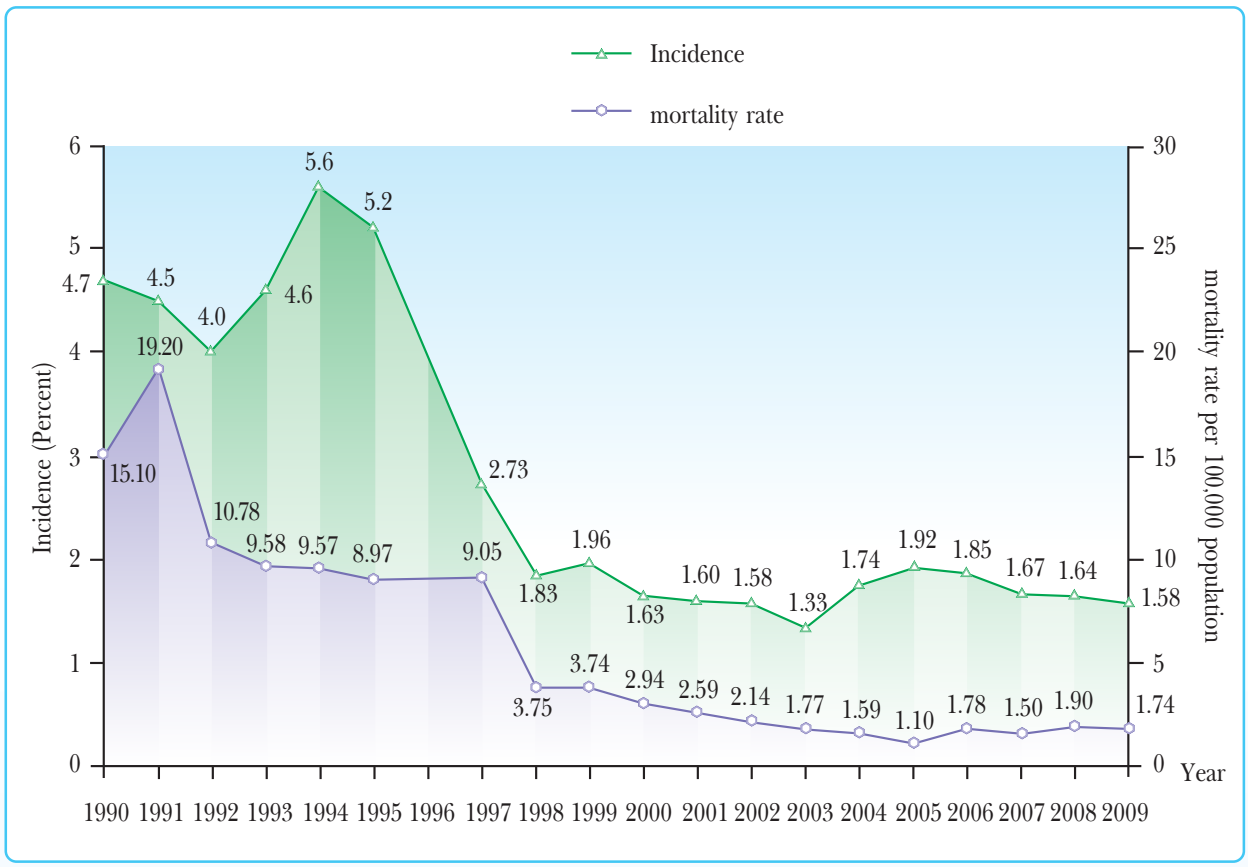


Source: Bureau of Epidemiology, Department of Disease Control.

2.1.3 Acute Respiratory Infection among Children

Currently, acute respiratory infection is still a crucial public health problem in Thailand. **Pneumonia is the number one cause of death, among all infectious diseases, in children under five.** The incidence of pneumonia in children has fallen from 5.2% in 1995 to 1.58% in 2009; and its mortality rate (per 100,000 population) has steadily dropped from 15.1 in 1990 to 1.74 in 2009 (Figure 5.12).

Figure 5.12 Incidence and mortality of pneumonia in children under five in Thailand, 1990–2009



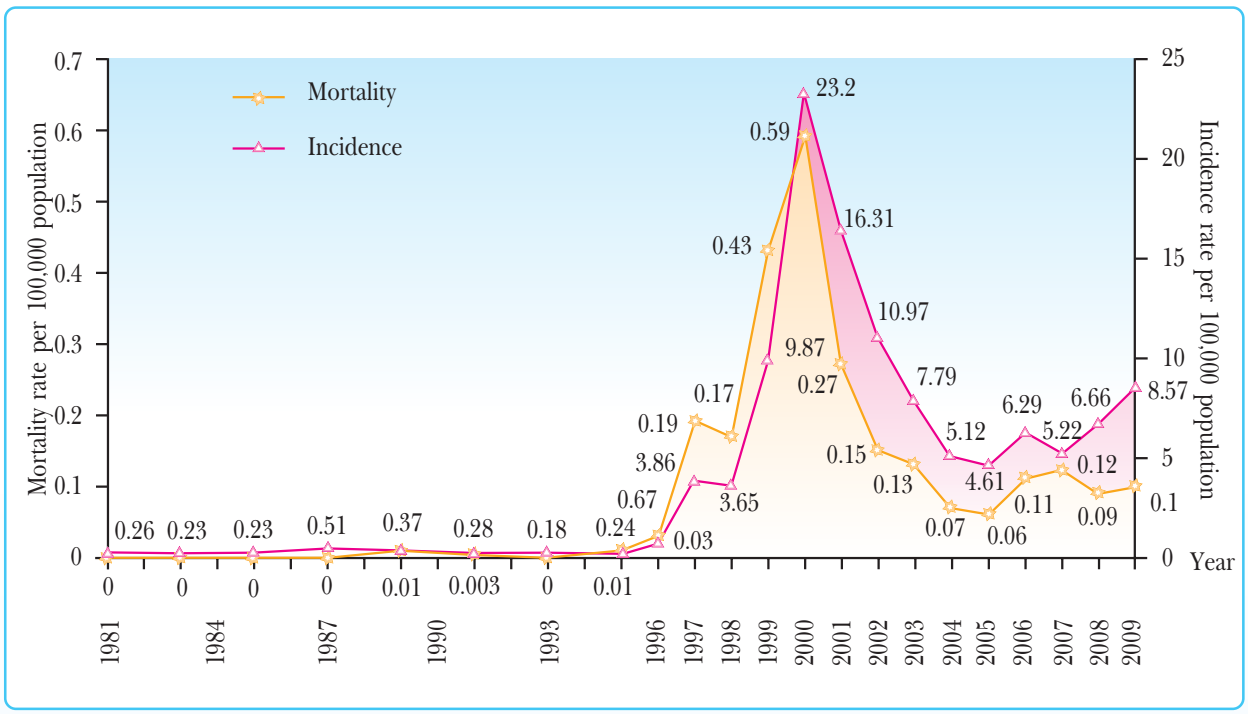
Sources: (1) Department of Disease Control, MoPH.

(2) Bureau of Epidemiology, Department of Disease Control, MoPH.

2.1.4 Leptospirosis

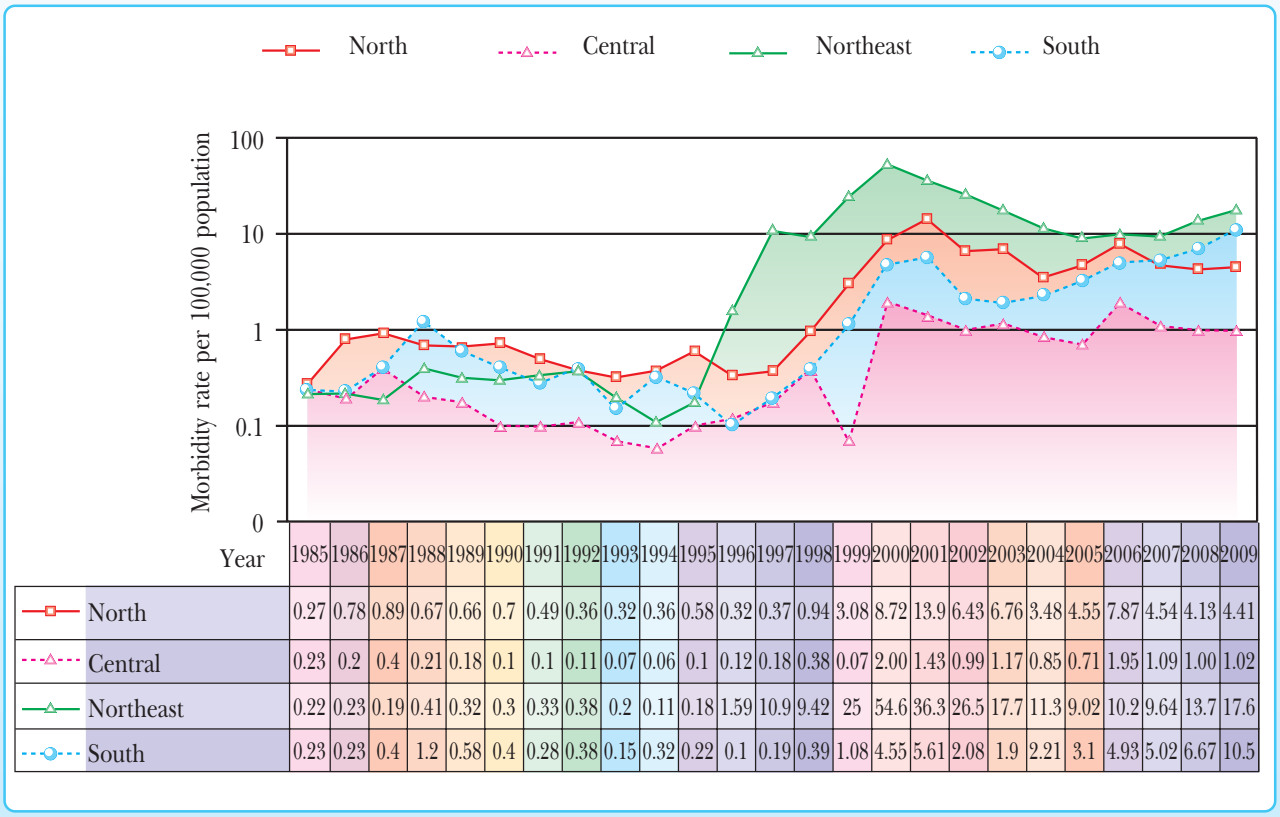
Leptospirosis is a re-emerging infectious disease having an incidence rate between 0.2 and 0.7 per 100,000 population during the period 1981–1996. But over the past four years the incidence and mortality rates was on the rise, i.e. the incidence per 100,000 population rising from 0.67 in 1996 to 23.2 in 2000, but dropping to 4.61 in 2005 (Figure 5.13). Over 50% of the patients live in the Northeastern region of the country (Figure 5.14). However, for the period 2008–2009, both the incidence and mortality rates were on the rise.

Figure 5.13 Incidence and mortality rates of leptospirosis in Thailand, 1981–2009



Source: Bureau of Epidemiology, Department of Disease Control, MOPH.

Figure 5.14 Morbidity rate of leptospirosis by region in Thailand, 1985–2009



	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
North	0.27	0.78	0.89	0.67	0.66	0.7	0.49	0.36	0.32	0.36	0.58	0.32	0.37	0.94	3.08	8.72	13.9	6.43	6.76	3.48	4.55	7.87	4.54	4.13	4.41
Central	0.23	0.2	0.4	0.21	0.18	0.1	0.1	0.11	0.07	0.06	0.1	0.12	0.18	0.38	0.07	2.00	1.43	0.99	1.17	0.85	0.71	1.95	1.09	1.00	1.02
Northeast	0.22	0.23	0.19	0.41	0.32	0.3	0.33	0.38	0.2	0.11	0.18	1.59	10.9	9.42	25	54.6	36.3	26.5	17.7	11.3	9.02	10.2	9.64	13.7	17.6
South	0.23	0.23	0.4	1.2	0.58	0.4	0.28	0.38	0.15	0.32	0.22	0.1	0.19	0.39	1.08	4.55	5.61	2.08	1.9	2.21	3.1	4.93	5.02	6.67	10.5

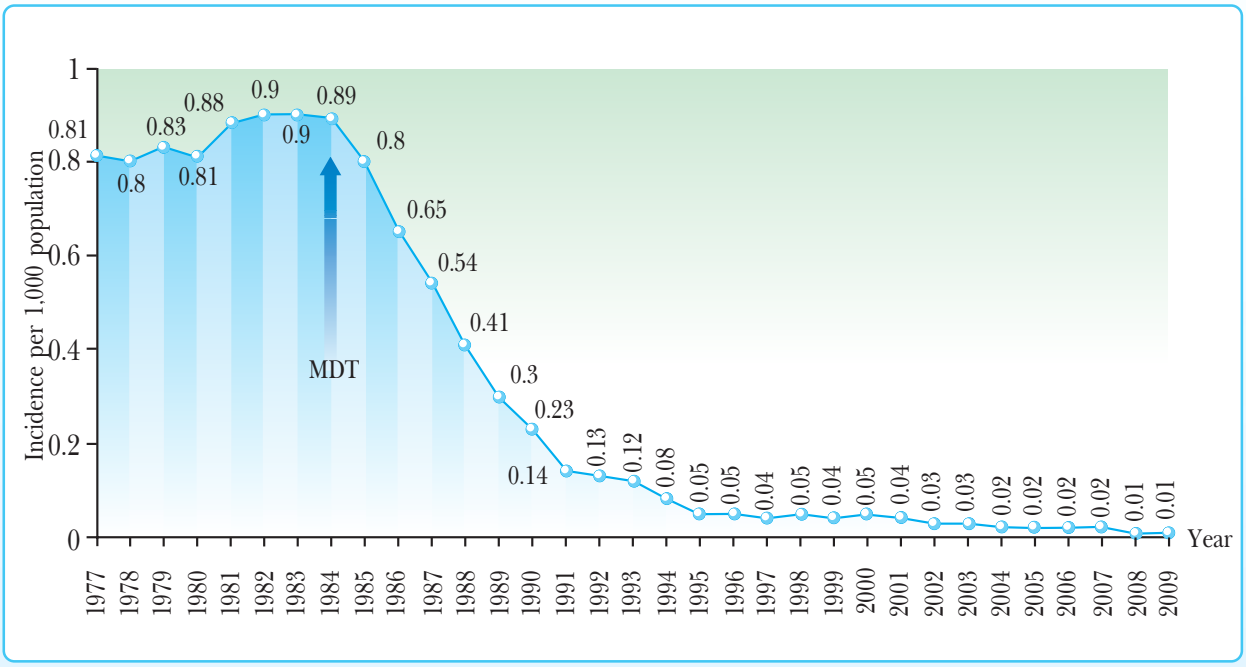
Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.1.5 Leprosy

The Leprosy Control Programme in Thailand has been implemented for over 40 years with the initiation of His Majesty the King and the support of the World Health Organization as well as several NGOs. The Programme has been quite successful in reducing the leprosy prevalence rate from 5 per 1,000 population in 1955 to 0.01 per 1,000 population in 2009 the rate for WHO to recognize Thailand as having eliminated leprosy (Figure 5.15). For the whole country, to date 170,000 leprosy patients have been cured as the leprosy control programme has been successfully implemented in a holistic manner according to His Majesty the King's advice.

The success of the Programme has been partially attributable to the introduction of the short-course multiple-drug therapeutic (MDT) regimens, recommended by WHO in 1984.

Figure 5.15 Incidence of leprosy in Thailand, 1977–2009



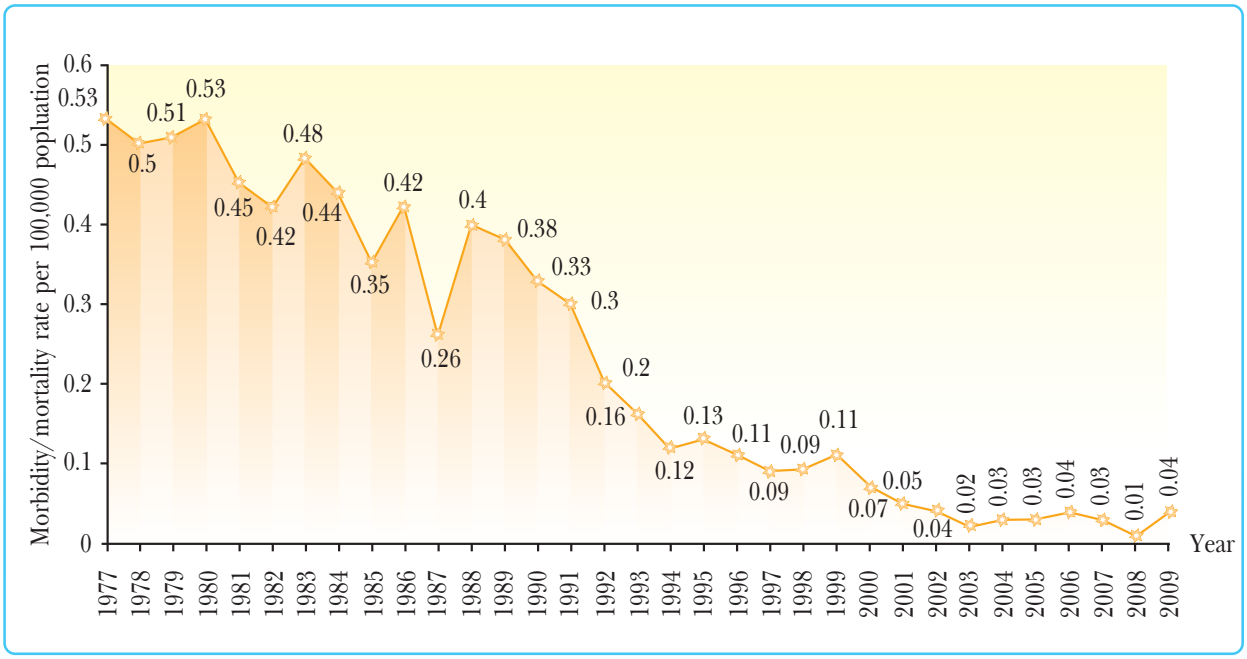
Source: Department of Disease Control, MoPH.

Note: MDT = Multiple-drug therapy

2.1.6 Rabies

As a result of the Rabies Control Programme implemented by the Ministry of Public Health in collaboration with the Department of Livestock Development of the Ministry of Agriculture and Cooperatives, the rabies morbidity/mortality rate dropped considerably from 0.53 per 100,000 population in 1977 to 0.01 per 100,000 population in 2008; however, in 2009, the rate rose to 0.04 on 100,000 population (Figure 5.16).

Figure 5.16 Morbidity/mortality rate of rabies in Thailand, 1977–2009



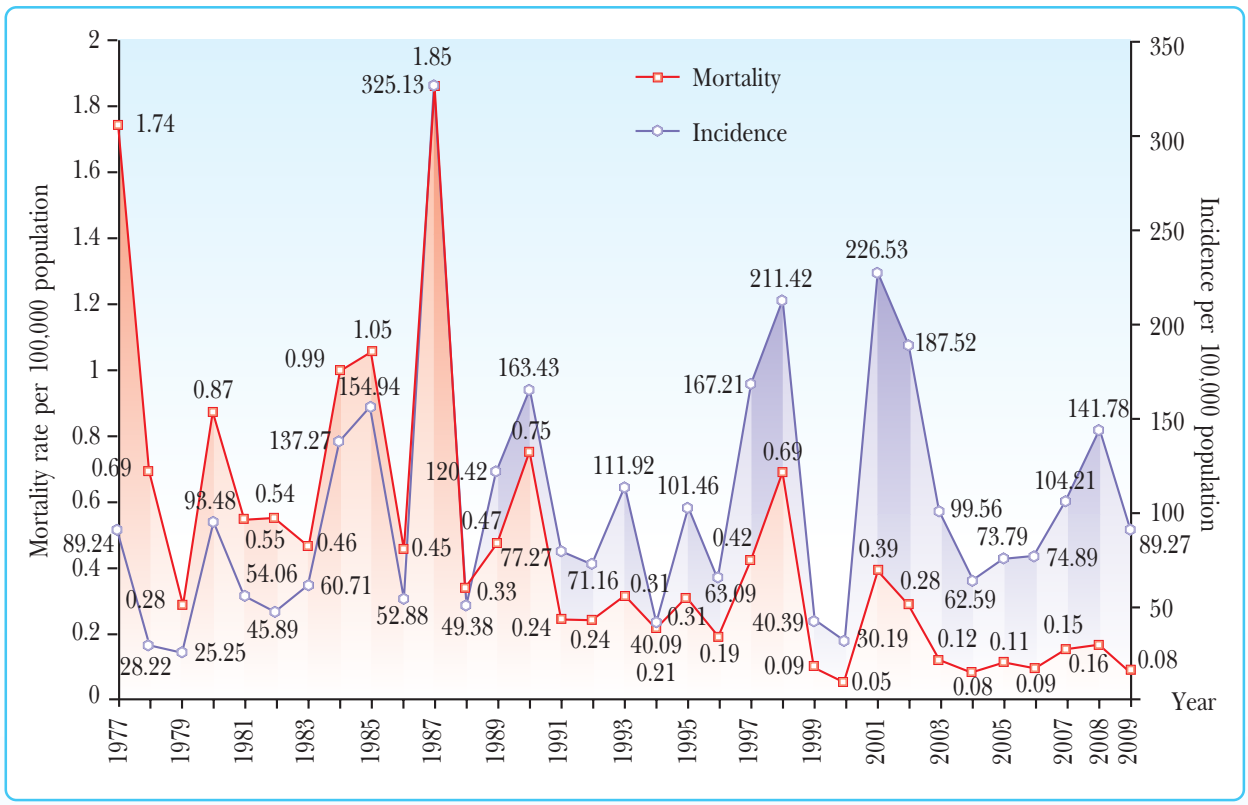
Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.2 Vector-Borne Diseases

2.2.1 Dengue Haemorrhagic Fever

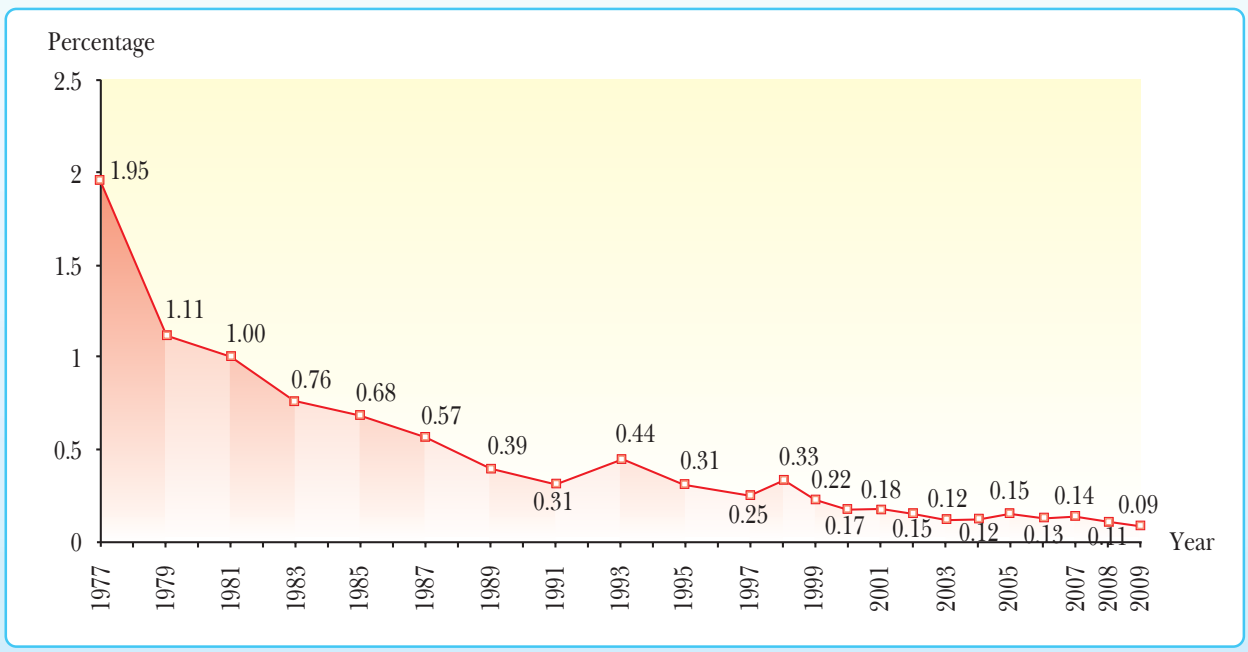
Dengue haemorrhagic fever (DHF) has been a major public health problem of the country over the past 30 years without a declining trend. In particular, for the periods 1997–1998 and 2001–2002, there was a rising trend with epidemics occurring for two years and non-epidemic for the following two years. However, the DHF case-fatality rate has been declining (Figures 5.17 and 5.18).

Figure 5.17 Incidence and mortality rates of dengue haemorrhagic fever, Thailand, 1977–2009



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Figure 5.18 Case-fatality rate of dengue haemorrhagic fever, 1977–2009

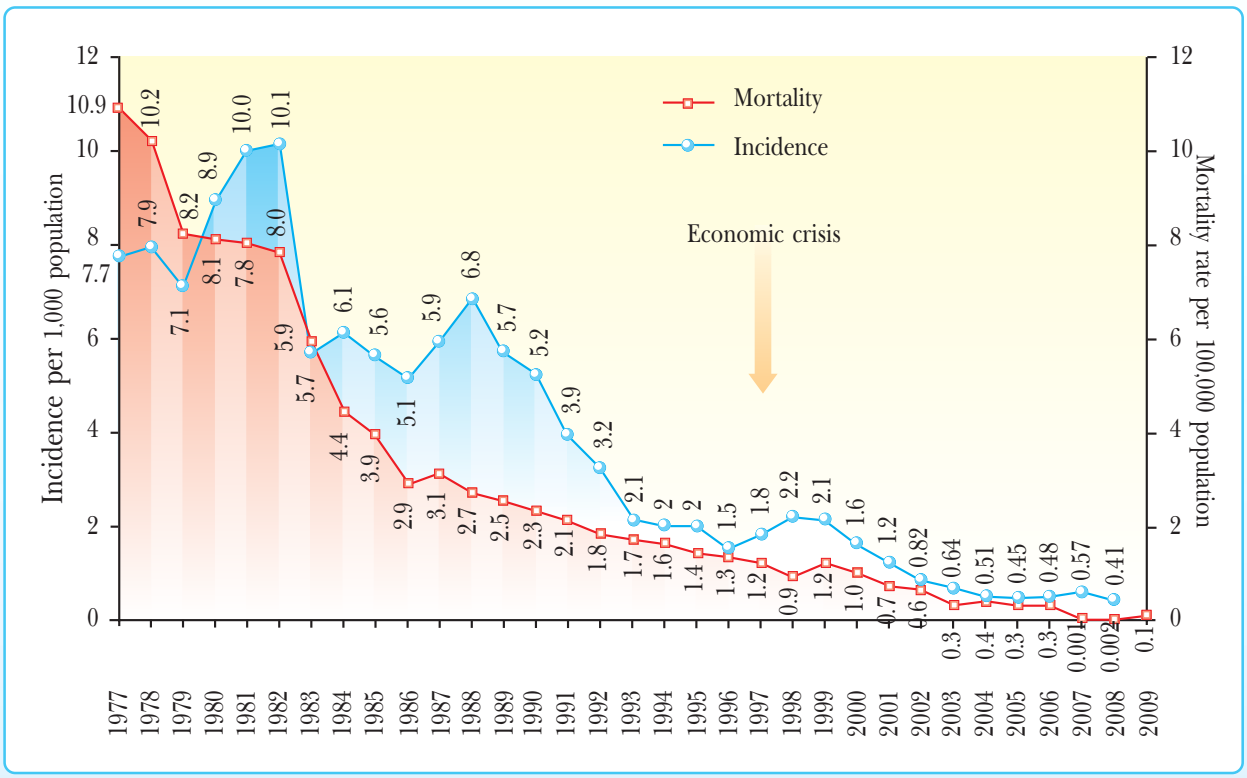


Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.2.2 Malaria

Thailand has succeeded, to a certain extent, in controlling malaria, leading to a considerable reduction in incidence and mortality rates (Figure 5.19). However, in some regions particularly the Thai-Myanmar and Thai-Cambodian border areas, the problem remains critical with regard especially to drug resistance. It is noted that **during 1997–1999 the malaria incidence rose slightly but the mortality rate was stable**. This phenomenon is postulated to be related to the discontinuation of DDT spraying, EI Nino phenomena and the restructuring of communicable disease control programmes. As a result, Malaria Units were upgraded/restructured to be "Vector-borne Disease Control Units", which are extensively responsible for the prevention and control of dengue hemorrhagic fever, filariasis and encephalitis. In the beginning, there might be some problems, but since 2000, the incidence and mortality rates have been declining.

Figure 5.19 Incidence and mortality rates of malaria in Thailand, 1977–2009

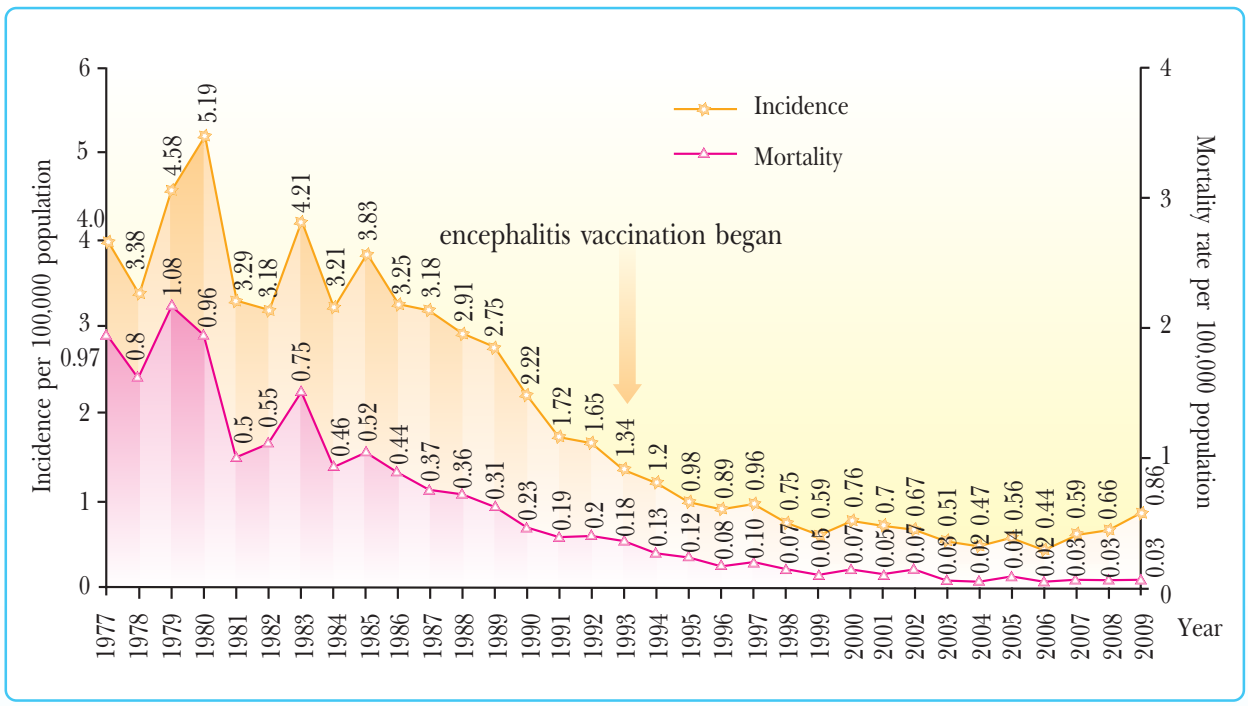


Sources: (1) Bureau of Vector-borne Disease, Department of Disease Control, MoPH.
(2) Bureau of Policy and Strategy, MoPH.

2.2.3 Encephalitis

As a result of economic and social development and intensive campaigns on immunization for the target groups of children in high-risk areas, the incidence and mortality rates of encephalitis have significantly declined (Figure 5.20). During the period 2008–2009, the incidence of encephalitis slightly increased while the mortality remained stable.

Figure 5.20 Incidence and mortality rates of encephalitis in Thailand, 1977–2009

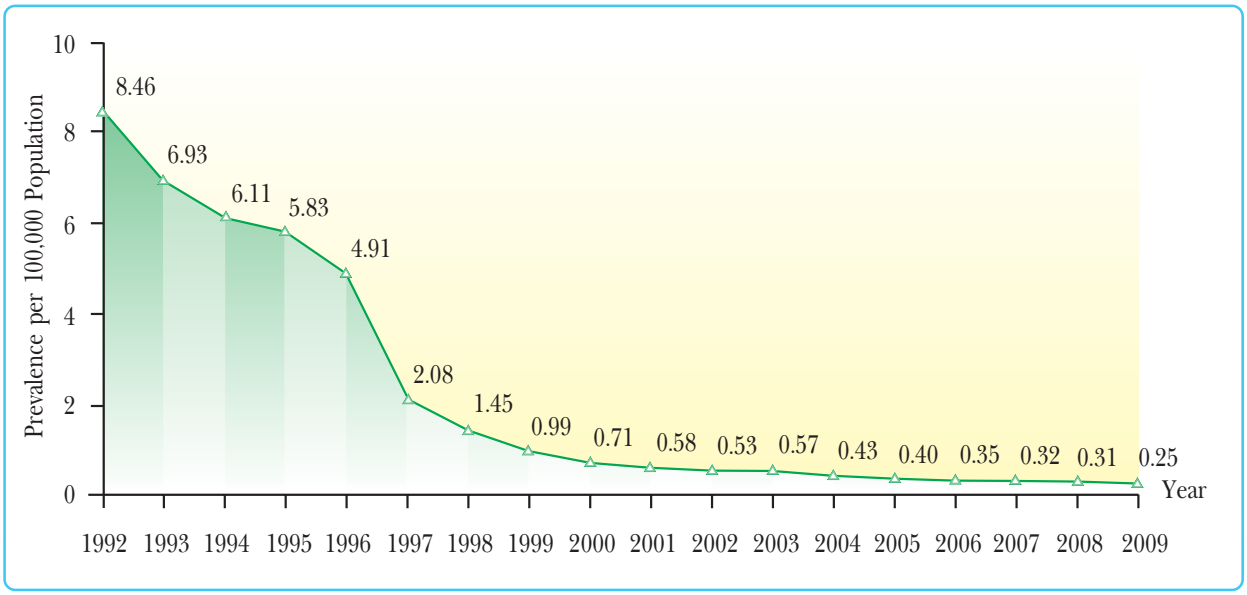


Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.2.4 Filariasis

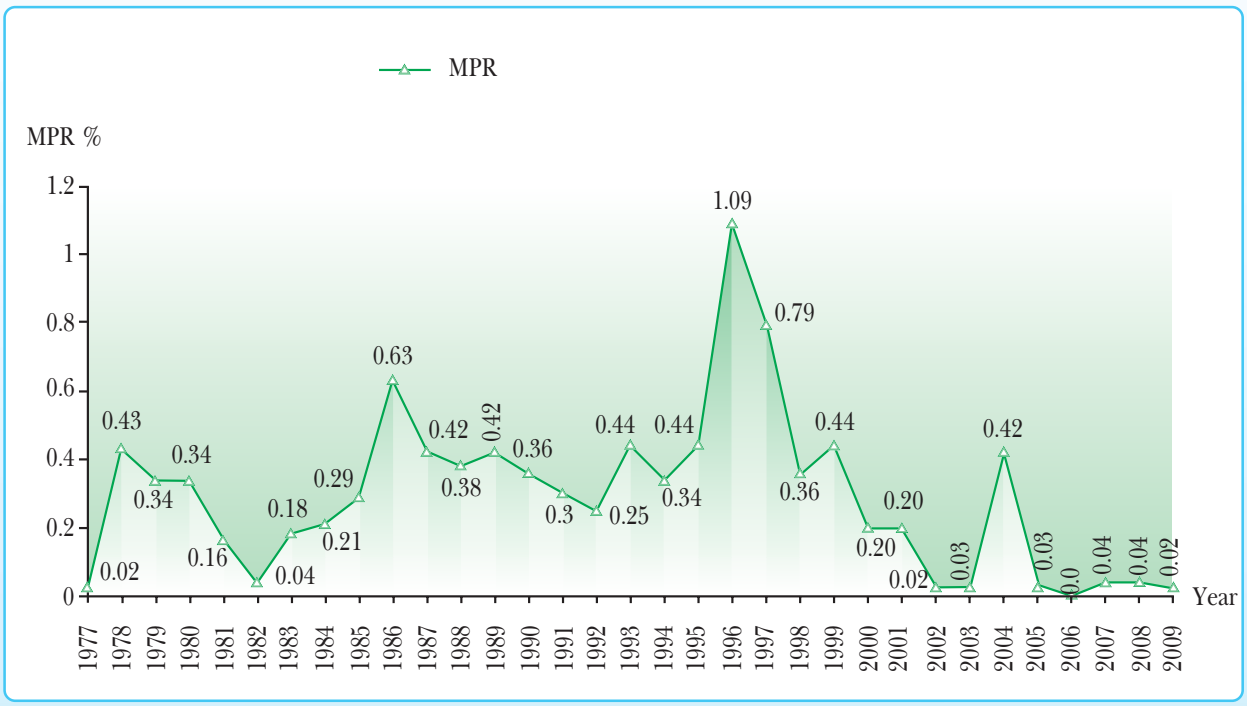
Overall, the filariasis control efforts have been able to reduce the prevalence rate (per 100,000 population) from 8.46 in 1992 to 0.25 in 2009 (Figure 5.21) and reduce the microfilaria positivity rate (MPR) in alien workers to less than 1% over the period of almost 30 years (1977–2009), except that in 1996 the rate was greater than 1% as a result of intensive health checkups for foreign workers (Figure 5.22). However, filariasis is still a public health problem in some areas, particularly the provinces along the Thai-Myanmar and Thai-Malaysian borders. This is largely because of the environmental conditions being favourable to mosquito breeding and the border areas being the places where workers especially from Myanmar cross over to find jobs in Thailand.

Figure 5.21 Prevalence rate of filariasis, Thailand, 1992–2009



Source: Department of Disease Control, MoPH.

Figure 5.22 Microfilaria positivity rate in alien workers, 1977–2009



Source: Department of Disease Control, MoPH.

2.3 HIV/AIDS, Tuberculosis and Sexually Transmitted Infections

2.3.1 HIV/AIDS

(1) HIV Infection Situation

According to the report on sentinel surveillance of HIV infection in the seven major target groups of population, implemented in all provinces during the period 1989-2009, the situation and trends can be summarized as follows:

Blood donors. The prevalence increased from 0.28% in 1989 to the peak of 0.81% in 1992, and then gradually dropped to 0.21% in 2009 (Figure 5.23).

Pregnant women attending antenatal clinics. The prevalence rose from 0.68% in 1991 to the peak of 2.29% in 1995, and then gradually dropped to 0.76% in 2009 (Figure 5.23).

Injecting drug users. The prevalence was approximately 30–43% throughout the period 1989–1997. After 1997, the prevalence rose to the peak of 50.77% in 1999, and fell to 34.98% in 2009 (Figure 5.24).

Male clients attending STI clinics. The prevalence jumped from 2.50% in 1990 to the peak of 8.5% in 1994 and remained stable at 7–9% during 1995–1999, but declined to 5.49% in 2009 (Figure 5.24).

Direct female Commercial Sex Workers (CSWs). The prevalence rose from 3.47% in 1989 to the peak of 33.15% in 1994, and fell to 3.88% in 2009 (Figure 5.24).

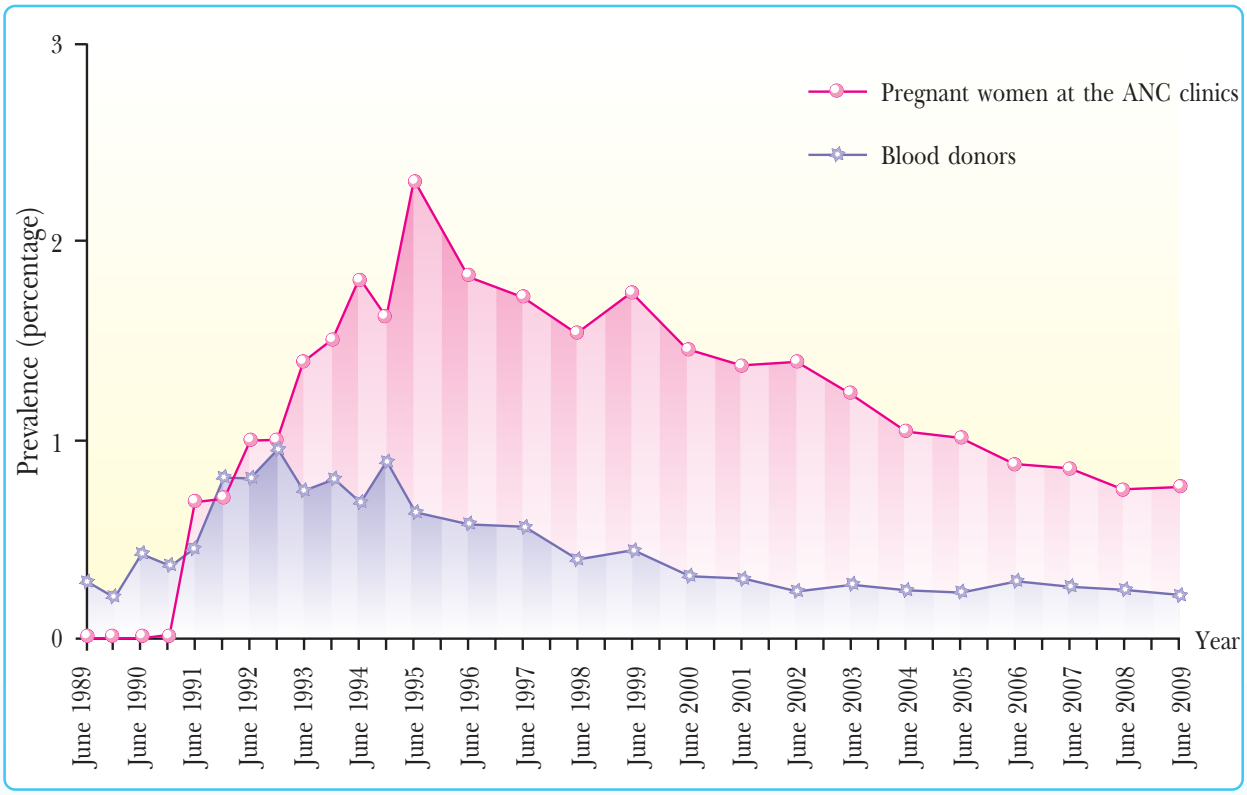
Indirect female CSWs. The prevalence escalated from 2% in 1990 to the peak of 10.14% in 1996. Since then the rate has gradually declined to 2.21% in 2009 (Figure 5.24).

Military recruits or conscripts. The prevalence increased from 1.6% in 1990 to the peak of 4% in 1993, and since then has dropped to 0.5% in 2009 (Figure 5.25).

It is noteworthy that the HIV/AIDS epidemic in Thailand originated in homosexual males during the period 1986–1987, then it spread to injecting drug users, female commercial sex workers, male sex seekers and, eventually, to families.

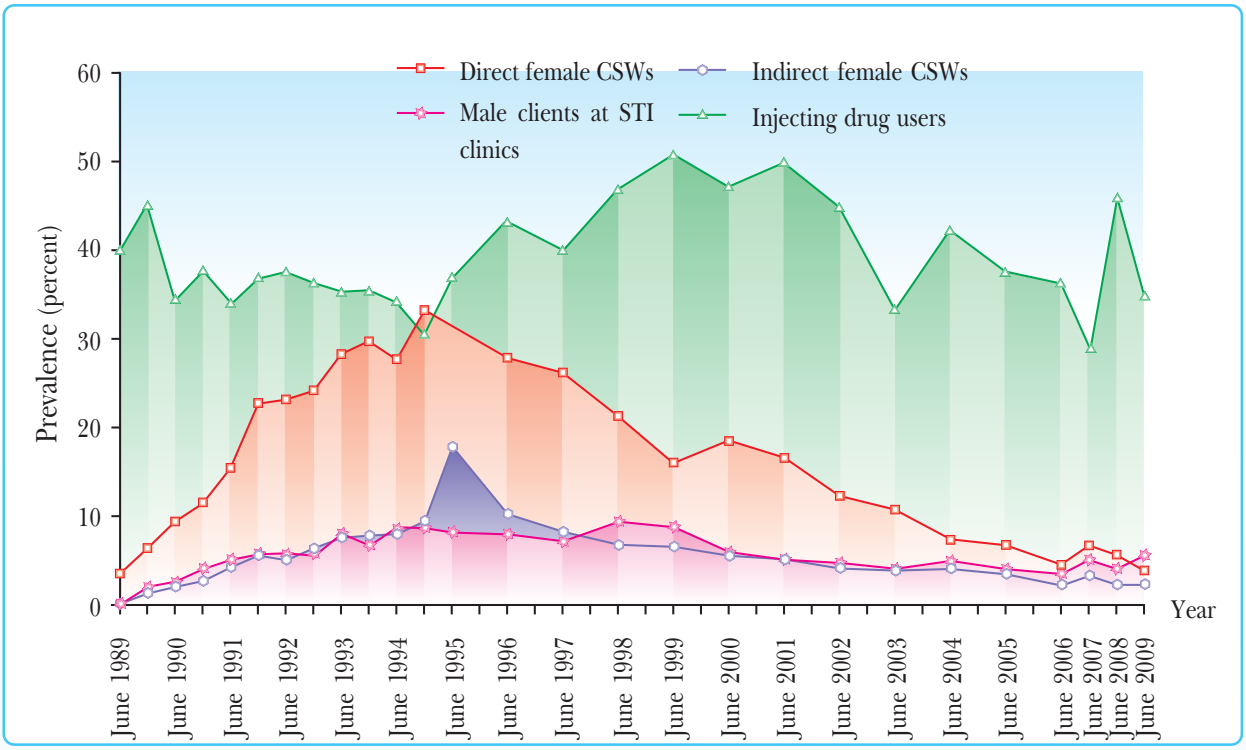
Nevertheless, the reduction in the HIV transmission in the heterosexual group during 1995–1996 was possibly a result of intensive health education campaigns among the high-risk group, coupled with the 100% condom use campaigns among female CSWs (Figure 5.30).

Figure 5.23 Prevalence of HIV infections in blood donors and pregnant women at the ANC clinics in government hospitals, 1989–2009



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Figure 5.24 Prevalence of HIV infections in direct and indirect female CSWs, male clients at STI clinics, and injecting drug users, Thailand, 1989–2009

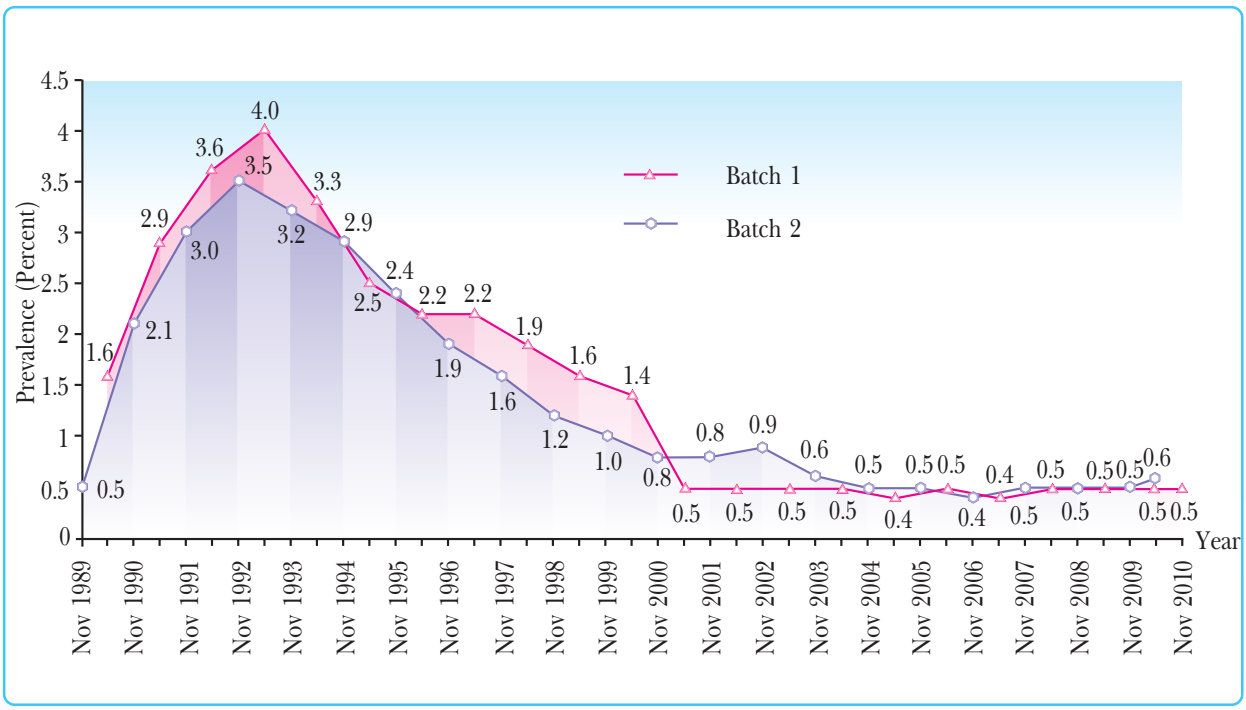


Group	June 1989	June 1990	June 1991	June 1992	June 1993	June 1994	June 1995	June 1996	June 1997	June 1998	June 1999	June 2000	June 2001	June 2002	June 2003	June 2004	June 2005	June 2006	June 2007	June 2008	June 2009
Direct female CSWs	3.47	9.30	15.24	22.97	28.25	27.64	33.15[(1)]	27.78	26.14	21.13	16.00	18.46	16.56	12.34	10.63	7.36	6.80	4.59	6.77	5.57	3.88
Indirect female CSWs	0.00	2.00	4.34	5.02	7.58	8.00	9.48[(1)]	10.14	8.22	6.74	6.56	5.51	5.03	4.07	3.88	4.00	3.37	2.27	3.27	2.28	2.21
Male clients at STI clinics	0.00	2.50	5.05	5.71	8.00	8.50	8.16	8.00	7.07	9.30	8.71	5.96	5.08	4.76	4.00	5.00	4.13	3.39	5.02	4.05	5.49
Injecting drug users	40.09	34.51	34.04	37.50	35.21	34.27	37.00	43.26	40.00	46.88	50.77	47.17	50.00	44.91	33.33	42.22	37.64	36.33	28.90	45.91	34.98
Pregnant women at ANC clinics	0.00	0.00	0.68	1.00	1.39	1.80	2.29	1.81	1.71	1.53	1.74	1.46	1.37	1.39	1.23	1.04	1.01	0.87	0.85	0.75	0.76
Blood donors	0.28	0.43	0.45	0.81	0.74	0.68	0.63	0.56	0.56	0.39	0.44	0.31	0.30	0.24	0.27	0.23	0.22	0.29	0.26	0.26	0.21

Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: [(1)] Data for December 1994.

Figure 5.25 Prevalence of HIV infections in Thai male military recruits, November 1989 – November 2010



Sources: Armed Forces Research Institute of Medical Sciences, Royal Thai Army Medical Department.
Institute of Pathology, Phra Mongkutklao Medical Centre, Royal Thai Army.

(2) Prevalence of AIDS Cases

According to the report on the number of AIDS patients during 1984–2009 by geographic region, the highest prevalence rates (per 100,000 population) were reported in the Central Region and the North, while the lowest rate was reported in the Northeast (Figure 5.26).

Nonetheless, the number of reported cases remains lower than actuality; as a matter of fact only 4.2–52.3%[7] of all the cases are actually reported.

(3) Projection of the Numbers of HIV-Infected Persons and AIDS Cases

The Ministry of Public Health and the Office of the National Economic and Social Development Board (NESDB), using the Asian Epidemic Model (AEM) technique, have estimated that between 2005 and 2011 the numbers of new HIV-infected and AIDS cases are on a declining trend while the cumulative numbers of HIV-infected cases and deaths due to AIDS slightly increase (Table 5.12 and Figure 5.27).

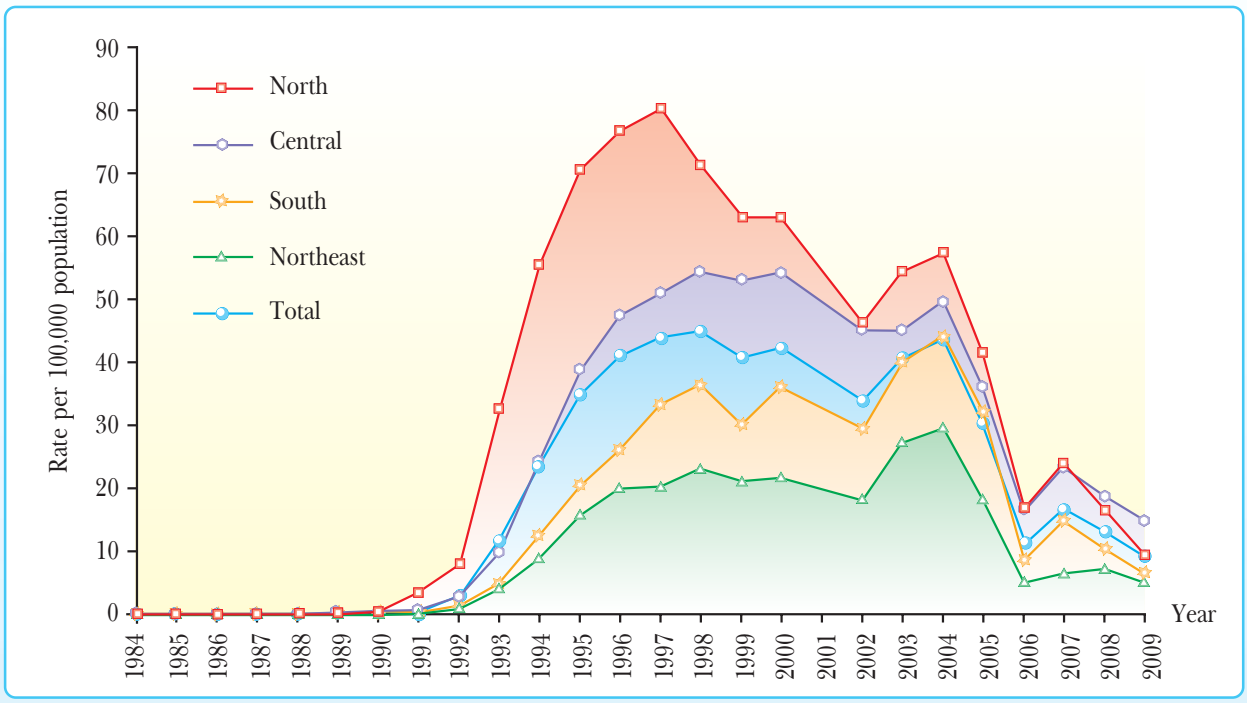
[7] Bureau of Epidemiology, MOPH. Assessment of the Completeness of AIDS Patients Reporting, for 2004, 2007.

Table 5.12 Projection of the numbers of HIV-infected persons, AIDS cases and deaths, 2005–2011

Category	Projected number of cases or deaths						
	2005	2006	2007	2008	2009	2010	2011
No. of new infections	16,513	15,174	13,936	12,787	11,753	10,853	10,097
No. of infections, accumulated	1,073,518	1,088,692	1,102,628	1,115,415	1,127,168	1,138,020	1,148,117
No. of AIDS cases (alive)	562,243	556,848	546,578	532,522	516,632	499,324	481,770
No. of new AIDS cases	50,254	50,814	51,091	50,657	49,049	46,272	42,992
No. of deaths due to AIDS	18,843	20,797	24,830	26,935	27,680	28,123	27,557
No. of deaths due to AIDS, accumulated	513,268	534,065	558,895	585,830	613,510	641,633	669,191

Source: Thai Working Group on HIV/AIDS Projection in Thailand 2005–2025 Using the Asian Epidemic Model.

Figure 5.26 Rates of reported AIDS cases by region, Thailand, 1984–2009

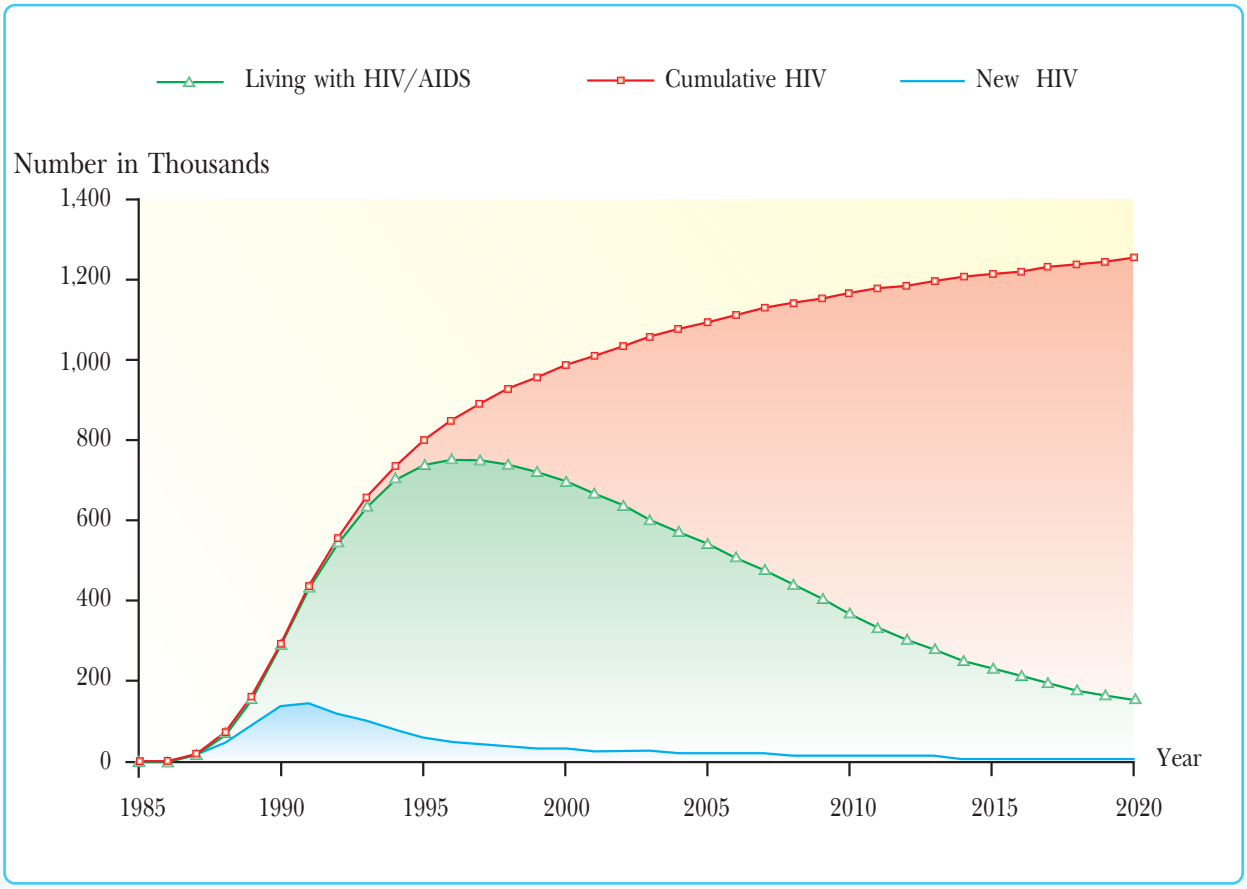


Region	1984	1986	1988	1990	1992	1994	1996	1998	2000	2002	2003	2004	2005	2006	2007	2008	2009
North	-	-	0.04	0.61	7.76	55.08	76.66	71.17	62.86	45.73	54.26	57.15	41.31	15.7	24.30	16.54	9.22
Central	0.01	0.01	0.03	0.40	2.85	23.97	47.15	54.22	53.65	44.83	44.76	49.28	35.73	16.51	23.23	18.58	14.96
South	-	-	0.01	0.07	1.35	12.46	25.81	36.06	35.98	29.15	39.84	43.88	32.18	8.63	14.73	10.46	6.47
Northeast	-	-	0.01	0.11	1.14	8.82	20.15	23.27	21.74	18.16	27.12	29.66	18.15	5.06	6.50	7.09	5.16
Total	**-**	**-**	**0.02**	**0.30**	**3.06**	**23.49**	**40.89**	**44.66**	**42.06**	**33.71**	**40.85**	**43.32**	**30.29**	**11.36**	**16.57**	**13.18**	**9.40**

Source: Bureau of Epidemiology, Department of Disease Control.

Note: The number of reported cases is about 4.2–52.3% of actuality.

Figure 5.27 Projections of the number of persons living with HIV/AIDS each year, cumulative number of HIV-infected persons, and number of new infections, Thailand, 1985–2020



Source: Department of Disease Control, MoPH.

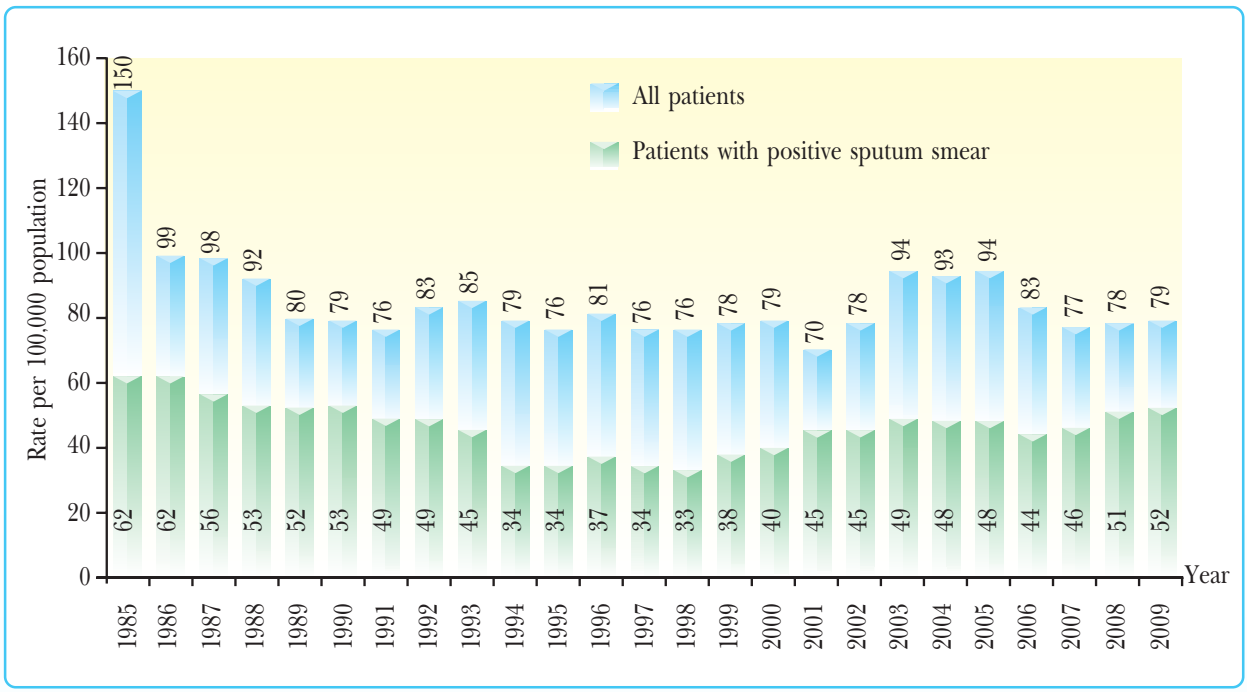
2.3.2 Tuberculosis

The tuberculosis prevalence (per 100,000 population) was actually declining between 1985 and 1989 from 150 to 80; but between 1990 and 2005 it did not decrease, rather it increased slightly (Figure 5.28).

Owing to the HIV/AIDS epidemic, tuberculosis is becoming a public health problem. In all upper northern provinces, the TB-HIV coinfection rate rose from 4.1% in 1991 to 15.1% in 2005. Overall, for the entire country for over 20 years, the coinfection prevalence has increased from 14.5% in 1989 to 30.14% in 2009 (Figure 5.29).

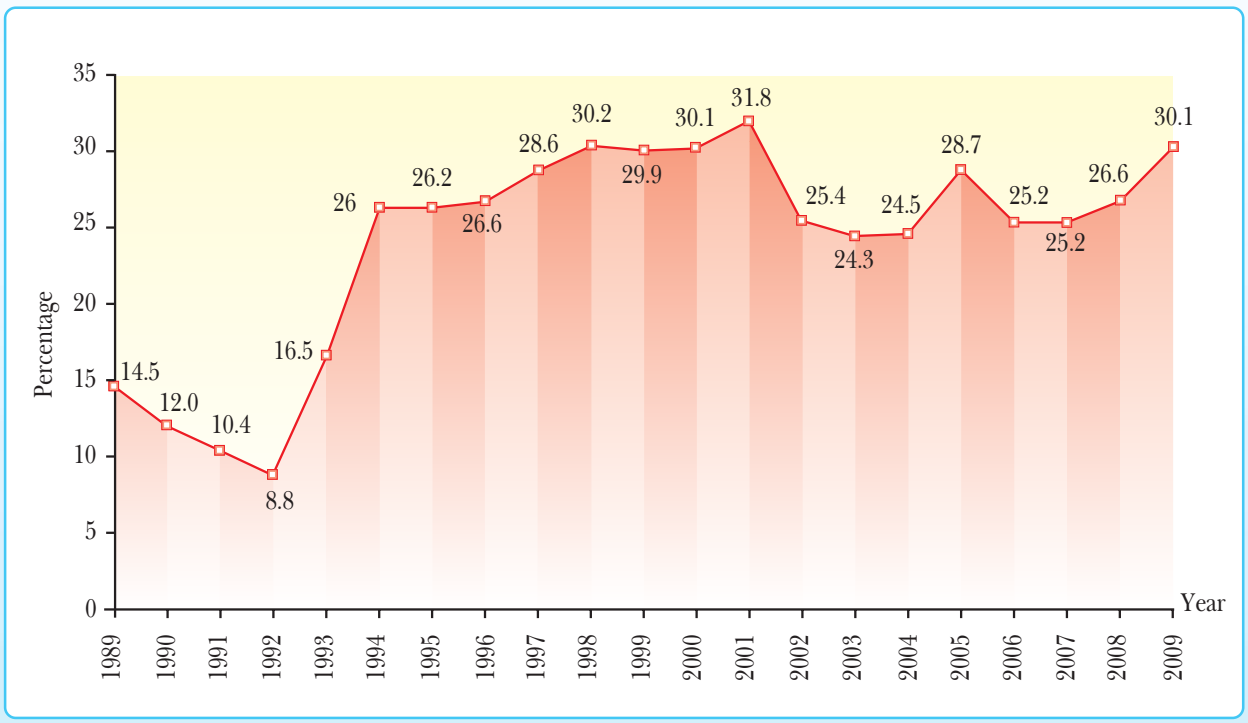
According to the 2008 WHO report, Thailand was ranked 18th among 22 countries with high burden of tuberculosis in the world. And WHO has also estimated that annually Thailand has 40,000 new tuberculosis cases in the infective stage; and totally each year there will be 90,000 cases of all types of tuberculosis with 13,000 deaths.

Figure 5.28 Rate of newly registered tuberculosis patients in Thailand, 1985–2009



Source: Department of Disease Control, MoPH.

Figure 5.29 Percentage of tuberculosis infections in HIV/AIDS patients in Thailand, 1989–2009

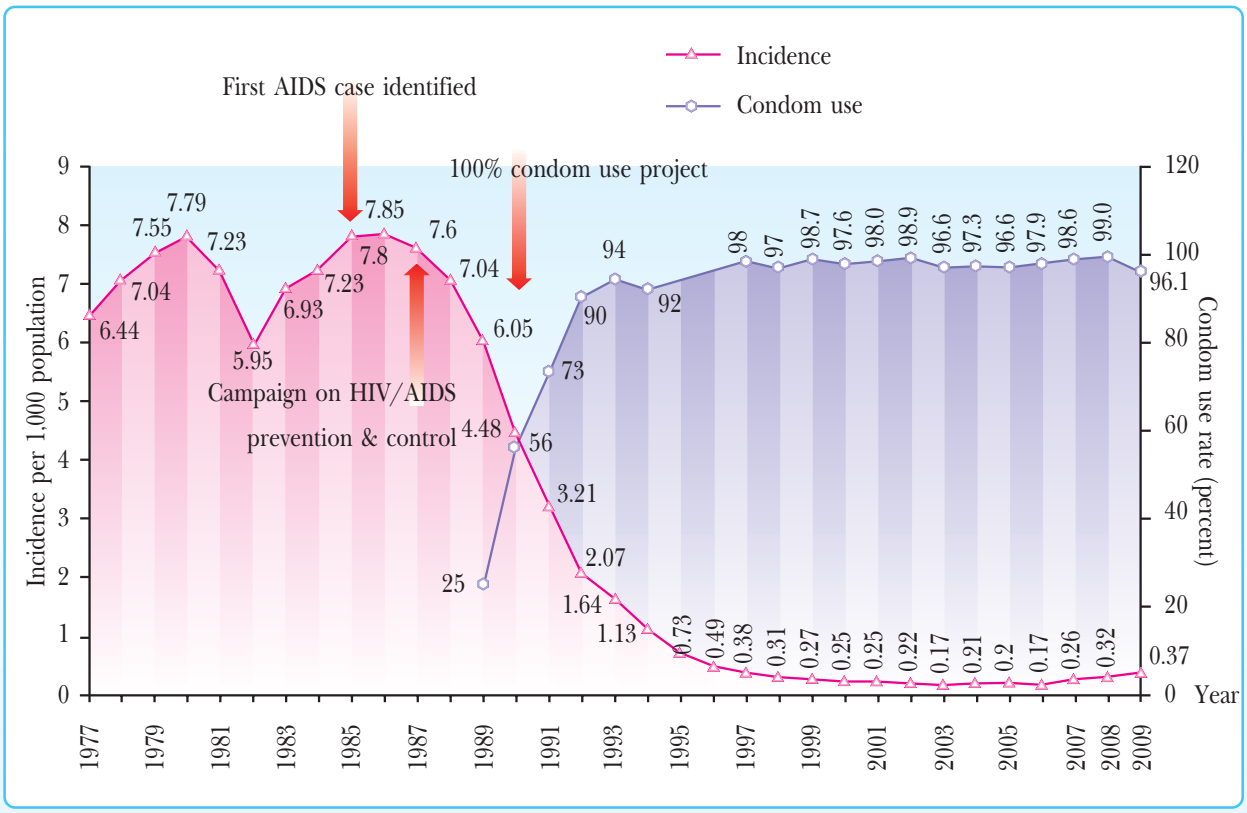


Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

2.3.3 Sexually Transmitted Infections (STIs)

Overall, the trends in STI prevalence in Thailand between 1977 and 2005 were improving. In particular, after 1986, the prevalence rate of STIs has fallen from 7.85 per 1,000 population in 1986 to 0.37 per 1,000 population in 2009 (Figure 5.30) as a result of the intensive campaigns on HIV/AIDS prevention and control. However, there have been signs of increase during 2007-2009, which need to be closely monitored.

Figure 5.30 Incidence of sexually transmitted infections and condom use rate among female commercial sex workers, Thailand, 1977–2009



Source: Bureau of Epidemiology and Cluster of STIs, Department of Disease Control, MoPH.

Note: Sexually transmitted infections include syphilis, gonorrhoea, chancroid, lymphogranuloma venereum, granuloma inguinale, and pseudogonorhoea.

2.4 Problems of Emerging Diseases

2.4.1 Avian Influenza

According to reports on avian influenza situation since 2003 Thai detected the first case of avian flu on 23 January 2004 and to date there have been 17 confirmed cases, of whom 12 have died; a case-fatality rate being 70.6%. As the government has implemented a drastic prevention and control measures, the disease outbreak can be successfully prevented. Since 2007 there has been no report of human-to-human transmission of the disease (Table 5.13).

Table 5.13 Avian influenza: numbers of confirmed cases and deaths in Thailand, 2003–2009

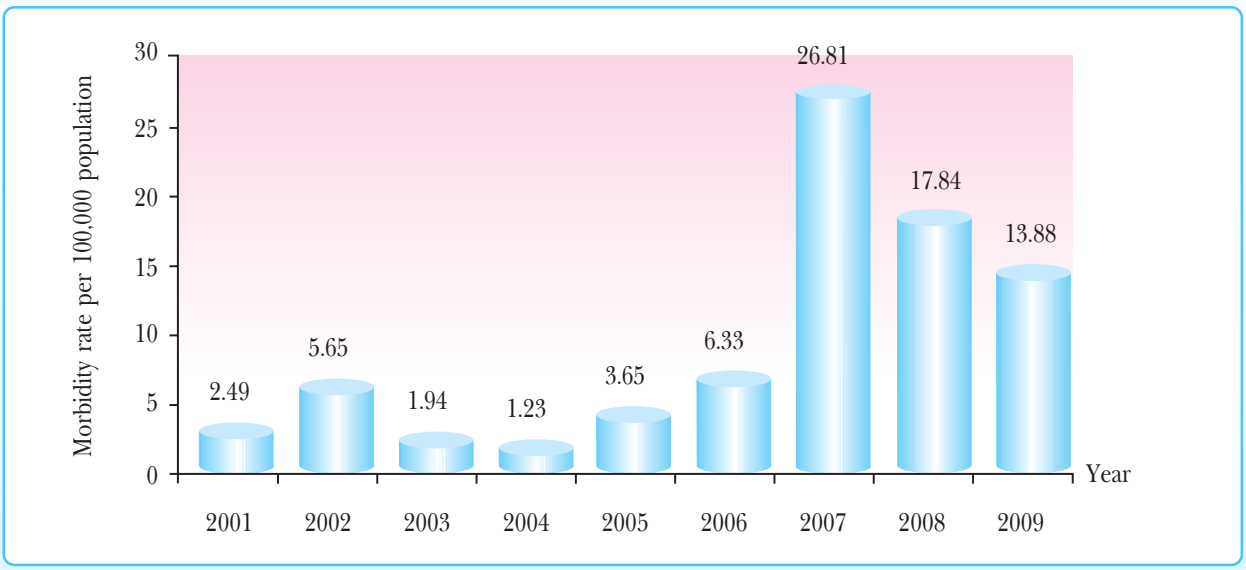
Case / death	No. of cases or deaths							
	2003	2004	2005	2006	2007	2008	2009	Total
Confirmed cases	0	17	5	3	0	0	0	25
Deaths	0	12	2	3	0	0	0	17
Case-fatality rate (%)	0.0	70.6	40.0	100.0	0.0	0.0	0.0	68.0

Source: National Institute of Health, Department of Medical Sciences, MoPH.

2.4.2 Hand-Foot-Mouth Disease

Hand-foot-mouth disease is another emerging disease; its outbreak was reported in 1997 in Malaysia. For Thailand, there have been reported cases since 2000; and in 2009 the morbidity rate was 13.88 per 100,000 population with 2 deaths (Figure 5.31).

Figure 5.31 Morbidity rate of hand-foot-mouth disease, 2001-2009



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Laboratory testing for enterovirus 71 conducted by the National Institute of Health of the Department of Medical Sciences in 2009 found that 7.0% of the samples were positive for the virus (Table 5.14).

Table 5.14 Number of cases and laboratory testing results for hand-foot-mouth disease, 2004–2009

Year	Surveillance situation		Lab tests positive for enterovirus 71 (%)
	Cases	Deaths	
2004	769	0	0
2005	2,270	0	5.97
2006	3,961	7	13.5
2007	16,846	0	12.9
2008	11,277	4	5.87
2009	8,806	2	7.0

Source: National Institute of Health, Department of Medical Sciences, MoPH.

2.4.3 Pandemic (H1N1) 2009

Pandemic (H1N1) 2009, or pandemic influenza A(H1N1), has spread and resulted in a public health crisis all over the world. As of 14 May 2010, the World Health Organization (http://www.who.int) reported that there were confirmed cases of the disease in 214 countries with at least 18,036 deaths (Table 5.15).

In Thailand, between 28 April 2009 and 18 October 2010, pandemic (H1N1) 2009 also spread, similar to that in other countries worldwide, beginning with a reported case coming into Thailand from another country in early May 2009. After that the disease began to spread on a limited scale and then on a wider scale. As of 13 October 2010, there were 225 deaths and it was reported that there might be millions of infected people nationwide. The first wave of the epidemic lasted for 6 months from May to October 2009 with an infection rate of 13%, or 8.3 million infected persons. And the second wave of epidemic occurred between January and April 2010 with the infection rate of 8.9%, or 5–6 million infected persons.

Table 5.15 Summary of reported deaths due to pandemic (H1N1) 2009, by WHO region, as of 14 May 2010

WHO Region	Cumulative total Deaths
WHO Regional Office for Africa (AFRO)	168
WHO Regional Office for the Americas (AMRO)	At least 8,361
WHO Regional Office for the Eastern Mediterranean (EMRO)	1,019
WHO Regional Office for Europe (EURO)	At least 4,861
WHO Regional Office for South-East Asia (SEARO)	1,798
WHO Regional Office for the Western Pacific (WPRO)	1,829
Total	**At least 18,036**

ที่มา: http://www.who.int-Update 2010.

2.5 Non-communicable Diseases

2.5.1 Cancer

Cancer is a major health problem among Thai people. According to the 2003 report on cancer in Thailand of the National Cancer Institute, among Thai males with cancer, the largest proportion of them had liver and bile duct cancer, followed by lung and intestinal cancer, while among Thai females with cancer, the largest proportion of them had breast cancer, followed by cervical cancer and liver and bile duct cancer (Figure 5.32). The incidence of cancer commonly found in various organs are as follows:

(1) Cervical and Breast Cancers

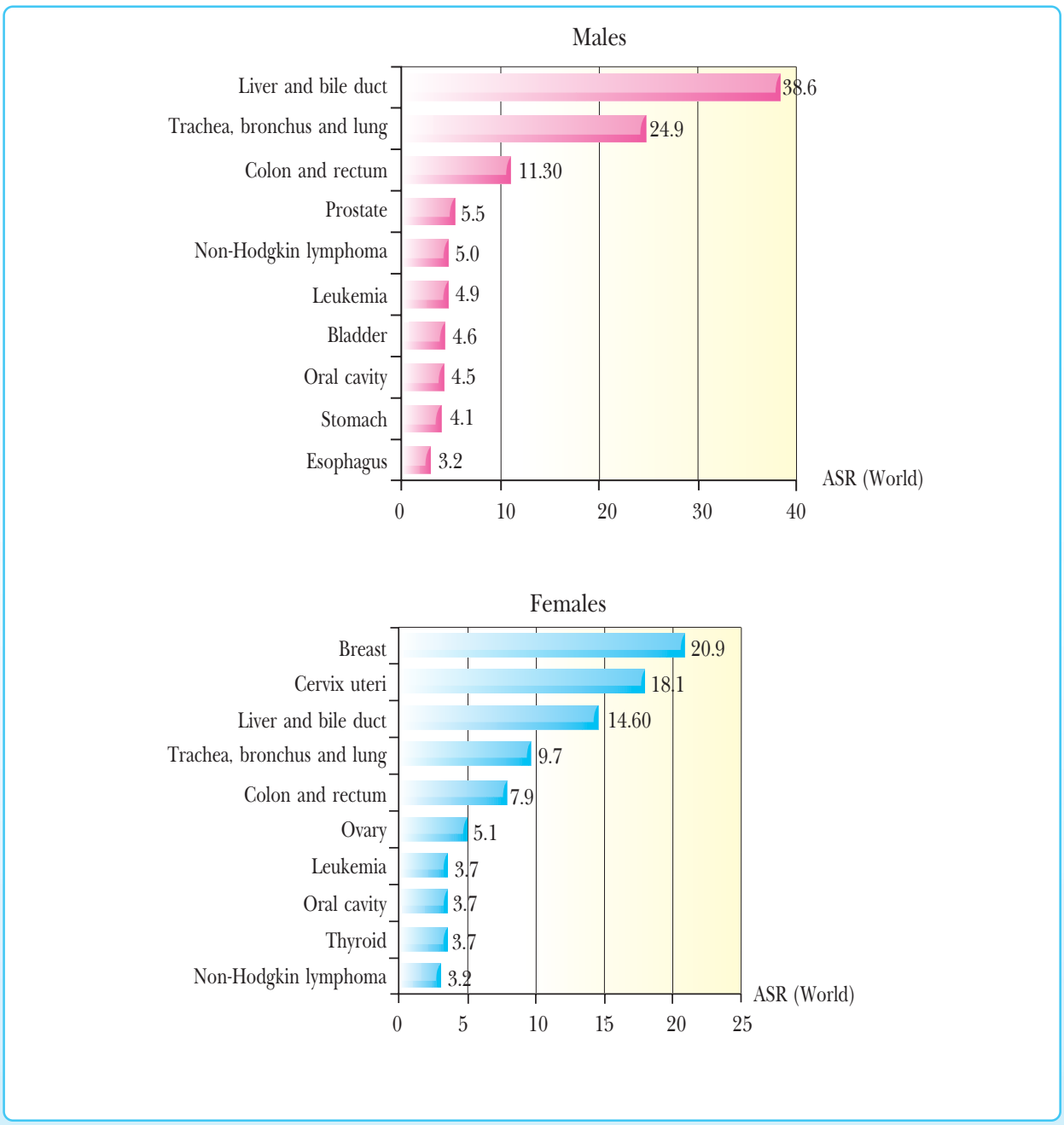
Cervical and breast cancers are fatal diseases that affect Thai women resulting in their premature death; and the trend is rising each year (Table 5.16) especially among female residents in Bangkok with a rising incidence of such cancers (Figure 5.33). According to the cancer registry in five member provinces, the highest rate of cervical cancer was recorded in Chiang Mai Province, while the highest rate of breast cancer was recorded in Bangkok (Table 5.17). Classified by age, females aged 35 and older have a greater incidence rate of cervical and breast cancers than those aged under 35. In comparison with those in the U.S., most American females (77%) had breast cancer when they were over 50 years of age, while it is only 40–59% among Thai females in the same age group (Table 5.18). Besides, it was found that 80% of Thai female breast cancer patients were in the invasive stage[8].

According to the 2008–09 health examination survey among females aged 15–59 years across the country, it was found that 42.5% of respondents had ever undergone a cervical cancer screening test, while the 2009 NSO survey reported a higher percentage of 60.2% (Table 5.19).

[8] Thammanit Angsusingh. Screening Mammography. Breast Cancer Treatment Centre, Siriraj Hospital.

Regarding breast self-examination, it was found in 2004 that approximately 50% of respondents had ever done a breast self-examination, while the 2006 survey, revealed that only 25% had ever done so. Concerning breast examination conducted by health personnel, between 2004 and 2009, about 18–23% of females had ever received such service, (Table 5.19). However, only 2–4% of females aged 40-59 nationwide had ever taken a mammogram (Table 5.19).

Figure 5.32 Top 10 commonly found cancers in Thailand, 2003



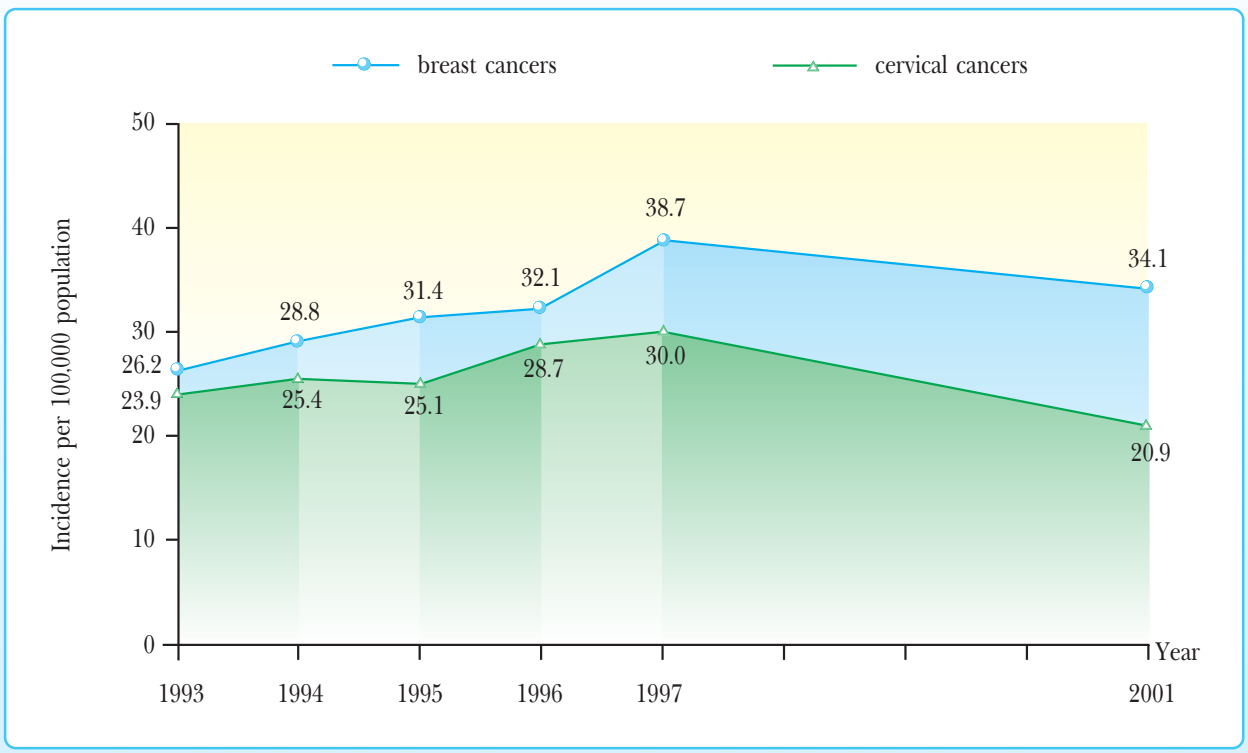
Source: Cancer in Thailand, 2001–2003.

Table 5.16 Incidence of cancers commonly found among Thai females, 1990, 1993, 1996,1999, 2000 and 2001

Number	Type of cancer	Incidence rate per 100,000 population					
		1990	1993	1996	1999	2000	2001
1	Cervical cancer	23.4	20.9	19.5	19.8	24.7	18.1
2	Breast cancer	13.5	16.3	17.2	19.9	20.5	20.9
3	Liver cancer	16.3	15.5	16.0	14.3	12.3	14.6
4	Lung cancer	12.1	11.1	10.0	9.9	9.3	9.7
5	Ovarian cancer	4.5	4.7	5.2	6.2	6.0	5.1

Source: Cancer in Thailand, 2001–2003.

Figure 5.33 Incidence of cervical and breast cancers among females in Bangkok, 1993–2001



Source: Cancer in Thailand, 2001–2003.

Table 5.17 Percentage of cancers of the reproductive organs recorded at provincial cancer registries, 1993, 1996, 1999 and 2001

Province	Cervical cancer, %				Breast cancer, %				Ovarian cancer, %			
	1993	1996	1999	2001	1993	1996	1999	2001	1993	1996	1999	2001
Chiang Mai	25.7	25.6	29.4	25.1	15.2	17.6	20.7	21.8	6.0	4.7	6.9	4.9
Lampang	23.1	23.6	22.3	23.8	15.0	16.4	20.8	25.5	4.4	3.7	4.6	6.3
Khon Kaen	18.0	15.0	15.9	15.3	8.6	11.6	13.7	15.6	4.5	5.6	6.2	5.2
Bangkok	18.5	20.7	19.3	20.9	20.6	25.4	24.3	34.1	4.2	5.9	6.1	6.6
Songkhla	15.8	16.1	20.6	16.2	11.5	12.1	17.2	20.8	3.1	4.6	5.7	5.0

Source: Cancer in Thailand, 2001–2003.

Table 5.18 Cases and proportions of breast cancer among Thai women by age group, 1983–2009

Siriraj Hospital's Surgery Department 1,353 cases (1983-1994)			Thanyarak Centre 5,994 cases (1995-2004)		Thanyarak Centre 219 cases (2005)		Thanyarak Centre 449 cases (2006)		Thanyarak Centre 597 cases (2007)		Thanyarak Centre 518 cases (2008)		Thanyarak Centre 839 cases (2009)	
Age (yrs)	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
< 40	311	23.0	996	16.6	39	13.4	53	11.8	64	10.72	67	12.93	89	10.61
40-49	437	32.3	2,487	41.5	97	33.4	158	32.2	206	34.51	171	33.01	219	26.10
50-59	353	26.1	1,721	28.7	92	31.6	139	31.0	188	31.49	158	30.50	289	34.45
60-69	162	12.0	597	10.0	37	12.7	68	15.1	90	15.08	89	17.18	144	17.16
70 and over	90	6.6	193	3.2	26	8.9	31	6.9	49	8.21	33	6.37	98	11.68
Total	**1,353**	**100**	**5,994**	**100**	**291**	**100**	**449**	**100**	**597**	**100**	**518**	**100**	**839**	**100**

Source: Thammanit Angsusing. Screening Mammography, Thanyarak Breast Cancer Centre.

Table 5.19 Percentage of Thai women who have ever taken screening tests for cervical and breast cancers by age group, 2004, 2006, 2007–2009

Screening	Percentage by age group (years), 2004 [1]				Percentage		
	15-29	30-44	45-59	Total	2006 [2]	2007 [3]	2008-2009 [2,4]
- Pap smear for cervical cancer	29.0	62.2	55.0	48.5	49.8	52.7	42.5-60.2
- Breast self-examination	35.0	58.3	53.5	48.7	24.6	-	23.6
- Breast examination by health personnel	13.2	28.1	27.9	22.7	24.5	-	17.9-20.3
- Mammogram (40-59 yrs)	-	-	-	4.0	-	-	2.5

Sources: 1. Report on the Third National Health Examination Survey, 2003-2004. Health Systems Research Institute, MoPH.

2. Report in Reproductive Health Survey, 2006 and 2009. National Statistical Office.
3. Survey on Risk Factors for NCDs and Injuries, 2007, Bureau of NCDs, Department of Disease Control, MoPH.
4. Report on the Fourth National Health Examination Survey, 2008-2009. National Health Examination Survey Office, Health Systems Research Institutes, MoPH.

(2) Liver Cancer

People's food consumption patterns have changed to eating out or eating readily-cooked food bought from restaurants or food stalls where the food might have been contaminated with pathogens or toxic substances due to unhygienic practices of the food handlers. Consumers, then, are likely to be vulnerable to food-borne diseases. Eating improperly heated food, especially freshwater fish, might cause opisthorchiasis or liver fluke disease which is a major cause of liver cancer. Besides, the high prevalence of hepatitis B infection in the past is also the cause of chronic hepatitis, cirrhosis and liver cancer (Table 5.20) as Thailand is found to have the highest incidence of liver cancer in the world[9].

[9] Vatanasapt, V., Sriamporn, S. (1999). Cancer in Thailand 1992 - 1994 (IARC Technical Report No. 34), Lyon,IARC.

Table 5.20 Incidence of liver cancer Thailand, 1993, 1996, 1999, 2000 and 2001

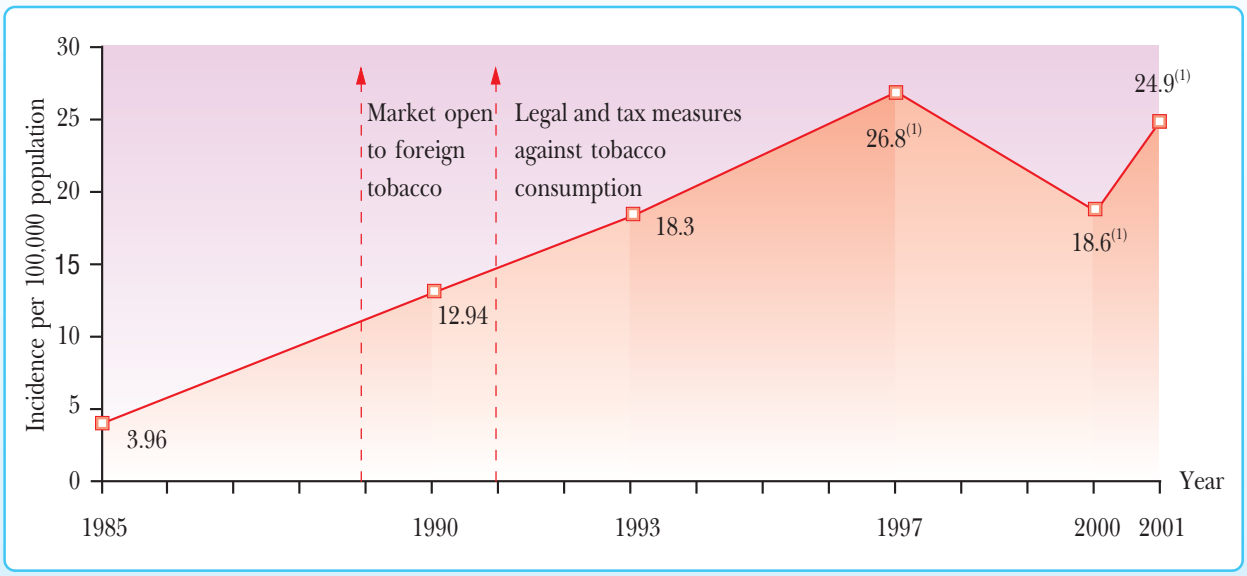
Year	Incidence (per 100,000 population)	
	Males	Females
1993	37.4	15.5
1996	40.5	16.0
1999	38.6	14.3
2000	31.2	11.5
2001	38.6	14.6

Source: Cancer in Thailand, 2001–2003.

(3) Lung Cancer

The incidence of lung cancer (per 100,000 population) increased sevenfold from 3.96 in 1985 to 26.8 in 1997, and dropped to 18.6 in 2000, but rose again to 24.9 in 2001, which was probably associated with tobacco consumption and air pollution (Figure 5.34).

Figure 5.34 Incidence of lung cancer in Thailand, 1985–2001

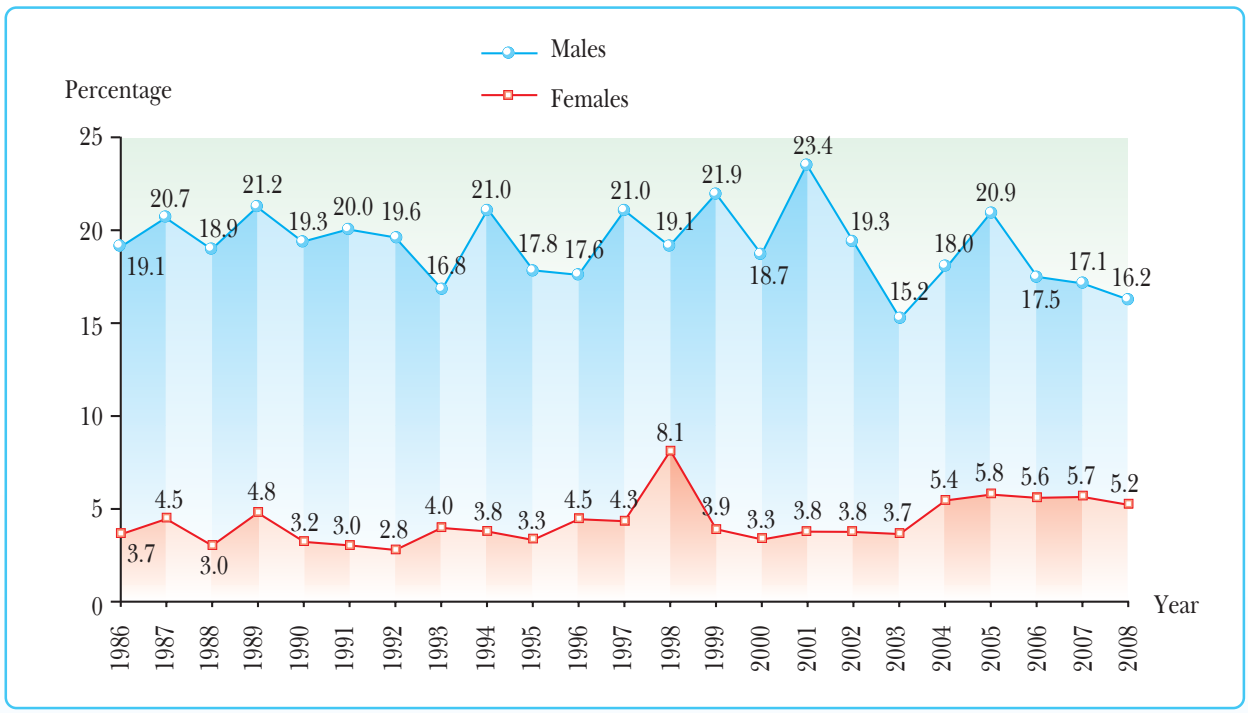


Source: Cancer in Thailand, 2001–2003.

Note: (1) Incidence of lung cancer in males.

Besides, according to the report on inpatient services at the National Cancer Institute between 1986 and 2008, 15% to 23% of inpatients were males, 3 to 8 times higher than in females (Figure 5.35).

Figure 5.35 Percentage of lung cancer patients registered for treatment at the National Cancer Institute, 1986–2008



Source: National Cancer Institute, Department of Medical Services, MoPH.

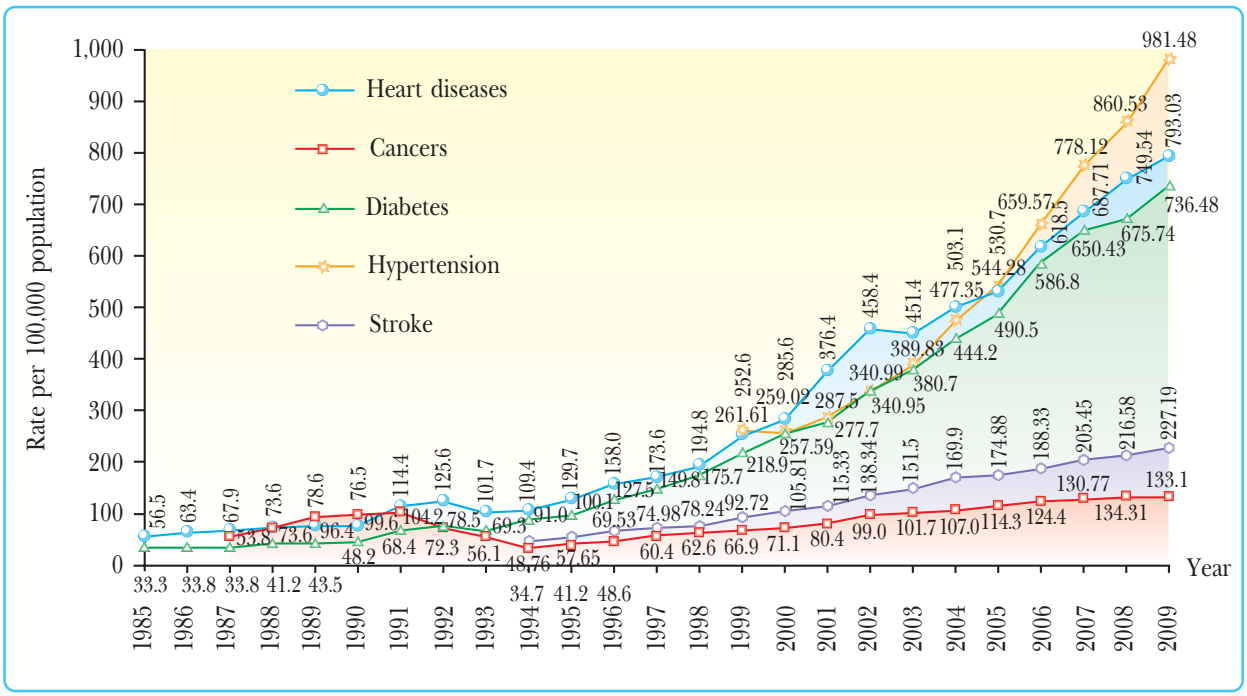
Note: As percentage of all cancer cases.

2.5.2 Heart Diseases, Diabetes, Hypertension and Stroke

Currently, the incidence of non-communicable diseases, that are the leading causes of morbidity and mortality among Thai people, including heart diseases, cancer, diabetes, hypertension and stroke, is on the rise. Such an increasing trend results from unhealthy consumption behaviours (eating foods with high carbohydrate, sugar and fat content), physical inactivity and overweight, as evidently demonstrated by the following hospital admission rates (per 100,000 population).

- Heart diseases. The admission rate has risen from 56.5 in 1985 to 109.4 in 1994 and to 793.03 in 2009.
- Cancer. The admission rate has risen from 34.7 in 1994 to 133.10 in 2009.
- Diabetes. The admission rate has also risen from 33.3 in 1985 to 91.0 in 1994 and 736.48 in 2009.
- Hypertension. The admission rate has risen from 261.61 in 1999 to 981.48 in 2009.
- Stroke. The admission rate has risen from 48.76 in 1994 to 227.19 in 2009 (Figure 5.36).

Figure 5.36 Rate of hospitalizations of patients with heart diseases, cancers, diabetes, hypertension and stroke, 1985-2009



Source: Inpatients Report. Bureau of Policy and Strategy, MoPH.

Note: The rate for cancers, since 1994, covers only liver, lung, cervical, and breast cancers.

Besides, the Bureau of Non-communicable Diseases, Department of Disease Control, MoPH, conducted surveys on risk behaviours for NCDs and chronic diseases among Thais aged 15–74 years in 2004, 2005 and 2007 and reported the following (Table 5.21):

The prevalence of overweight rose from 15.3% to 19.1% or an increase of approximately 1.8 million people.

The prevalence of obesity rose from 2.6% to 3.7% or an increase of approximately 0.5 million people.

The prevalence of hypertension rose from 8.0 % to 9.4% or an increase of approximately 0.7 million people.

The prevalence of diabetes rose from 3.2 % to 3.9% or an increase of approximately 0.4 million people.

The prevalence of stroke, paresis and paralysis rose from 0.8% to 1.1% or an increase of approximately 0.2 million people.

The prevalence of ischemic heart disease rose from 1.1% to 1.5% or increase of approximately 0.2 million people.

Table 5.21 Comparison of prevalence of health status and behavioural risk factors for NCDs among Thai people in 2004, 2005 and 2007

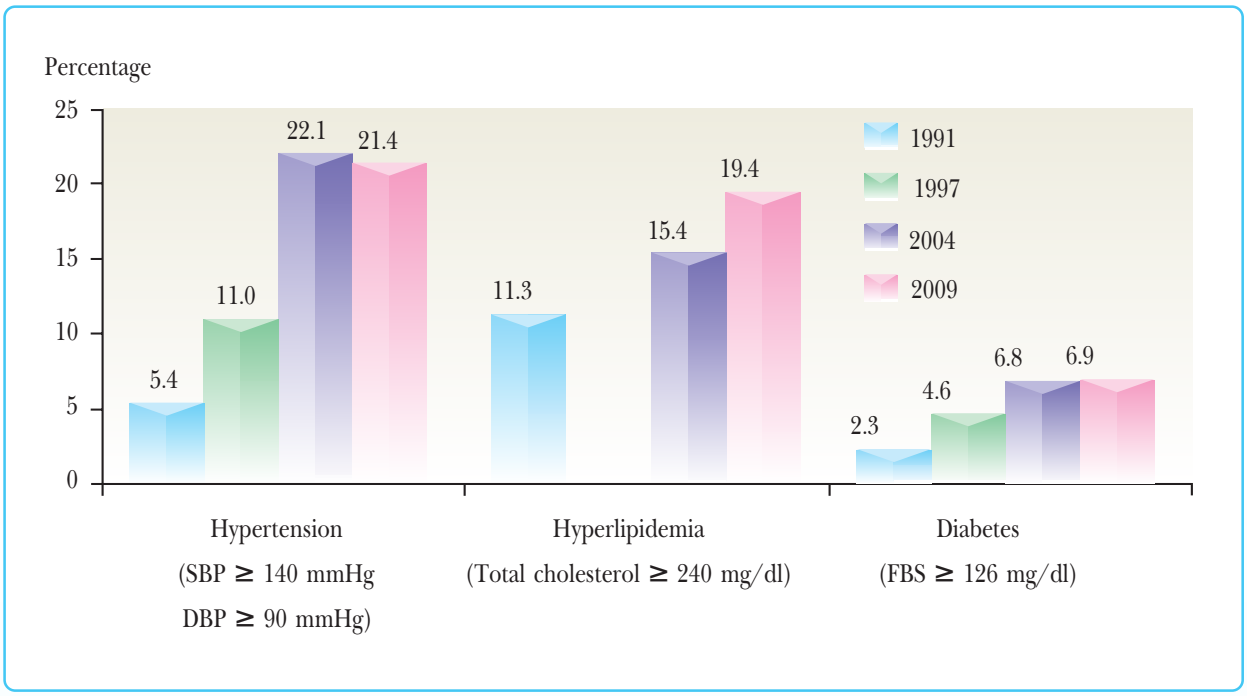
Health status and behavioural risk	Prevalence (percentage of people with risk or illness)			
	2004	2005	2007	change (2004-2007)
Overweight (BMI ≥ 25-30 kg/m^2)	15.3 (7.0 million)	16.1 (7.3 million)	19.1 (8.8 million)	+3.8 (1.8 million)
Obesity (BMI ≥ 30 kg./m^2)	2.6 (1.2 million)	3.0 (1.4 million)	3.7 (1.7 million)	+1.1 (0.5 million)
People with hypertension	8.0 (3.6 million)	8.3 (3.7 million)	9.4 (4.3 million)	+1.4 (0.7 million)
People with diabetes	3.2 (1.4 million)	3.7 (1.6 million)	3.9 (1.8 million)	+0.7 (0.4 million)
People with stroke (paresis/paralysis)	0.8 (0.3 million)	0.9 (0.4 million)	1.1 (0.5 million)	+0.3 (0.2 million)
People with ischemic heart disease	1.1 (0.5 million)	1.1 (0.5 million)	1.5 (0.7 million)	+0.4 (0.2 million)

Source: NCD Behavioural Risk Factor Surveillance Centre, Bureau of NCDs, Department of Disease Control, MoPH.

Note: Data on disease prevalence were obtained from history taking with the patients and thus were only from those who had known of that own illnesses.

Besides, the first through fourth health examination survey on Thai people (1991–2009) revealed that the prevalence of hypertension had a tendency to rise from 5.4% in 1991 to 11.0% in 1997 and to 21.4% in 2008–2009. Similarly, the diabetes prevalence had risen from 2.3% in 1991 to 4.6% in 1997 and 6.9% in 2008–2009; and for hyperlipidemia (high blood cholesterol), the rise was from 11.3% in 1991 to 19.4% in 2008-09 (Figure 5.37). This is evident that the prevalence of non-communicable diseases among Thais has got a rising trend; and more importantly, the proportion of patients who has never had any diagnosis is also higher, resulting in a lower rate of patients receiving medical treatment. Thus, the people in this group do not have a chance to receive preventive care for their complications that might occur after getting ill with the diseases (Figure 5.38).

Figure 5.37 Prevalence of chronic diseases that are major health problems among Thai people, 1991–2009



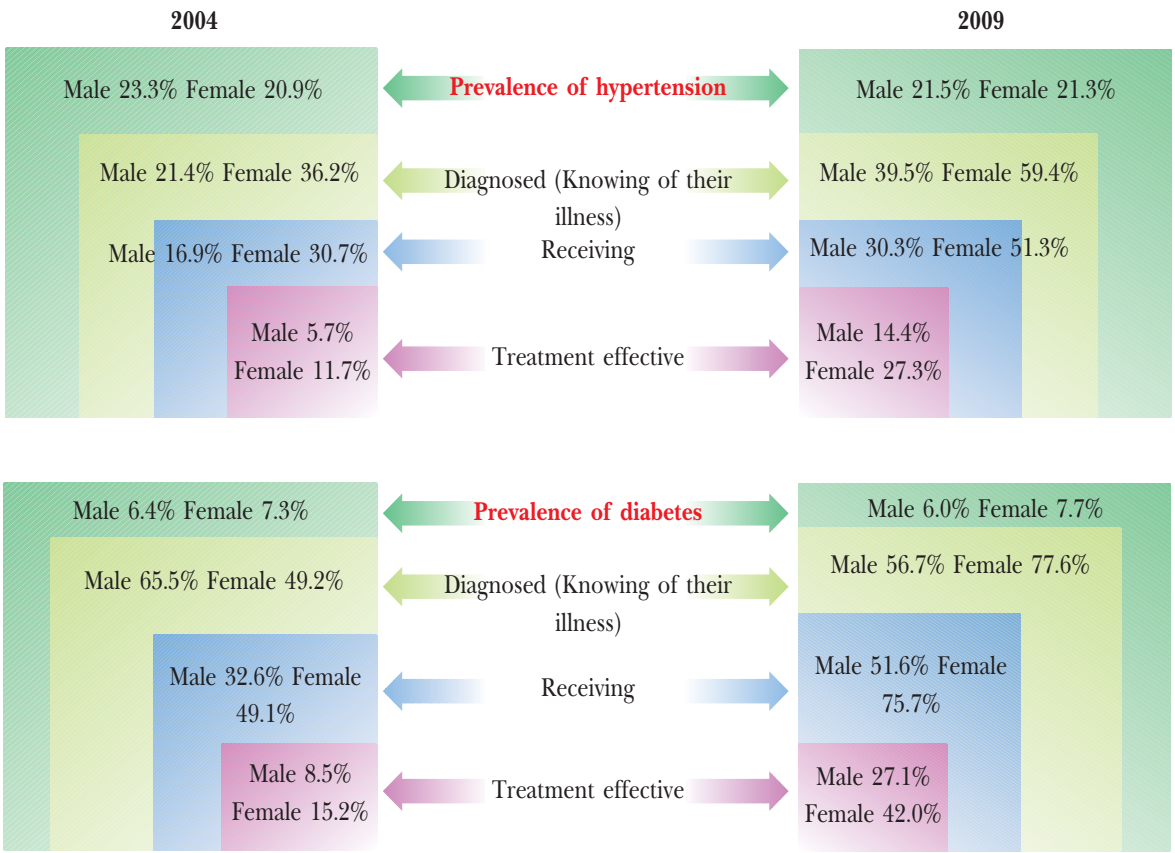
Sources: 1. Report on the First National Health Examination Survey, 1991–1992. Thai Health Research Institute.

2. Report on the Second National Health Examination Survey, 1996–1997. Thai Health Research Institute.
3. Report on the Third National Health Examination Survey, 2003–2004. Health Systems Research Institute and Bureau of Policy and Strategy, MoPH.
4. Report on the Fourth National Health Examination Survey, 2008-2009. National Health Examination Survey Office, Health Systems Research Institute, MoPH.

Notes: 1. Data on prevalence of diabetes and hypertension were obtained from blood test and blood-pressure taking, thus, being data from patients with known and unknown illness status.

2. Data on hyperlipidemia for 1996 were based on the total cholesterol level of 200 mg/dl; so they were uncomparable.

Figure 5.38 Prevalence of diabetes and hypertension as well as appropriate treatment among Thai people, 2004 and 2009

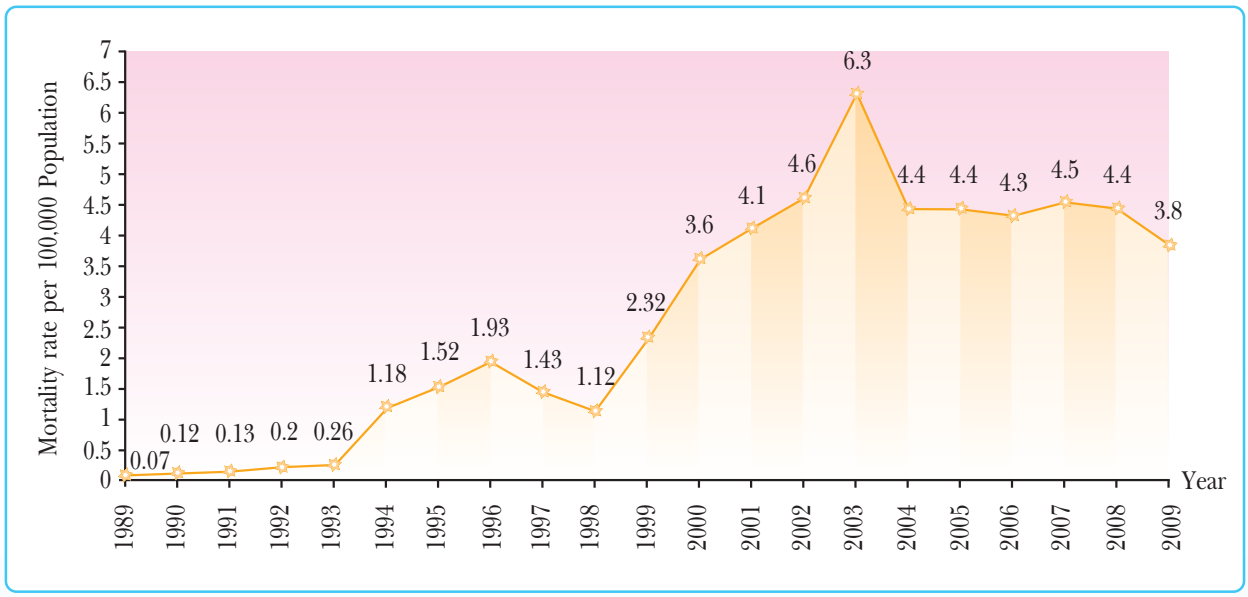


Sources: 1. Report on the Third National Health Examination Survey, 2003–2004. Health Systems Research Institute and Bureau of Policy and Strategy, MoPH.

2. Report on the Fourth National Health Examination Survey, 2008-2009. National Health Examination Survey Office, Health Systems Research Institute, MoPH.

2.5.3 Emphysema. The prevalence of emphysema has risen from 0.07 per 100,000 population in 1989 to 3.8 per 100,000 population in 2009 (Figure 5.39).

Figure 5.39 Mortality rate due to emphysema, 1989–2009

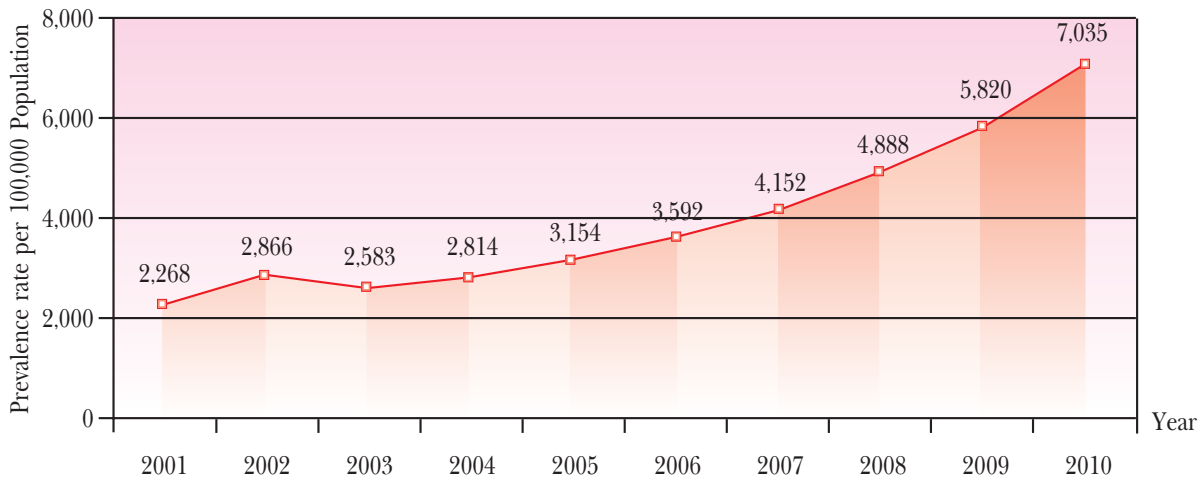


Source: Bureau of Policy and Strategy, MoPH.

2.5.4 Chronic Obstructive Pulmonary Disease (COPD). A major cause of COPD is cigarette smoking or exposure to smog for a long period of time. According to the 2004 and 2009 National Health Examination Surveys, 0.5% of the people aged 15 and over had COPD. In 2010, it was estimated that the prevalence of COPD among Thais would be 7,035 per 100,000 population[10] (Figure 5.40).

[10] The projection was based on the assumption that in the next 10 years the smoking rate will decrease each year by 0.42% among males and 0.16% among females.

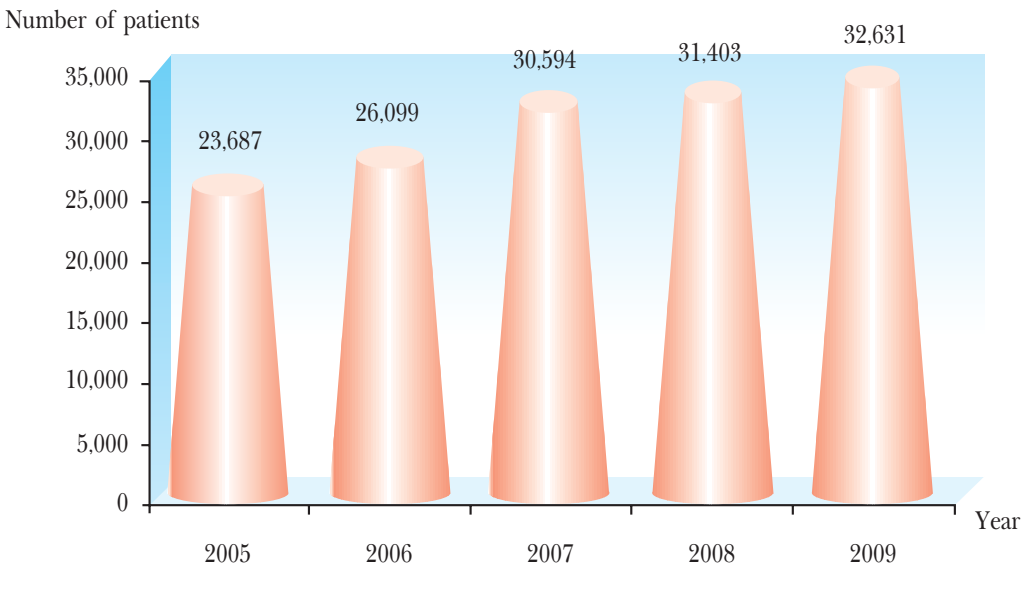
Figure 5.40 Projection of chronic obstructive pulmonary disease prevalence, Thailand, 2001–2010



Source: Sawang Saenghiranwattana. Chronic Obstructive Pulmonary Disease: Current Situation and Trends, 1999.

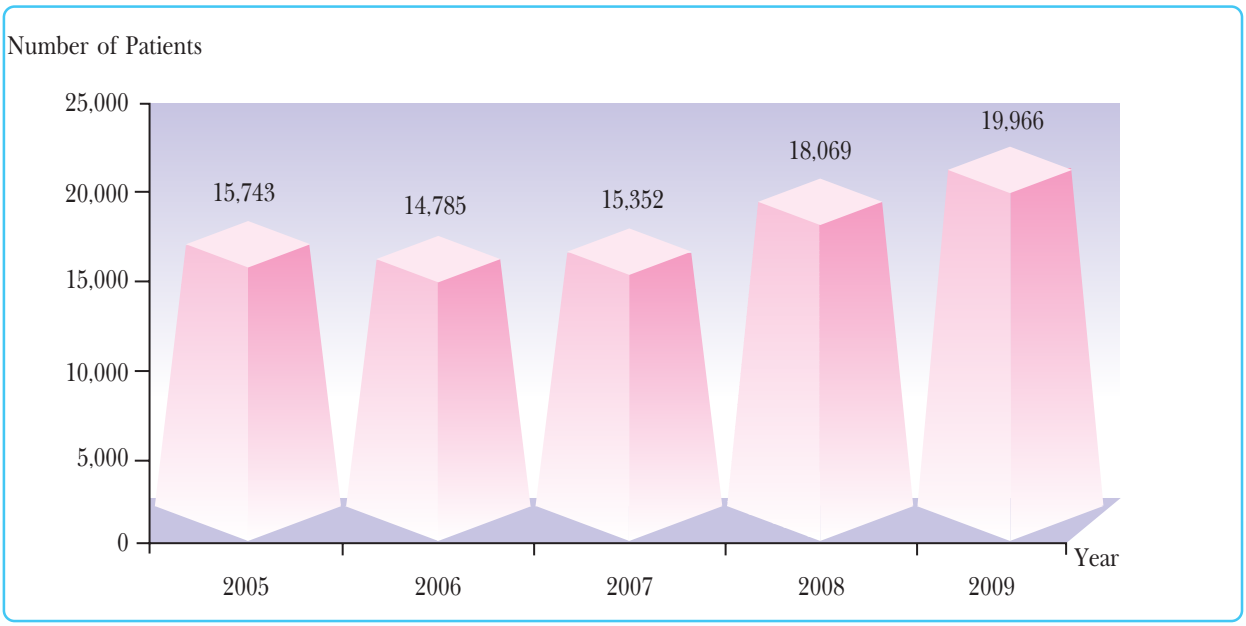
2.5.5 Coronary Artery and Valvular Heart Diseases. Both diseases have a rising trends (Figures 5.41 and 5.42) as they are associated with to tobacco use, physical inactivity, hyperlipidaemia and overweight.

Figure 5.41 Number of patients with coronary artery disease treated at the Chest Disease Institute, 2005–2009



Source: Chest Disease Institute, Department of Medical Services, MoPH.

Figure 5.42 Number of Patients with valvular heart disease Treated at the Chest Disease Institute, 2005–2009



Source: Chest Disease Institute, Department of Medical Services, MoPH.

2.5.6 Kidney Diseases

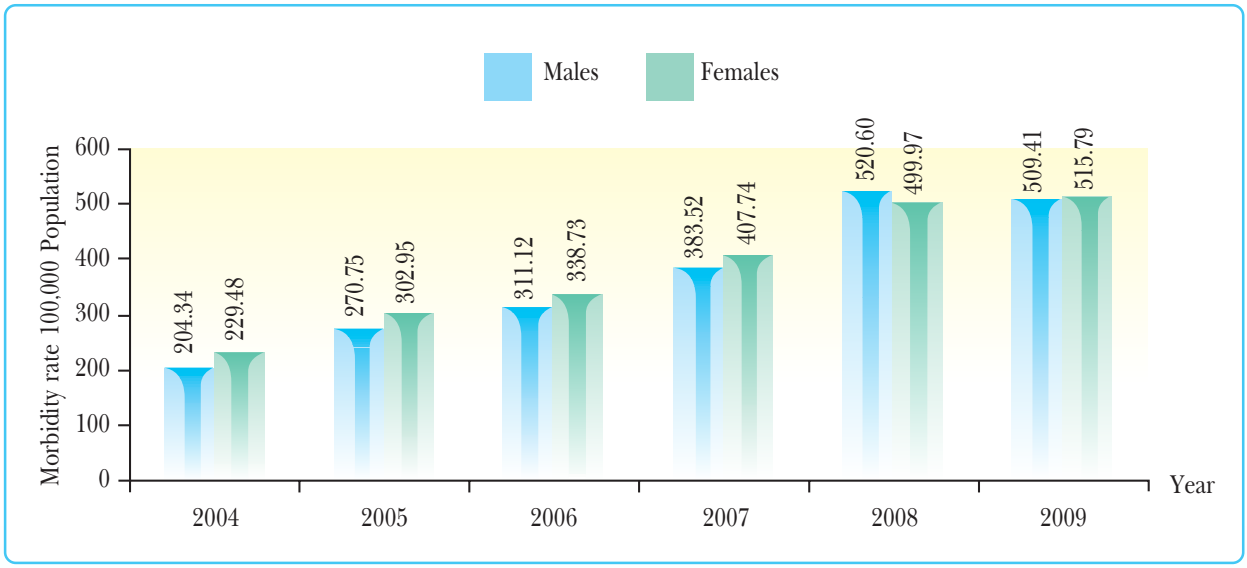
According to the inpatient statistics of the MoPH's Bureau of Policy and Strategy, the morbidity rate of kidney diseases (per 100,000 population) has risen from 461.91 in 2004 to 878.96 in 2009. The kidney failure rate has more than doubled, rising from from 217.04 in 2004 to 512.65 in 2009, the number being as high as 55% of all kidney disease patients (Table 5.22). It is noteworthy that women are more likely than men to have kidney failure (Figure 5.43). The risk factors for such disease including diabetes and hypertension are steadily on the rise.

Table 5.22 Morbidity rate of kidney diseases by group of illnesses, 2004–2009

Group of kidney diseases	Morbidity rate (per 100,000 population)					
	2004	2005	2006	2007	2008	2009
Kidney diseases	**461.91**	**574.29**	**626.02**	**721.83**	**920.32**	**878.96**
Acute nephritic syndrome	4.25	4.48	5.65	6.60	5.73	9.04
Renal tubulo-interstitial diseases	133.37	159.80	161.44	173.01	199.80	175.21
Renal failure	217.04	287.05	325.10	395.79	510.17	512.65
Urolithiasis	85.39	95.94	98.66	99.25	156.47	123.58
Other nephritic diseases	21.86	30.08	35.16	47.16	48.15	58.48

Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Figure 5.43 Morbidity rates of renal failure in males and females, 2004–2009

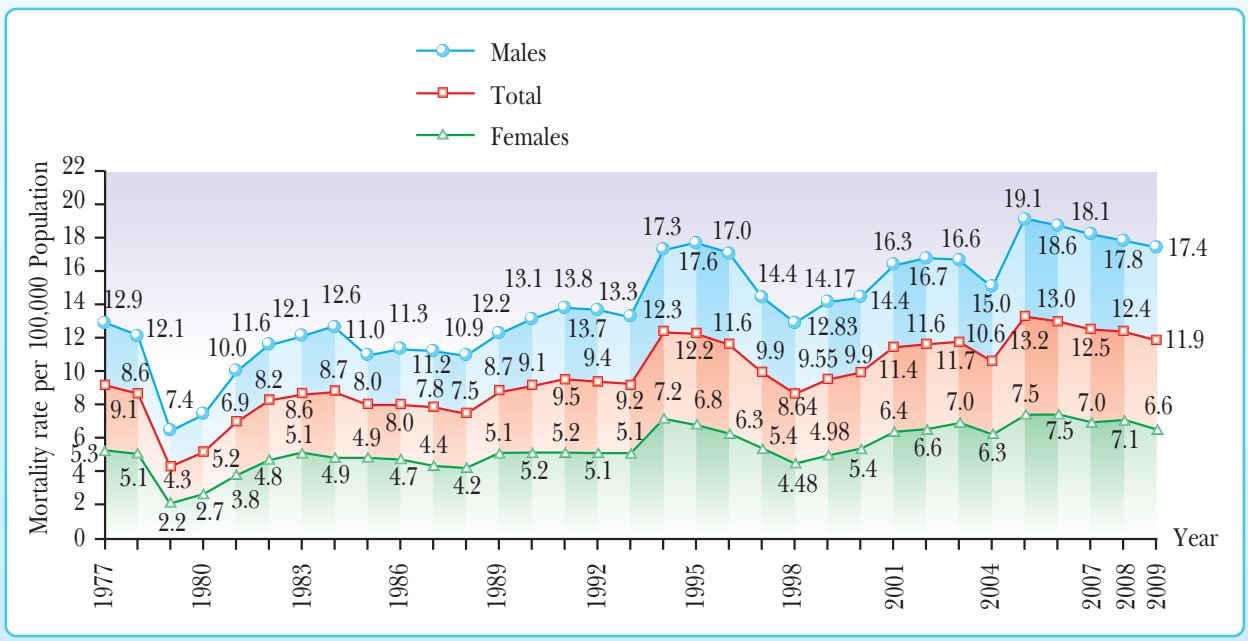


Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

2.5.7 Cirrhosis

Consumption of alcohol for a long time negatively affects the liver as it has been found that, between 1977 and 2009, the mortality rates of liver disease and chronic cirrhosis were reported at 4.3 to 13.2 per 100,000 population, the rates being 6 to 19 in males and 2 to 7 in females, i.e. 2 to 4 times higher in males than in females (Figure 5.44). Cirrhosis is partly caused by hepatitis B viral infection, whose prevalence was high in the past, and currently it has a declining trend.

Figure 5.44 Mortality rate of liver disease and cirrhosis, Thailand, 1977-2009



Source: Bureau of Policy and Strategy, MoPH.

2.6 Injuries and Accidents

2.6.1 Road Traffic Accidents

The situation of road traffic accidents in Thailand can be categorized by the time period as follows:

The First Period, before 1986: Economic Recession. The number of accidents was not so high during this period. Each year, there were about 18,000–25,000 accidents with about 2,000–4,000 deaths or a mortality rate of 3.9–5.7 per 100,000 population. And there were approximately 8,000–9,000 injury cases each year, or an injury rate of 17.2 per 100,000 population.

The Second Period, 1987–1992: Economic Recovery. During this period there were about 40,000–60,000 accidents each year, nearly two times higher than during the previous period, with about 8,000–9,000 deaths or a mortality rate of 7.4–16.0 per 100,000 population. It was noteworthy that casualties increased almost threefold anad the number of injuries increased to 20,000–25,000 each year or an injury rate of 24.0–43.9 per 100,000 population, an approximately twofold rise.

The Third Period, 1993–1996: Bubble Economy. Each year there were 80,000–100,000 accidents, a twofold increase, with about 14,000–16,000 deaths or a mortality rate of 16.3–28.2 per 100,000 population, a nearly twofold increase. And there were about 40,000–50,000 injuries each year or an injury rate of 43.4–85.6 per 100,000 population, an approximately twofold increase.

The Fourth Period, 1997–2001: Economic Crisis. The number of accidents dropped to 70,000–80,000 each year with around 12,000 deaths or a mortality rate of 20.0–22.7 per 100,000 population. And each year there were 48,000–52,000 injuries or an injury rate of 77.5–86.9 per 100,000 population. This was a declining trend compared with the previous period.

The Fifth Period, 2002 onwards: Economic Recovery and Road Safety Operations. Each year there were approximately 90,000-125,000 accidents with 12,000-14,000 deaths or a mortality rate of 19-22.26 per 100,000 population. And there were approximately 60,000-95,000 injuries a year or an injury rate of 110.8-151.72 per 100,000 population.

After the implementation of the road safety programme, the number of road accidents has dropped to 85,000–90,000 with about 10,000–11,000 deaths per year, or a mortality rate of 17–18 per 100,000 population. And each year there are about 60,000–70,000 injuries or an injury rate of 98–112.41 per 100,000 population (Figure 5.45).

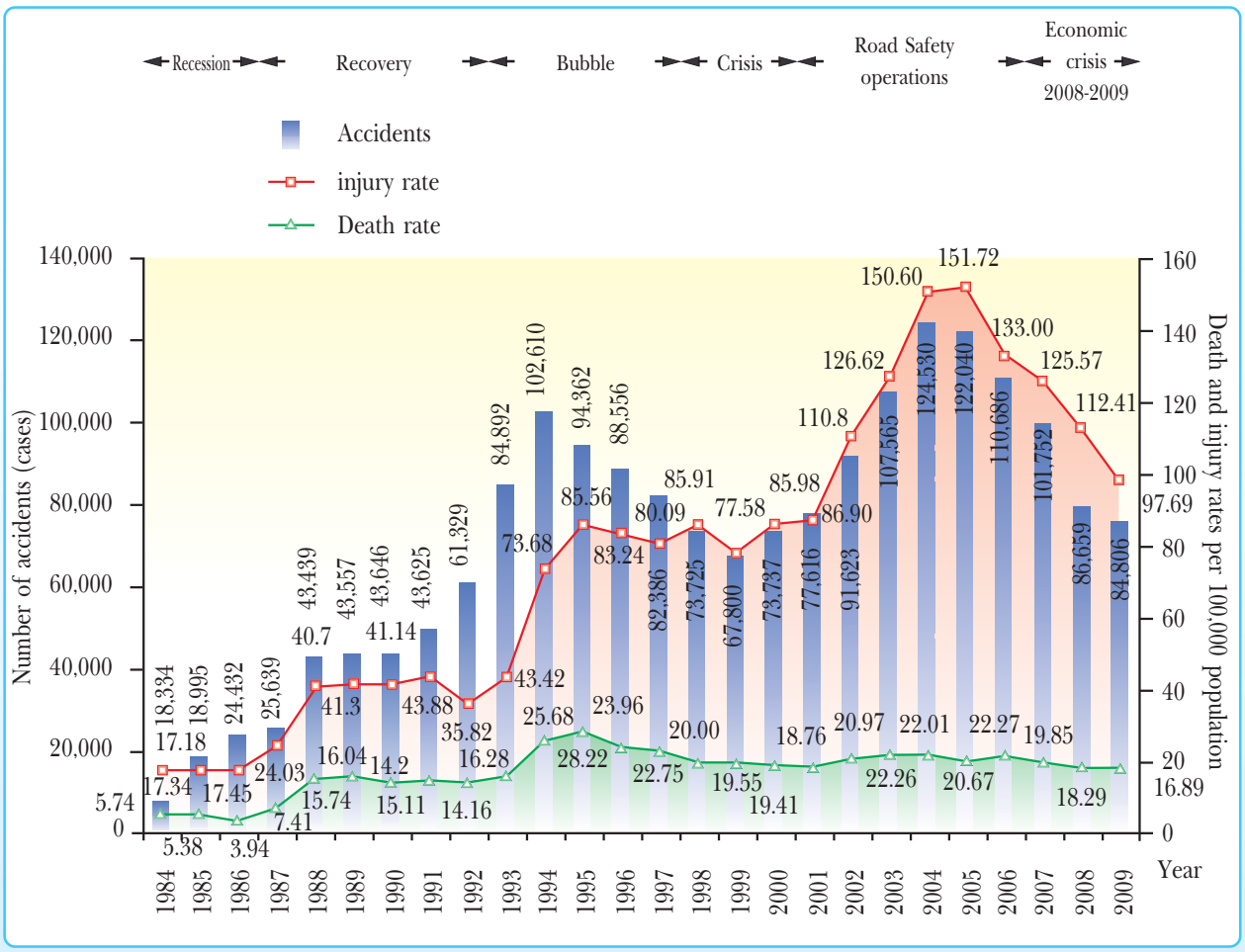
It has been found that the largest proportion of road accident-related deaths occur in the working-age group (15–34 years), 4–5 times higher in males than in females (Table 5.24 and Figure 5.46).

Primarily, traffic accidents are mostly caused by humans (69.9%) and a small proportion by the vehicles and environment (1.6% and 0.3%, respectively, (Figure 5.47). By category of road traffic accidents, the most commonly found category is speeding (16.3%), followed by cutting across the path of another vehicle in short distance, following another vehicle too closely and drunk driving (Figure 5.48).

According to the road traffic accident report of the Royal Thai Police, most of the accidents involve motorcycles, the proportion had a rising trend of 50.7% in 1998 to 62.0% in 2009. That is consistent with the report of the Land Transport Department which reveals that the number of registered motorcycles has risen threefold from 534,458 units in 1998 to 1,635,807 units in 2009. An analysis of motorcycle riding accidents conducted by the Bureau of Epidemiology of the MoPH's Disease Control Department revealed that more than 40% of seriously injured cases had drunk alcohol before riding a motorcycle (Table 5.25).

This kind of situation caused a direct loss of property worth 3,815.5 million baht in 2009 (Table 5.23). But actually there are other incalculable losses including life losses, medical expenses, disabilities, etc.

Figure 5.45 Death and injury rates from road traffic accidents, Thailand, 1984–2009



Source: Police Information System Centre, Royal Thai Police.

Table 5.23 Numbers and rates of accidents, deaths and injuries and estimated damages, 1984–2009

Year	Population	No. of accidents (cases)	Deaths		Injuries		Property damages (baht)
			No. (persons)	Rate per 100,000 pop.	No. (persons)	Rate per 100,000 pop.	
1984	50,583,105	18,334	2,904	5.74	8,770	17.34	56,265,453
1985	51,795,651	18,955	2,788	5.38	8,901	17.18	60,645,504
1986	52,696,204	24,432	2,086	3.94	9,242	17.45	55,061,650
1987	53,873,172	25,639	3,991	7.41	12,947	24.03	129,539,616
1988	54,960,917	43,439	8,651	15.74	22,370	40.70	329,527,667
1989	55,888,393	43,557	8,967	16.04	23,083	41.30	439,028,000
1990	56,303,273	43,646	7,997	14.20	23,161	41.14	477,603,000
1991	56,961,030	49,625	8,608	15.11	24,995	43.88	639,616,000
1992	57,788,965	61,329	8,184	14.16	20,702	35.82	607,793,000
1993	58,336,072	84,892	9,496	16.28	25,330	43.42	1,021,464,000
1994	59,095,419	102,610	15,176	25.68	43,541	73.68	1,408,216,000
1995	59,277,900	94,362	16,727	28.22	50,718	85.56	1,631,117,000
1996	60,116,182	88,556	14,405	23.96	50,044	83.24	1,561,708,187
1997	60,816,227	82,386	13,836	22.75	48,711	80.09	1,571,786,469
1998	61,155,888	73,725	12,234	20.00	52,538	85.91	1,378,673,826
1999	61,577,827	67,800	12,040	19.55	47,770	77.58	1,345,985,811
2000	61,770,259	73,737	11,988	19.41	53,111	85.98	1,242,205,524
2001	62,093,855	77,616	11,652	18.76	53,960	86.90	1,240,801,187
2002	62,554,482	91,623	13,116	20.97	69,313	110.80	1,494,936,815
2003	62,939,819	107,565	14,012	22.26	79,692	126.62	1,750,964,040
2004	62,526,693	124,530	13,766	22.01	94,164	150.60	1,623,081,112
2005	62,195,839	122,040	12,858	20.67	94,364	151.72	3,238,226,110
2006	62,623,416	110,686	12,693	20.27	83,290	133.00	3,643,747,912
2007	62,933,515	101,752	12,492	19.85	79,029	125.57	4,620,398,166
2008	63,214,022	88,689	11,561	18.29	71,059	112.41	5,415,524,563
2009	63,457,439	84,806	10,717	16.89	61,996	97.69	3,815,520,899

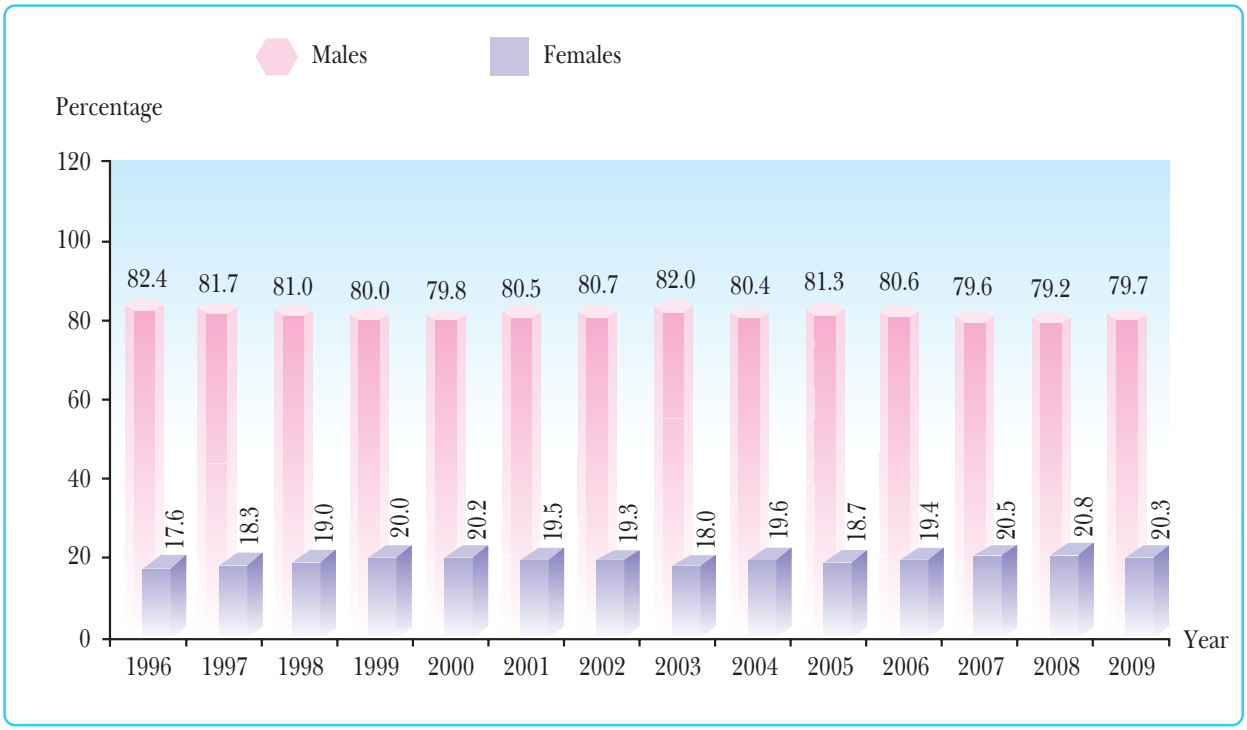
Source: Police Information System Centre, Royal Thai Police.

Table 5.24 Number and percentage of deaths from road traffic accidents by age group, 1996–2009

Age group (years)	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
0 – 4	291	1.7	175	1.3	210	2.6	254	2.2	287	2.2	243	1.9	205	1.5	164	1.3	154	1.3	158	1.5	135	1.3	119	1.2	139	1.4	146	1.5
5 - 9	389	2.3	227	1.8	146	1.8	261	2.2	287	2.2	256	2.0	214	1.6	196	1.5	183	1.5	151	1.4	149	1.4	129	1.3	150	1.5	89	0.9
10 – 14	599	3.6	392	3.0	237	3.0	300	2.6	387	2.9	356	2.7	428	3.2	363	2.8	425	3.4	359	3.3	375	3.6	346	3.5	347	3.6	356	3.7
15 – 19	2,786	16.6	2,052	15.8	1,075	13.5	1,501	13.0	1,647	12.5	1,623	12.5	1,869	13.9	1,829	14.3	1,811	14.7	1,534	13.9	1,408	13.5	1,371	13.7	1,226	12.6	1,145	12.1
20 – 24	2,995	17.8	2,236	17.3	1,184	14.8	1,702	14.6	1,861	14.1	1,810	14.0	2,003	14.9	2,040	15.9	1,819	14.7	1,598	14.5	1,405	13.5	1,207	12.1	1,125	11.6	1,057	11.1
25 – 29	2,262	13.5	1,743	13.5	1,051	13.2	1,470	12.6	1,641	12.4	1,575	12.2	1,686	12.6	1,623	12.7	1,530	12.4	1,334	12.1	1,244	11.9	1,142	11.4	1,085	11.2	1,034	10.9
30 – 34	1,733	10.3	1,343	10.4	830	10.4	1,286	11.1	1,452	11.0	1,437	11.1	1,415	10.5	1,279	10.0	1,233	10.0	1,103	10.0	986	9.5	915	9.2	991	10.2	899	9.5
35 –39	1,410	8.4	1,177	9.1	742	9.3	1,113	9.6	1,221	9.3	1,306	10.1	1,225	9.1	1,198	9.4	1,094	8.9	1,016	9.2	956	9.2	918	9.2	826	8.5	826	8.7
40 – 44	1,017	6.1	904	7.0	665	8.3	914	7.9	1,092	8.3	1,063	8.2	1,086	8.1	1,030	8.0	950	7.7	891	8.1	886	8.5	856	8.6	845	8.7	800	8.4
45 – 49	870	5.2	750	5.8	488	6.1	785	6.8	884	6.7	912	7.0	903	6.7	847	6.6	832	6.8	759	6.9	745	7.2	772	7.7	758	7.8	749	7.9
50 – 54	594	3.6	484	3.7	329	4.1	561	4.8	638	4.8	650	5.0	697	5.2	651	5.1	654	5.3	614	5.6	648	6.2	621	6.2	586	6.0	639	6.7
55 – 59	546	3.3	468	3.6	320	4.0	444	3.8	507	3.8	463	3.6	488	3.6	493	3.8	510	4.1	449	4.0	421	4.0	483	4.8	498	5.1	543	5.7
60 – 64	421	2.5	371	2.9	287	3.6	392	3.4	448	3.4	450	3.5	408	3.0	371	2.9	422	3.4	395	3.5	352	3.4	319	3.2	357	3.7	381	4.0
65 – 69	304	1.8	209	1.6	205	2.6	283	2.4	352	2.7	341	2.6	355	2.7	316	2.5	295	2.4	272	2.4	277	2.7	345	3.5	291	3.0	329	3.5
70 – 74	162	1.0	157	1.2	115	1.5	168	1.4	241	1.8	204	1.6	222	1.7	225	1.8	232	1.9	201	1.8	233	2.2	239	2.4	238	2.5	229	2.4
75 – 79	112	0.6	67	0.5	66	0.8	83	0.7	135	1.0	124	1.0	139	1.0	116	0.9	126	1.0	123	1.1	125	1.2	121	1.2	151	1.6	159	1.7
80 – 84	39	0.2	37	0.3	22	0.3	56	0.5	59	0.5	65	0.5	56	0.4	43	0.3	43	0.3	52	0.5	45	0.4	64	0.6	49	0.5	76	0.8
85 and over	26	0.1	21	0.1	10	0.1	26	0.2	46	0.3	60	0.5	39	0.3	27	0.2	27	0.2	32	0.2	31	0.3	22	0.2	24	0.2	33	0.3

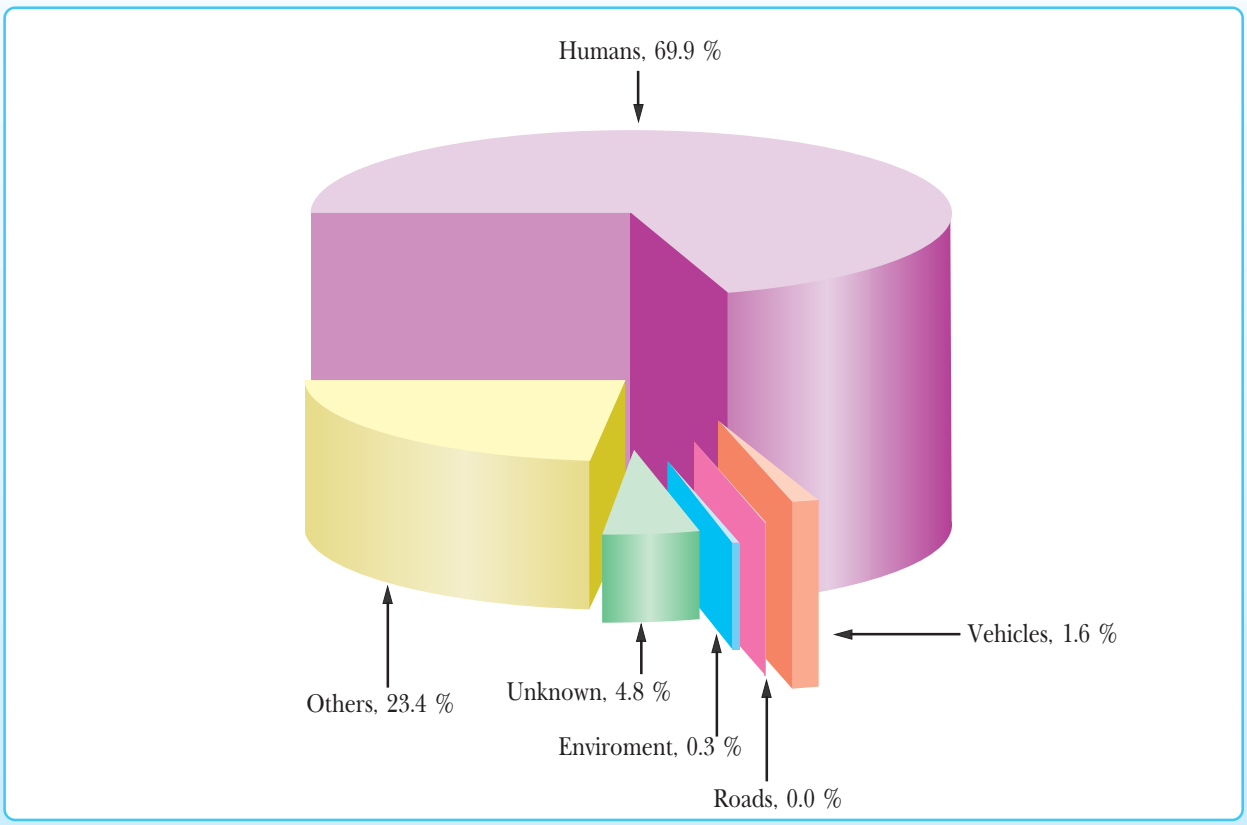
Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Figure 5.46 Proportion of deaths from road traffic accidents by sex, 1996–2009



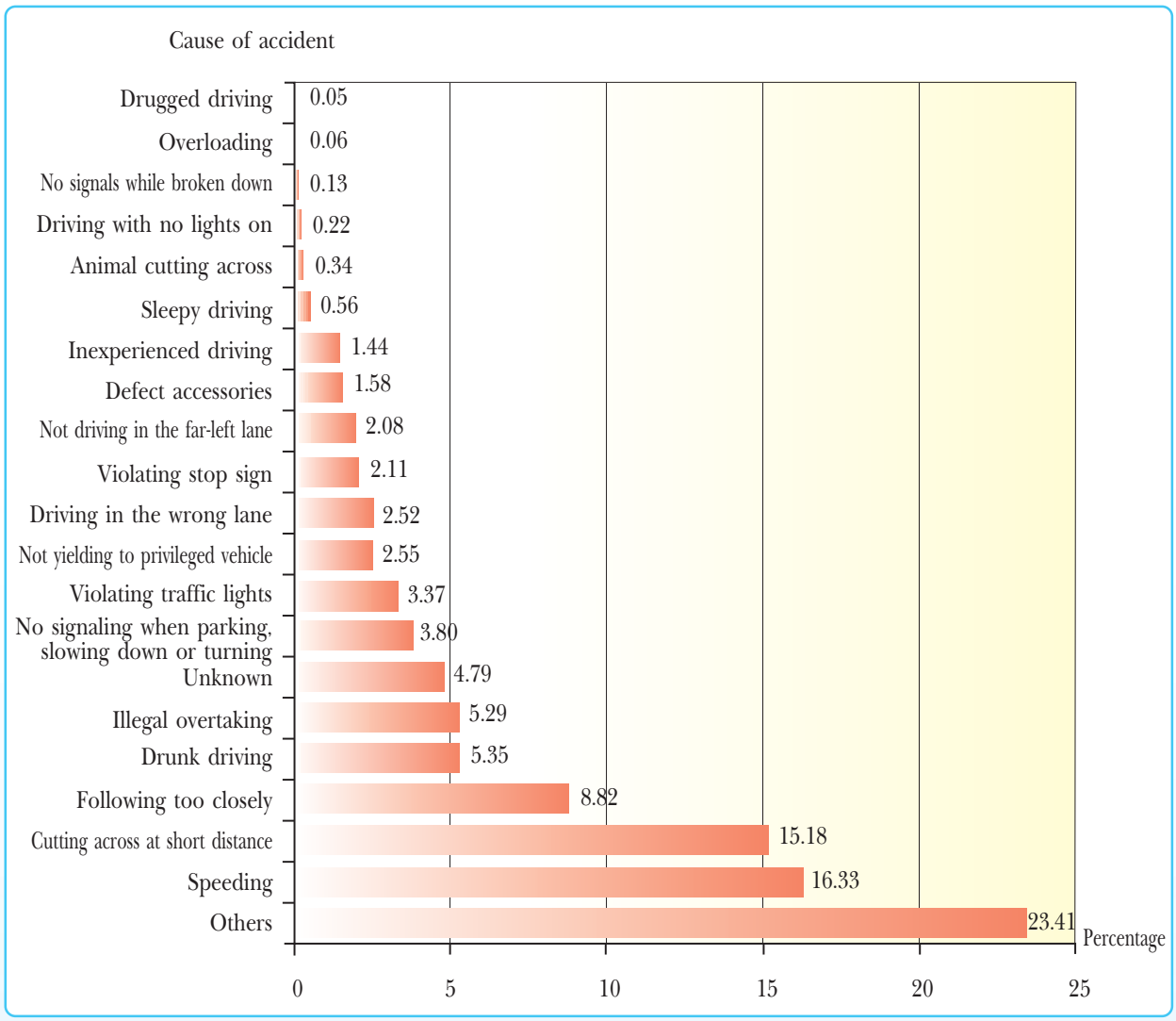
Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Figure 5.47 Major causes of road traffic accidents, 2009



Source: Royal Thai Police.

Figure 5.48 Causes of road traffic accidents by traffic-police charge, 2009



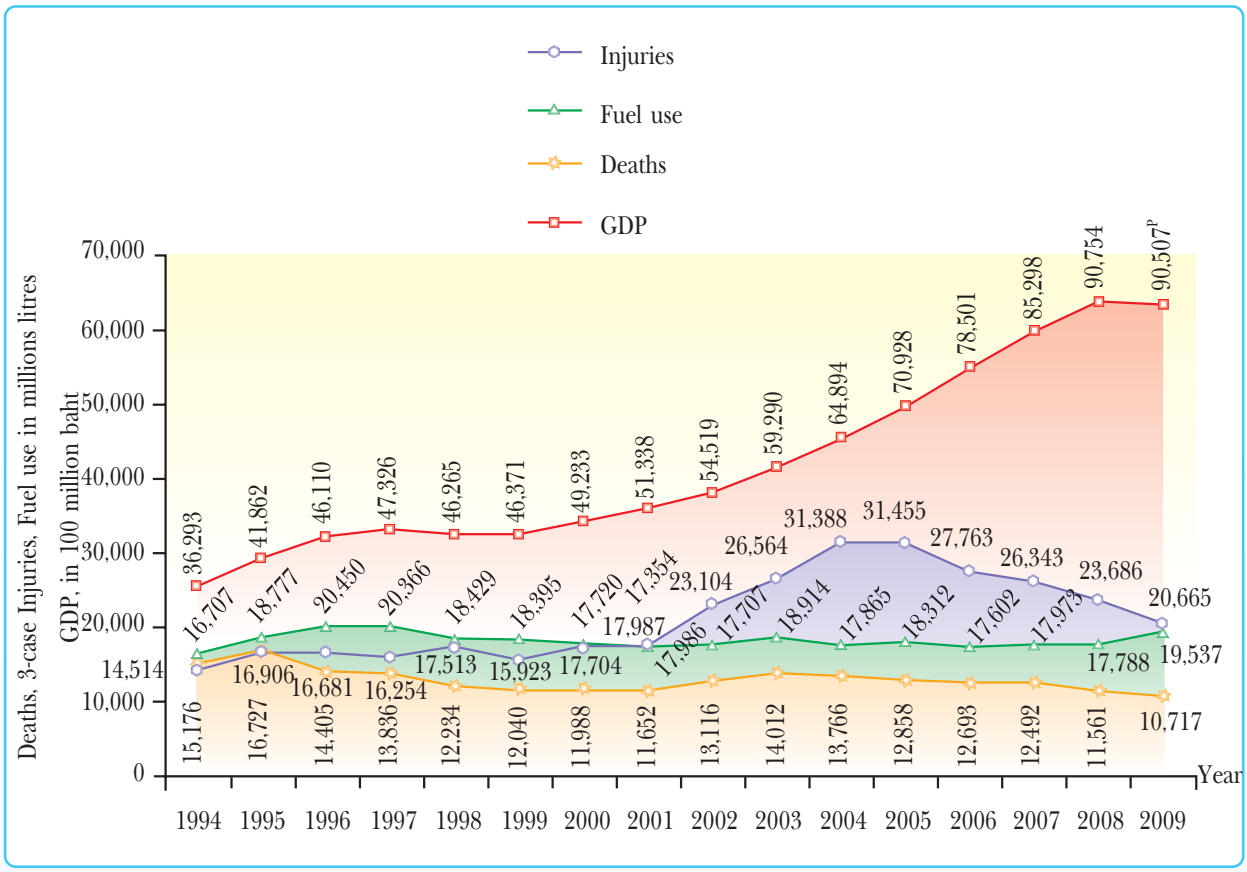
Source: Royal Thai Police.

Table 5.25 Numbers of road traffic accidents and motorcycles and proportion of seriously injured drinking motorcyclists, 1991–2009

Year	Number of road traffic accidents (cases)	Motorcycle accident charges (cases)	Proportion of motorcycle accidents (percent)	No. of registered motorcycles (units)	Proportion of seriously injured drinking motorcyclists (percent)
1991	48,625	-	-	693,241	-
1992	61,329	-	-	715,877	-
1993	84,892	-	-	859,176	-
1994	102,610	-	-	1,091,216	-
1995	94,362	-	-	1,339,076	-
1996	88,556	-	-	1,247,906	-
1997	82,386	-	-	988,472	-
1998	73,725	37,414	50.7	534,458	-
1999	67,800	34,943	51.5	497,422	-
2000	73,737	37,498	50.8	682,929	-
2001	77,616	41,215	53.1	849,907	-
2002	91,623	53,732	58.6	1,186,957	43.7
2003	107,565	66,110	61.5	1,643,179	49.4
2004	124,530	77,642	62.3	1,943,590	48.6
2005	122,040	78,830	64.6	2,011,816	46.5
2006	110,686	75,752	68.4	2,001,711	44.4
2007	101,752	68,140	67.0	1,665,400	44.0
2008	88,689	59,162	66.7	1,796,376	41.7
2009	84,806	52,608	62.0	1,635,807	-

Sources: 1. Police Information Centre, Royal Thai Police.
2. Land Transport Department, Ministry of Transport.
3. Bureau of Epidemiology, Department of Disease Control, MoPH.

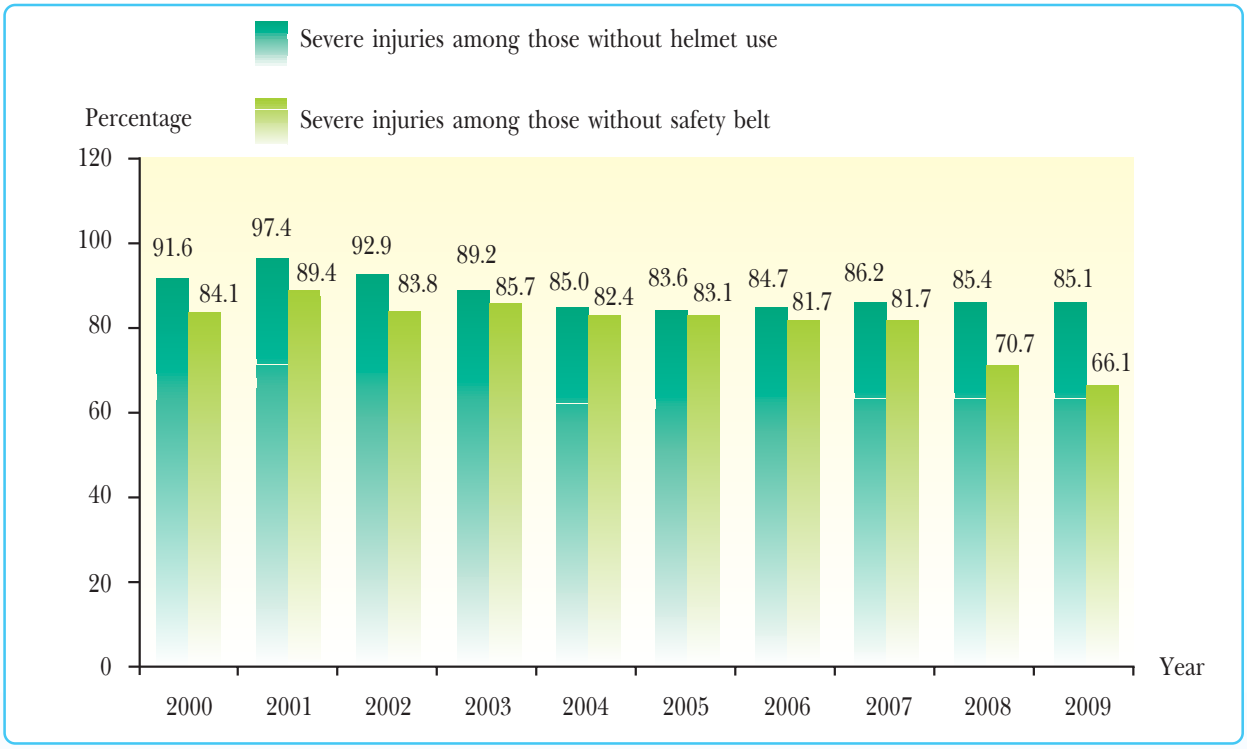
Figure 5.49 Trends in GDP growth, fuel use for transportation, injuries and deaths from road traffic accidents, 1994–2009



Sources
1. Yordphol Tanaboriboon el al. Situation of Road Traffic Accidents in Thailand, 2006.
2. Police Information Centre, Royal Thai Police.
3. Department of Alternative Energy Development and Efficiency, Ministry of Energy
4. Office of the National Economic and Social Development Board.

Even though the royal decree on safety or crash helmets has been enforced in all provinces throughout the country since 1 January 1996, the data from the injury surveillance system have shown that motorcycle riders/passengers who do not wear helmets as well as motor vehicle drivers/passengers who do not use safety belts are 80% more likely to have serious injuries from traffic accidents than those who do so (Figure 5.50); and nearly half of those motorcycle accident victims with severe injuries have drunk alcohol before riding (Figure 5.51).

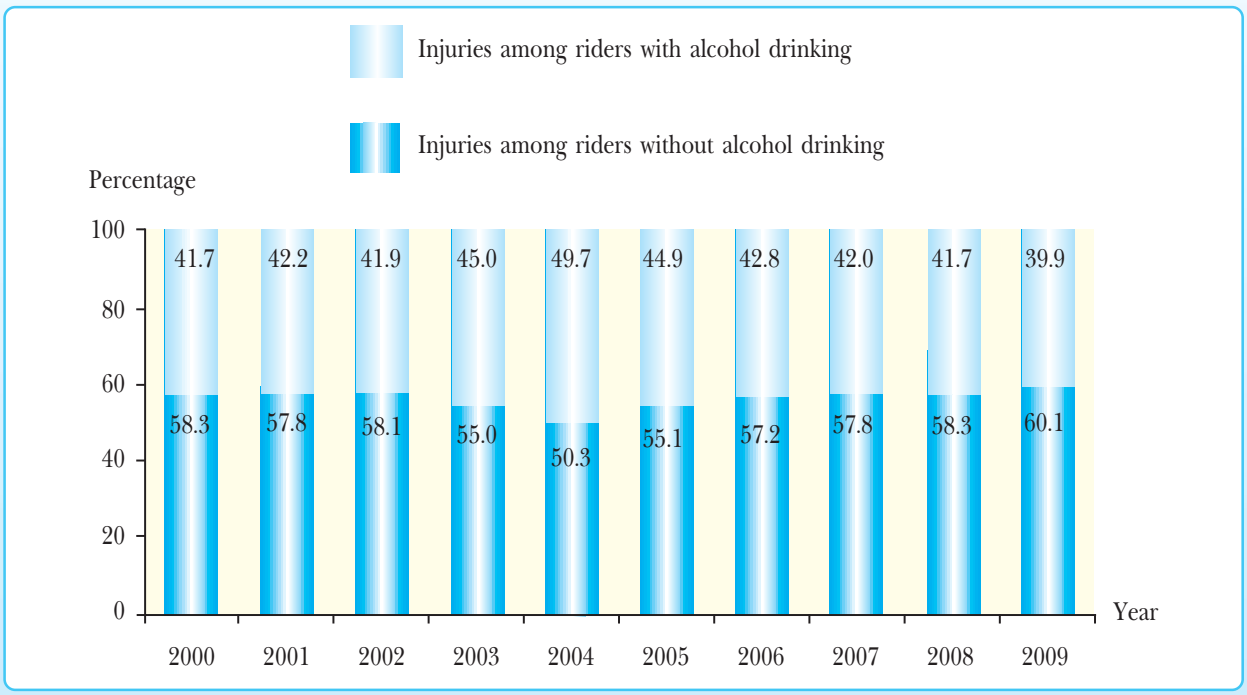
Figure 5.50 Proportion of serious injuries from traffic accidents among riders/drivers and passengers with and without safetybelt/helmet use, 2000–2009



Source: Report on Injury Surveillance in Thailand. Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: Data for 2008–2009 are riders/drivers only.

Figure 5.51 Proportion of severe injuries among motorcycle riders with and without alcohol drinking, 2000–2009



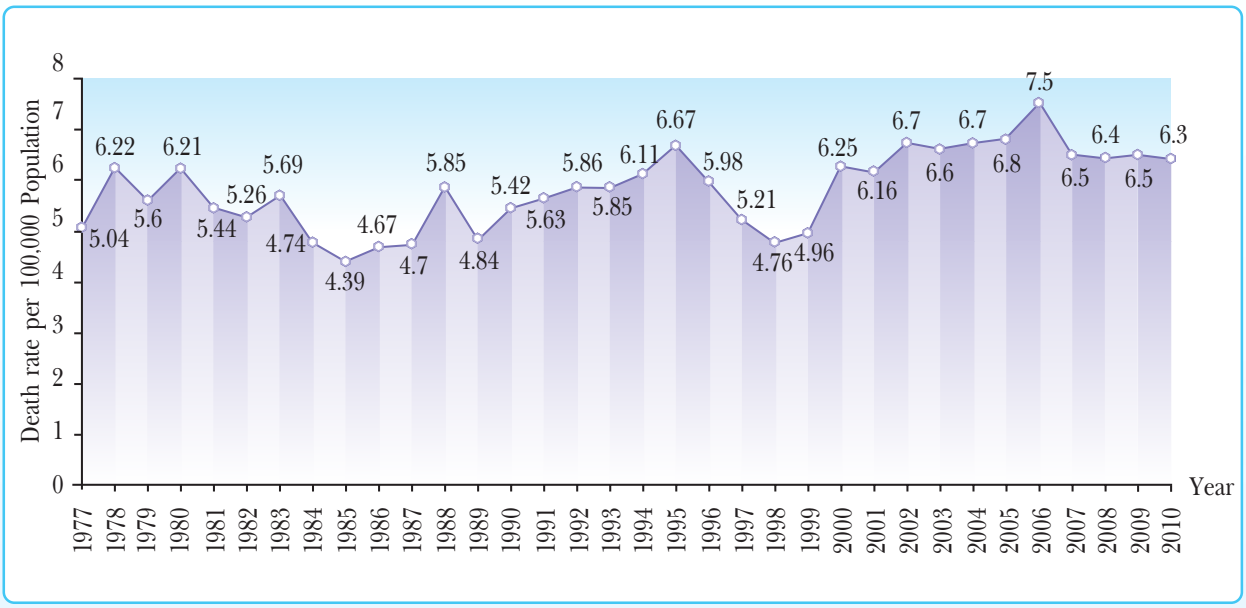
Source: Report on Injury Surveillance in Thailand. Bureau of Epidemiology, Department of Disease Control, MoPH.

2.6.2 Water-Related Accidents

Water-related accidents are an important problem that has not received adequate attention as expected, compared to the problem of road traffic accidents, even through the drowning rate in Thai children is 5 to 15 times higher than that in developed countries[11].

During 1977–2010, the rate of deaths from drowning and falling into water was 4.4–7.5 per 100,000 population (Figure 5.52). An epidemiological analysis of water-related accidents in Thailand during the period 1996–2010 revealed that, among those who died from drowning, males were 3 times more likely than females to become the victims; the highest number being among school-age children (Figure 5.53), probably due to their lack of experience in playing safely in the water and thus being less capable of helping themselves.

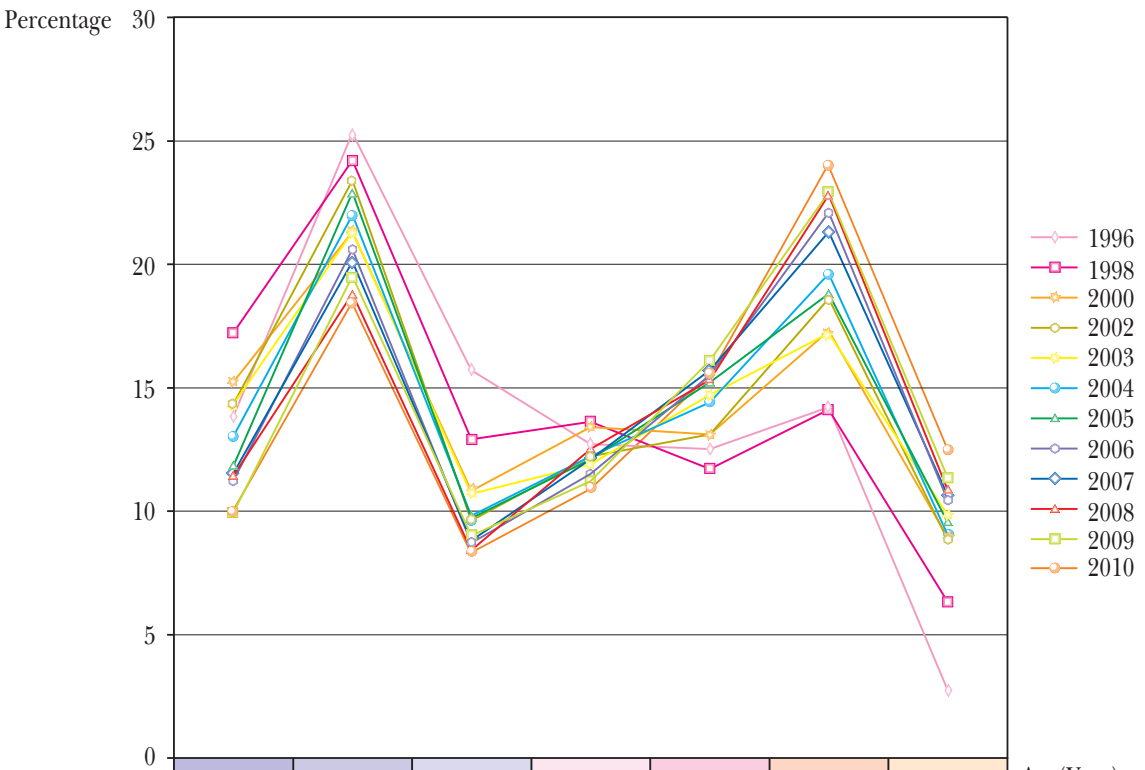
Figure 5.52 Rate of deaths from accidental drowning in Thailand, 1977–2010



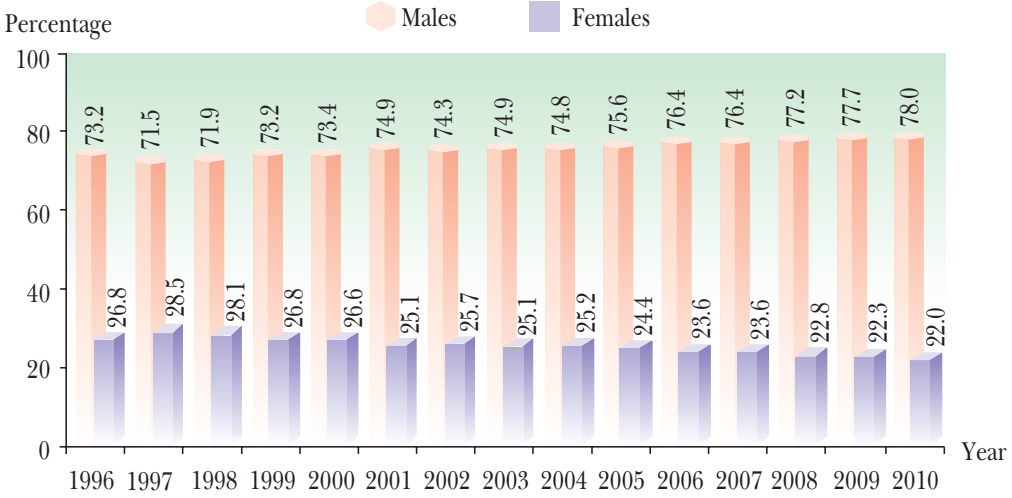
Source: Bureau of Policy and Strategy, MoPH.

[11] Adisak Plitponkarnpim. Child Safety Promotion and Injury Prevention Research Centre of Ramathibodi Hospital, 2006.

Figure 5.53 Percentage of reported deaths from accidental drowning by age and gender in Thailand, 1996–2010



	< 4	5-14	15-24	25-34	35-44	45-64	> 64
1996	13.8	25.3	15.7	12.7	12.5	14.2	5.7
1998	17.2	24.2	12.9	13.6	11.7	14.1	6.3
2000	15.2	21.3	10.8	13.4	13.1	17.3	8.9
2002	14.3	23.4	9.6	12.2	13.1	18.6	8.8
2003	14.3	21.3	10.7	11.9	14.7	17.2	9.8
2004	13.0	22.0	9.8	12.2	14.4	19.6	9.0
2005	11.8	22.9	9.7	12.1	15.2	18.8	9.5
2006	11.2	20.6	8.7	11.5	15.5	22.1	10.4
2007	11.5	20.1	8.8	12.1	15.7	21.3	10.6
2008	11.4	18.8	8.4	12.5	15.3	22.8	10.8
2009	9.9	19.5	9.0	11.2	16.1	22.9	11.3
2010	10.0	18.5	8.4	10.9	15.6	24.0	12.6



Source: Mortality Report. Bureau of Policy and Strategy, MoPH.

2.7 Occupational and Environmental Diseases

According to the epidemiological surveillance of occupational diseases, significant situations can be summarized as follows:

2.7.1 Pesticide Poisoning

Based on the Department of Health's cholinesterase level examinations among farmers during 1992–2007, 13–39% of farmers had abnormal enzyme levels resulting from pesticide exposure. The trend is unlikely to decline and the rate of pesticide poisoning is between 2 and 6 cases per 100,000 population (Table 5.26).

Table 5.26 Cholinesterase test-results and morbidity/mortality due to pesticide poisoning among farmers, 1992–2009

Year	Cholinesterase test[1]			Pesticide poisoning [2]		
	Number (persons)	Tested abnormal (cases)	Abnormal (percent)	Illness (cases)	Deaths (cases)	Morbidity rate per 100,000 pop.
1992	42,471	8,669	20.41	3,599	31	6.23
1993	242,820	48,500	19.97	3,299	44	5.65
1994	411,998	72,590	17.62	3,143	41	5.32
1995	460,521	78,481	17.04	3,398	21	5.71
1996	156,315	40,520	25.92	3,196	31	5.32
1997	563,354	89,926	15.96	3,297	27	5.42
1998	369,573	77,789	21.05	4,398	15	7.16
1999	360,411	48,217	13.38	4,169	31	6.78
2000	278,612	52,604	18.88	3,109	21	5.03
2001	89,945	21,758	24.19	2,652	15	4.27
2002	115,105	33,858	29.4	2,571	14	4.11
2003	NA	NA	NA	2,342	9	3.72
2004	NA	NA	NA	1,864	9	2.98
2005	84,046	26,034	31.0	1,321	0	2.12
2006	133,255	36,776	27.6	1,183	0	2.00
2007	89,376	34,428	38.52	1,452	0	2.31
2008	-	-	-	1,705	2	2.70
2009	-	-	-	1,691	0	2.66

Sources: [1] Department of Health, MoPH.

[2] Bureau of Epidemiology, Department of Disease Control, MoPH.

2.7.2 Occupational Diseases in the Industrial Sector

There are several heavy metals used in industries such as lead, arsenic, cadmium, mercury, and chromium, whose residues and contamination in the environment and food are hazardous to humans exposed to such metals; the resulting health problems are as shown in Table 5.27.

Table 5.27 Morbidity rates due to occupational and environmental diseases by group of illness, 1999–2009

Disease	Morbidity rate (per 100,000 population)										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Occupational diseases	7.51	7.01	4.85	4.60	4.19	4.49	2.86	2.45	3.15	3.22	3.57
Occupational lung diseases	0.14	0.19	0.13	0.14	0.22	0.20	0.22	0.10	0.37	0.21	0.41
Lead poisoning	0.10	0.08	0.17	0.09	0.05	0.08	0.02	0.03	0.03	0.04	0.04
Other heavy metal poisonings (manganese, arsenic cadmium)	0.06	0.04	0.05	0.08	0.04	0.89	0.02	0.04	0.05	0.06	0.07
Organic solvent poisoning	0.25	0.18	0.16	0.13	0.11	0.15	0.20	0.19	0.21	0.25	0.23

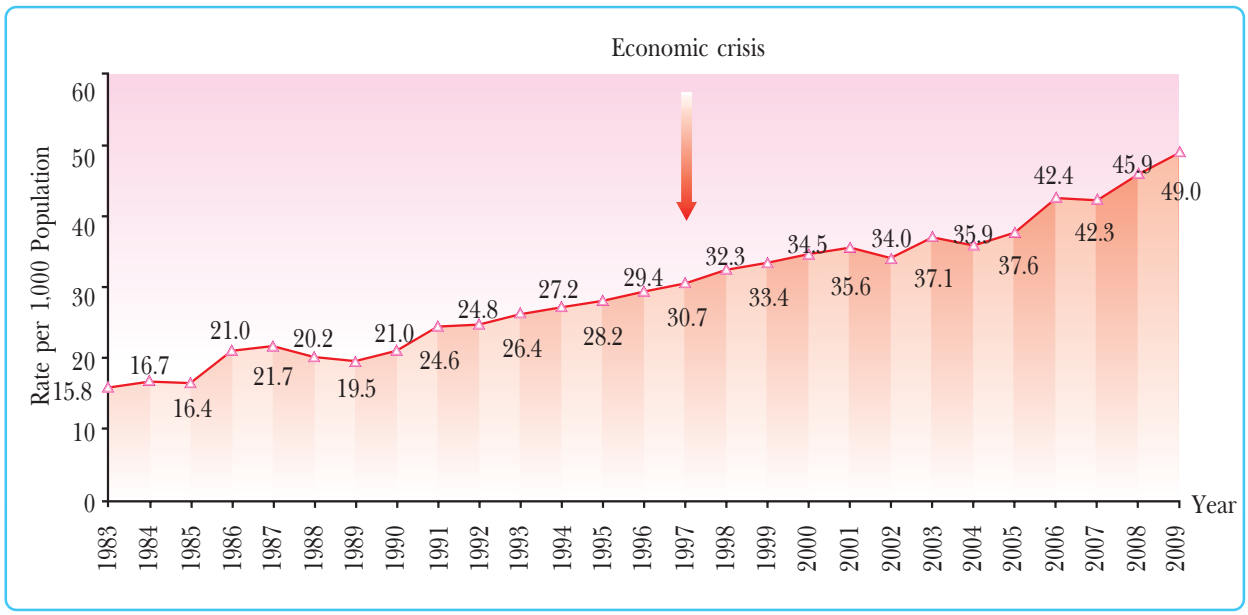
Source: Bureau of Epidemiology, Department of Disease control, MoPH.

Besides, the Bureau of Epidemiology has conducted a study on the health impact on industrial workers exposed to trichloroethylene in Thailand; as much as 90,000 tons of such chemical was imported for industrial use in 2008 (Department of Industrial Works, 2008). If used carelessly, such a chemical is fatally dangerous to human health. According to the 2003–2008 surveillance on occupational and environmental diseases, there were 68 reported cases of solvent poisoning (11 cases per year on average), including 11 due to exposure to trichloroethylene, 8 due to benzene, 3 due to toluene, and 46 due to unidentified chemicals.

2.8 Mental Health Problem

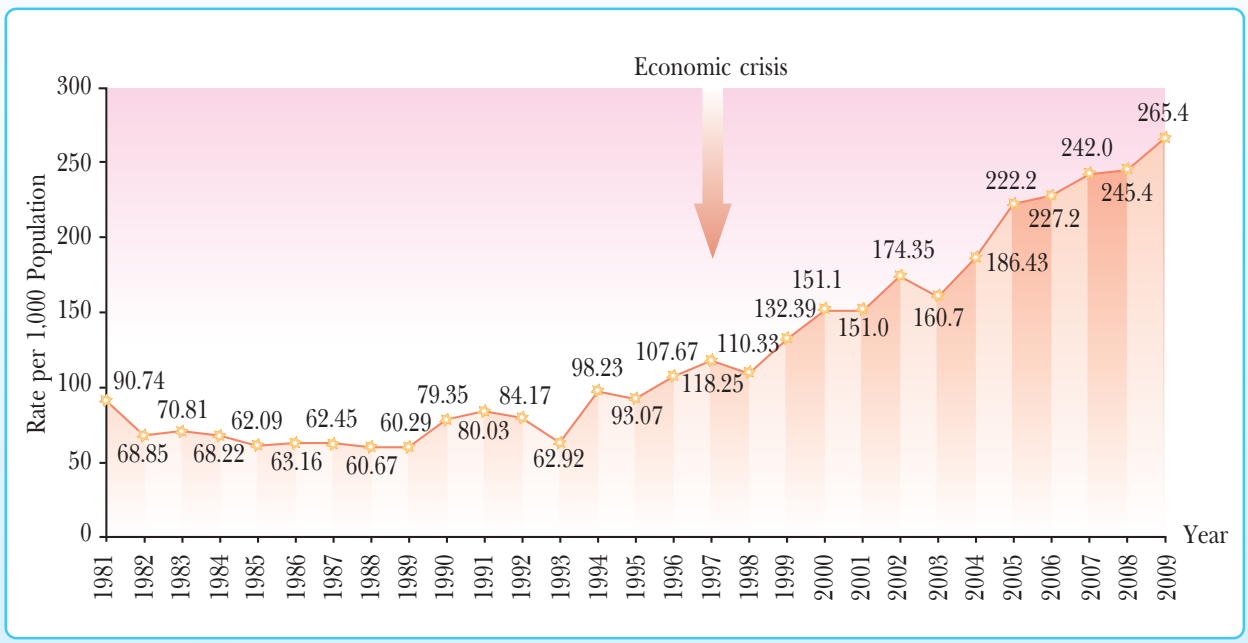
Mental health problems, based on the prevalence of mental disorders and suicide situation, tend to be worsening among the Thai people as the rate of outpatients attending mental health clinics has increased from 24.6 per 1,000 population in 1991 to 49.0 per 1,000 population in 2009 (Figure 5.54); and the numbers of patients with psychosis, depression and epilepsy are on the rise (Table 5.28). In addition, the rate of admissions of patients with psychosis and mental disorders has also risen from 90.74 per 100,000 population in 1981 to 265.4 per 100,000 population in 2009 (Figure 5.55).

Figure 5.54 Rate of outpatient visits with mental and behavioural disorders, 1983–2009



Source: Outpatients Report. Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Figure 5.55 Rate of admissions of patients with psychosis and mental disorders, Thailand, 1981-2009



Source: Inpatients Report. Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

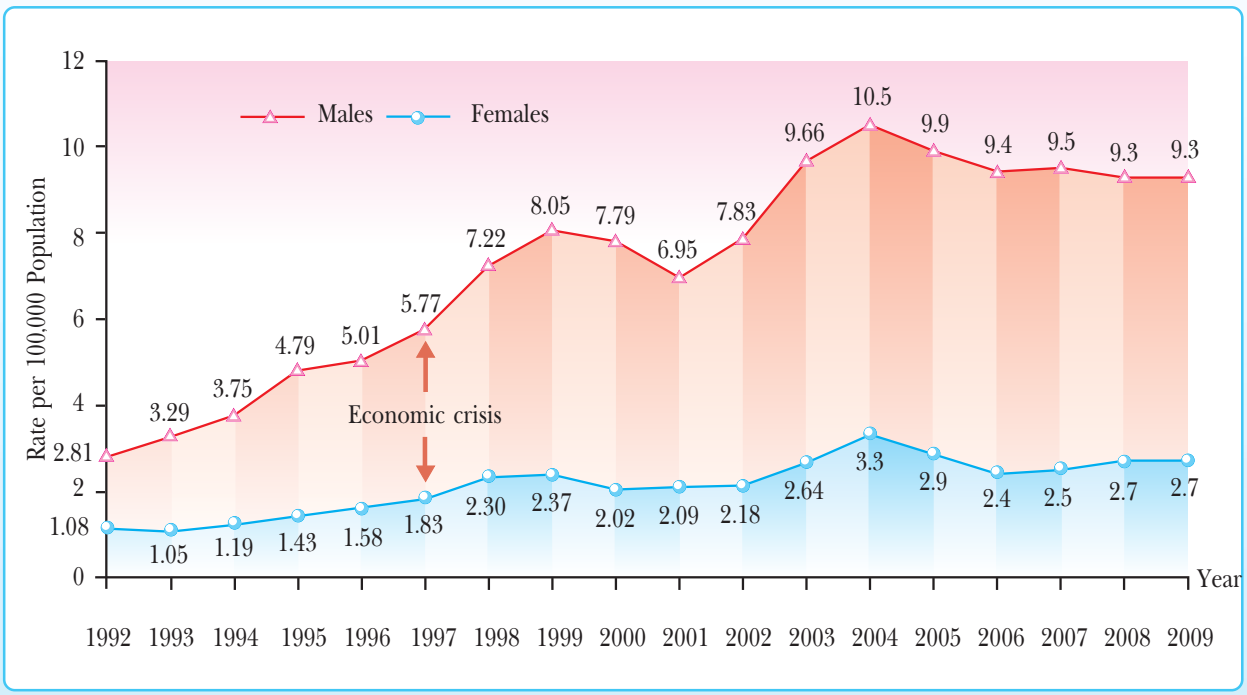
Table 5.28 Prevalence of mental disorders, 1997-2009

Mental disorder	Prevalence (per 100,000 population)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
- Psychosis	440.1	435.3	424.8	451.0	519.6	828.0	751.4	682.7	572.3	640.6	581.5	612.3	578.1
- Anxiety disorder	789.9	822.6	764.7	812.2	776.0	862.5	865.6	667.6	596.8	548.8	580.5	532.8	527.3
- Major depression	55.9	74.3	99.5	130.3	94.9	134.8	163.8	140.6	149.9	186.0	196.5	229.9	260.8
- Mental retardation	44.7	52.9	58.2	52.4	51.7	62.3	56.6	55.5	51.7	60.8	58.5	52.7	48.4
- Epilepsy	109.3	125.8	NA	149.8	182.5	200.3	193.5	180.5	195.2	172.1	195.1	184.7	193.1

Source: Department of Mental Health, MoPH.

Suicide is one of the indicators reflecting serious mental conditions. According to a report of the Royal Thai Police, after the 1997 economic crisis the suicidal rate tended to be on the rise; the rate in males being almost four times greater than that in females. However, after 2005, the rate has had a declining trend for both males and females (Figure 5.56).

Figure 5.56 Rate of suicides, 1992-2009



Sources: 1. Data for 1992-2003 were derived from the database of the Royal Thai Police.
2. Data for 2004-2009 were derived from the Bureau of Policy and Strategy, Office the Permanent Secretary, MoPH.

2.9 Nutritional Diseases

2.9.1 Malnutrition

The trend in overall nutritional status of preschool children has been rather stable. However, with respect to geographical variation, preschool children in the Northeast and North are more likely to be malnourished than those in other regions (Tables 5.29).

According to the World Health Report,[12] it was estimated that in 2000 approximately 27% or 168 million of all children under 5 years of age worldwide were malnourished (weigh-for-age scale), making them more vulnerable to death due to diarrhoea and pneumonia.

Table 5.29 Nutritional status (weight-for-age, percentage) of children aged 0–6 years by region, 2004–2006

Year	Central		Northeast		North		South		Total	
	Rather low	Lower than standard	Rather low	Lower than standard	Rather low	Lower than standard	Rather low	Lower than standard	Rather low	Lower than standard
2004	2.68	1.35	8.02	3.03	7.56	2.67	5.24	2.81	6.23	2.53
2005	3.01	1.91	6.58	3.23	5.98	3.39	4.99	2.68	5.30	2.83
2006	2.90	2.81	6.44	2.98	4.74	2.72	4.36	3.27	5.19	2.94

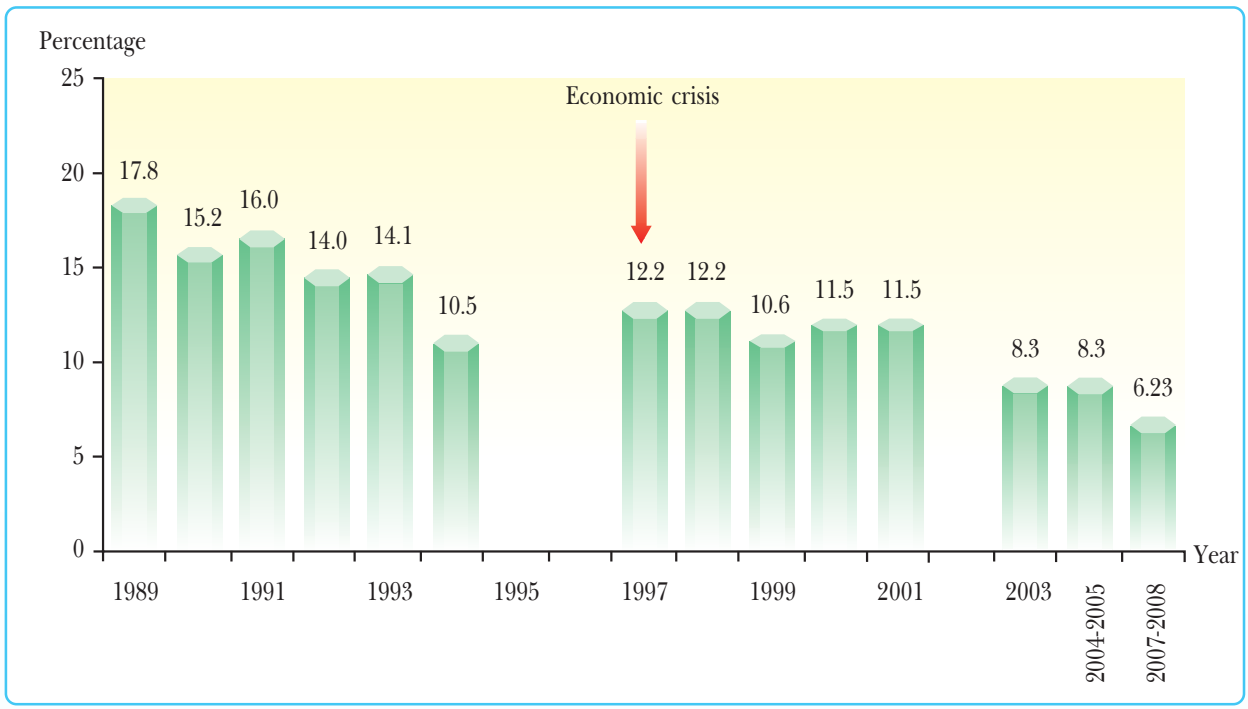
Sources: Department of Health, MoPH.

Note: Since 2004, the Department of Health has changed the criteria for assessing nutritional status of children.

The rate of underweight primary schoolchildren dropped steadily from 17.8% in 1989 to 6.23% in 2007–2008. (Figure 5.57).

[12] Pathom Sawanpanyalert (editor). World Health Report 2002: Reducing Risks and Promoting Health. 2003 (in Thai).

Figure 5.57 Proportion of underweight primary schoolchildren, 1989–2008



Source: Department of Health, MoPH.

Note: For 1995, 1996, and 2002 there were no surveys on malnutrition among primary schoolchildren.

For 2003, data were derived from Thailand Diet and Nutrition Survey, Fifth Round, Department of Health, MoPH.

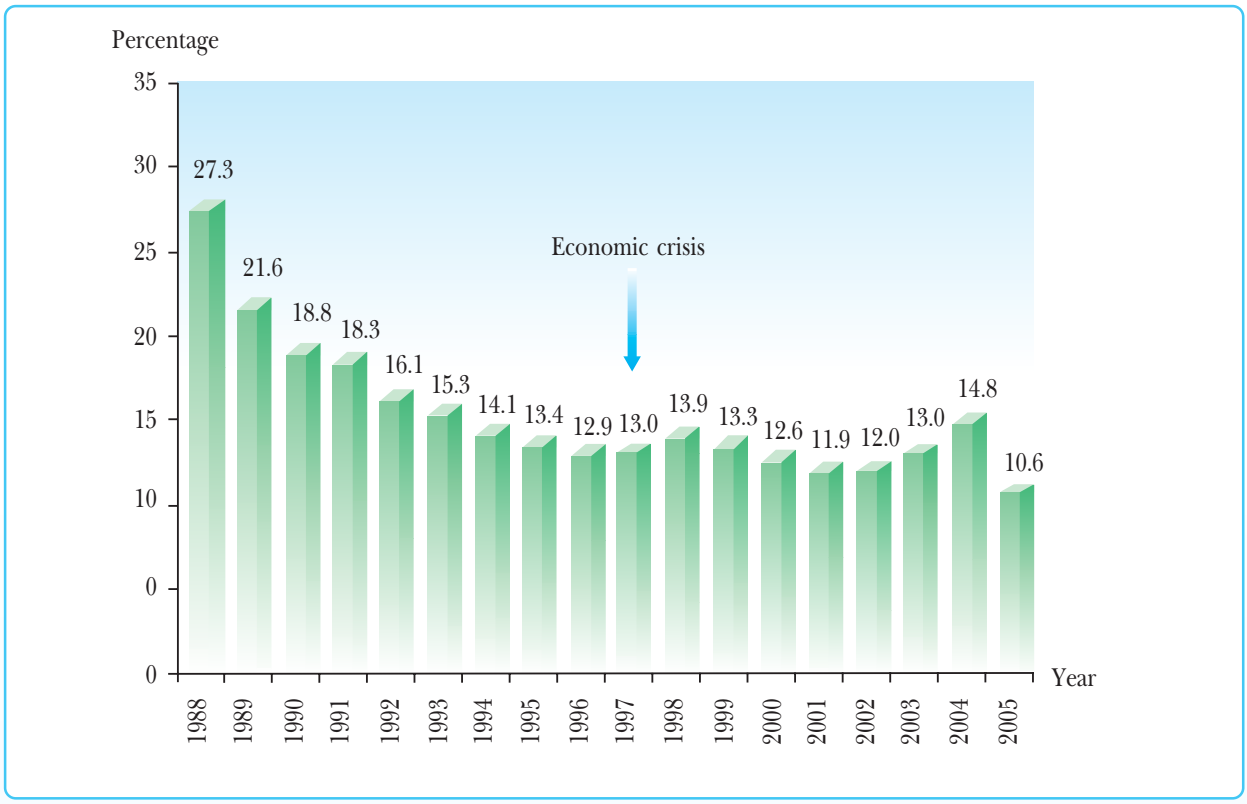
For 2005, data were derived from Child and Youth Survey, 2004–2005. Thai Health Promotion Foundation, 2006.

For 2007–2008, data were derived from Child Watch Survey, 2007–2008. Ramjitti Institute.

2.9.2 Anaemia among Pregnant Women

The rate of anaemia among pregnant women had a declining trend, i.e. dropping from 27.3% in 1988 to 12.9% in 1996, but it rose slightly during the economic crisis. However, the rate dropped again to 10.6% in 2005 (Figure 5.58). Besides, according to the Fourth National Health Examination Survey in 2009, 12.5% of pregnant women had abnormality in their thalassemia screening.

Figure 5.58 Proportion of anaemic pregnant women (Hct <33%), 1988–2005

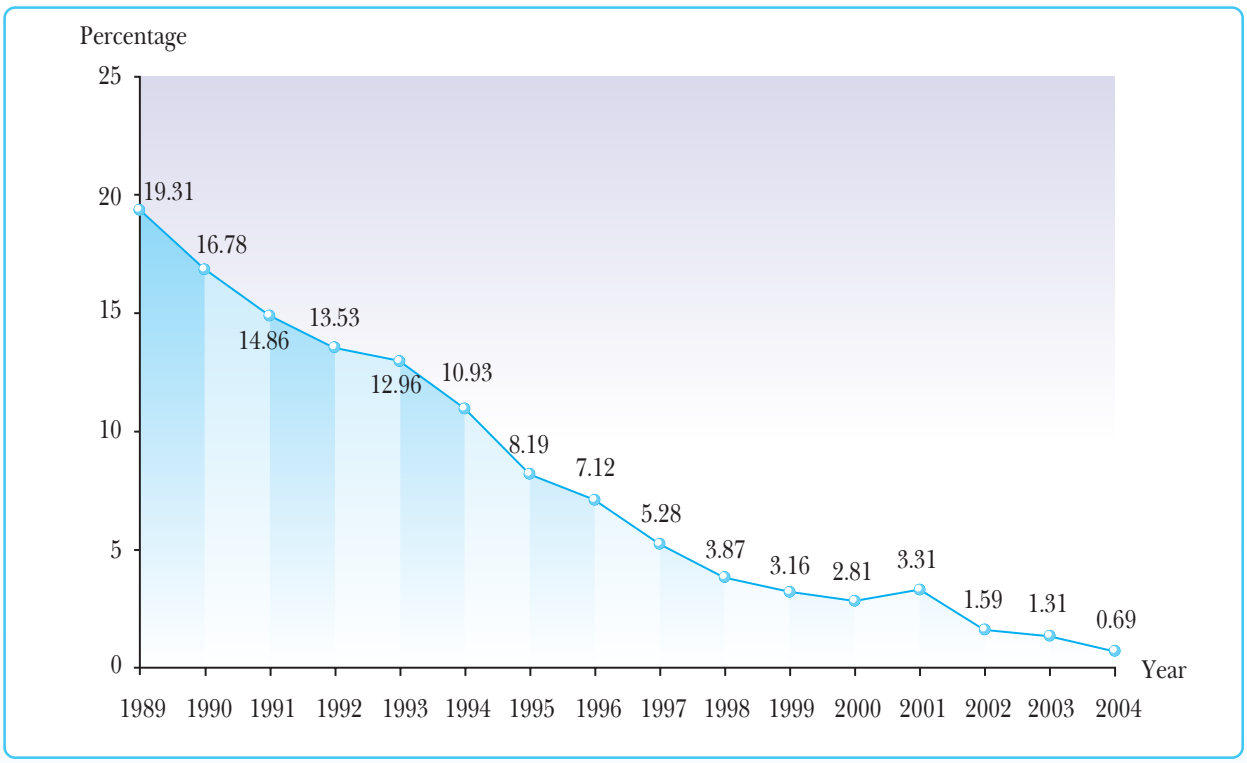


Source: Department of Health, MoPH.

2.9.3 Iodine Deficiency Disorders

As a result of strong efforts on the elimination of iodine deficiency disorders (IDD), the prevalence of IDD in primary schoolchildren in 15 provinces with high rates of severe goitre dropped from 19.31% in 1989 to 0.69% in 2004 (Figure 5.59); and the national average of goitre prevalence rate also dropped to 1.3% in 2003. But the IDD surveillance programme in pregnant women for preventing intellectual problems among newborn babies revealed that the trend in iodine deficiency among pregnant women rose from 34.5% in 2000 to 57.4 in 2005; however, the rate had a declining trend during 2007–2008 (Figure 5.60).

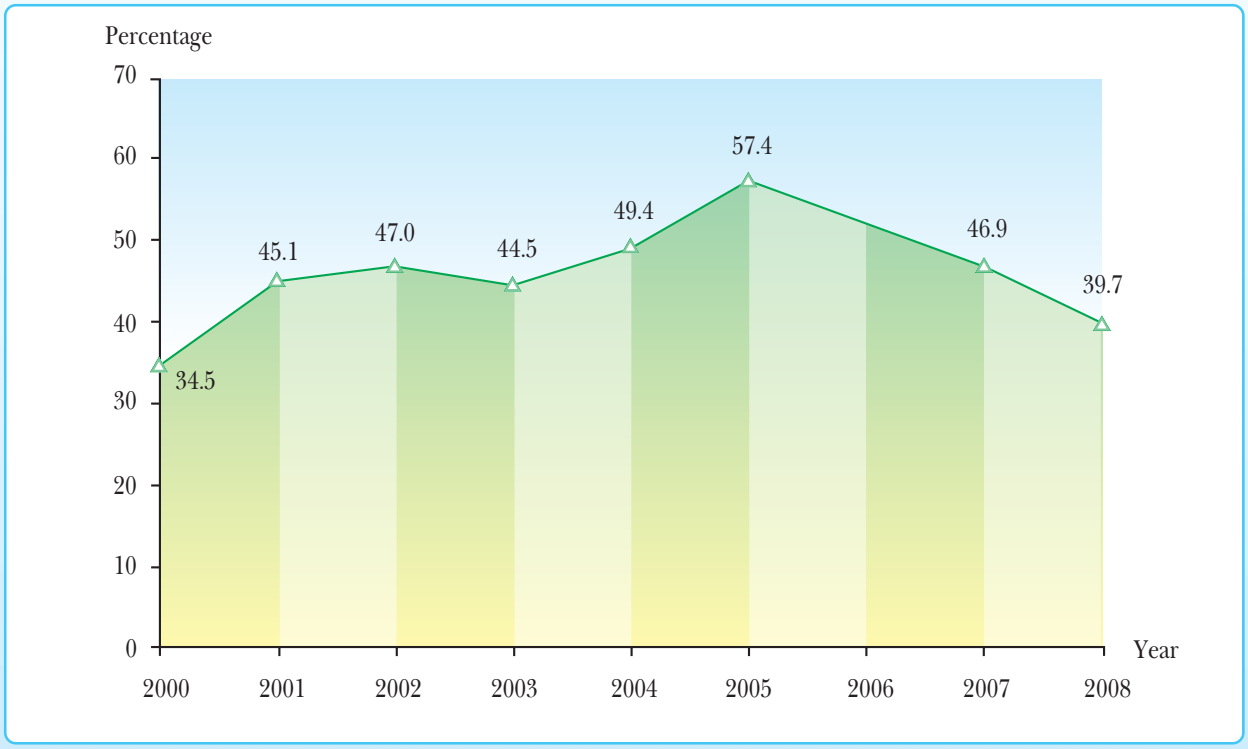
Figure 5.59 Situation of iodine deficiency disorders among primary schoolchildren, 1989–2004



Source: Department of Health, MoPH.

Note: Data were collected only from 15 provinces with a severe goitre problem.

Figure 5.60 Percentage of pregnant women with iodine deficiency (iodine in urine <10 μg/dl), 2000–2008

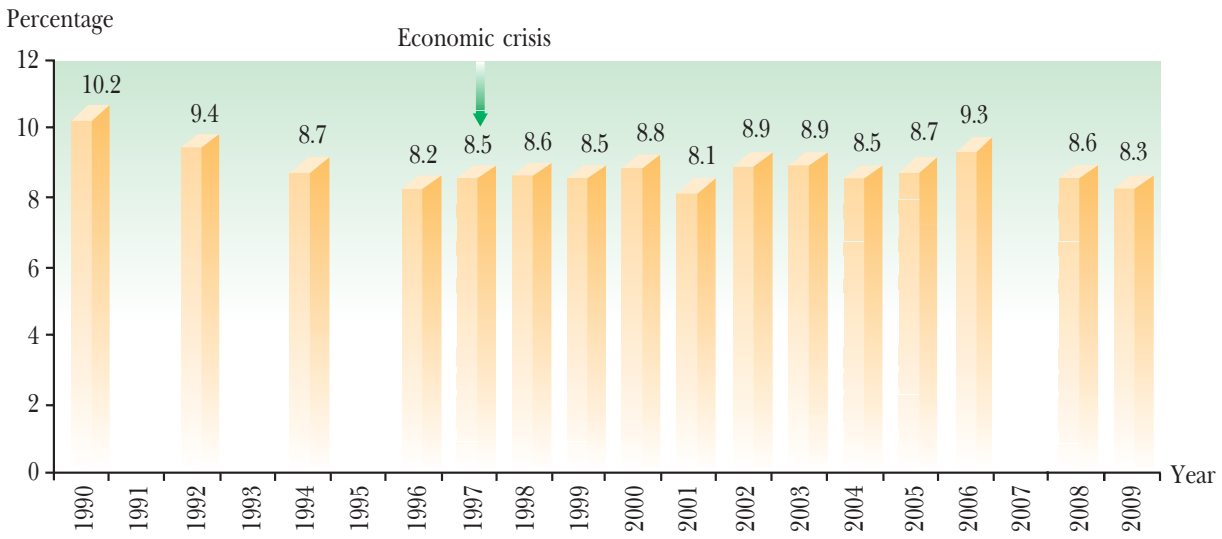


Source: Department of Health, MoPH.

2.9.4 Neonates with Birth Weight under 2,500 Grams

Even though the rate of low birth weight (below 2,500 grams) in general has declined from 10.2% in 1990 to 8.3% in 2009 (Figure 5.61), after the economic crisis the rate of low birth weight in Thailand has been stable or rising slightly, particularly among the poor and unemployed population groups whose rates are markedly higher than that among the non-poor; and the rates are highest in the South and the Northeast.

Figure 5.61 Percentage of newborns with low birth weight (under 2,500 grams), 1990–2009



Sources: 1. Department of Health, MoPH.
2. For 2006, data were derived from the Child Situation Survey in Thailand, Dec 2005 – Feb 2006, National Statistical Office.

2.10 Health Problems of the Elderly

2.10.1 Diseases and Deficiencies in the Elderly

According to the report on burden of disease or disability-adjusted life years (DALYs) lost among elderly persons (aged 60 years and over), most Thai elders have DALYs lost due to chronic diseases and bodily degeneration, most of which are cerebrovascular disease and other illnesses (Table 5.30).

Table 5.30 Ranking of disability-adjusted life years lost among Thai elderly persons by sex and cause, 2004

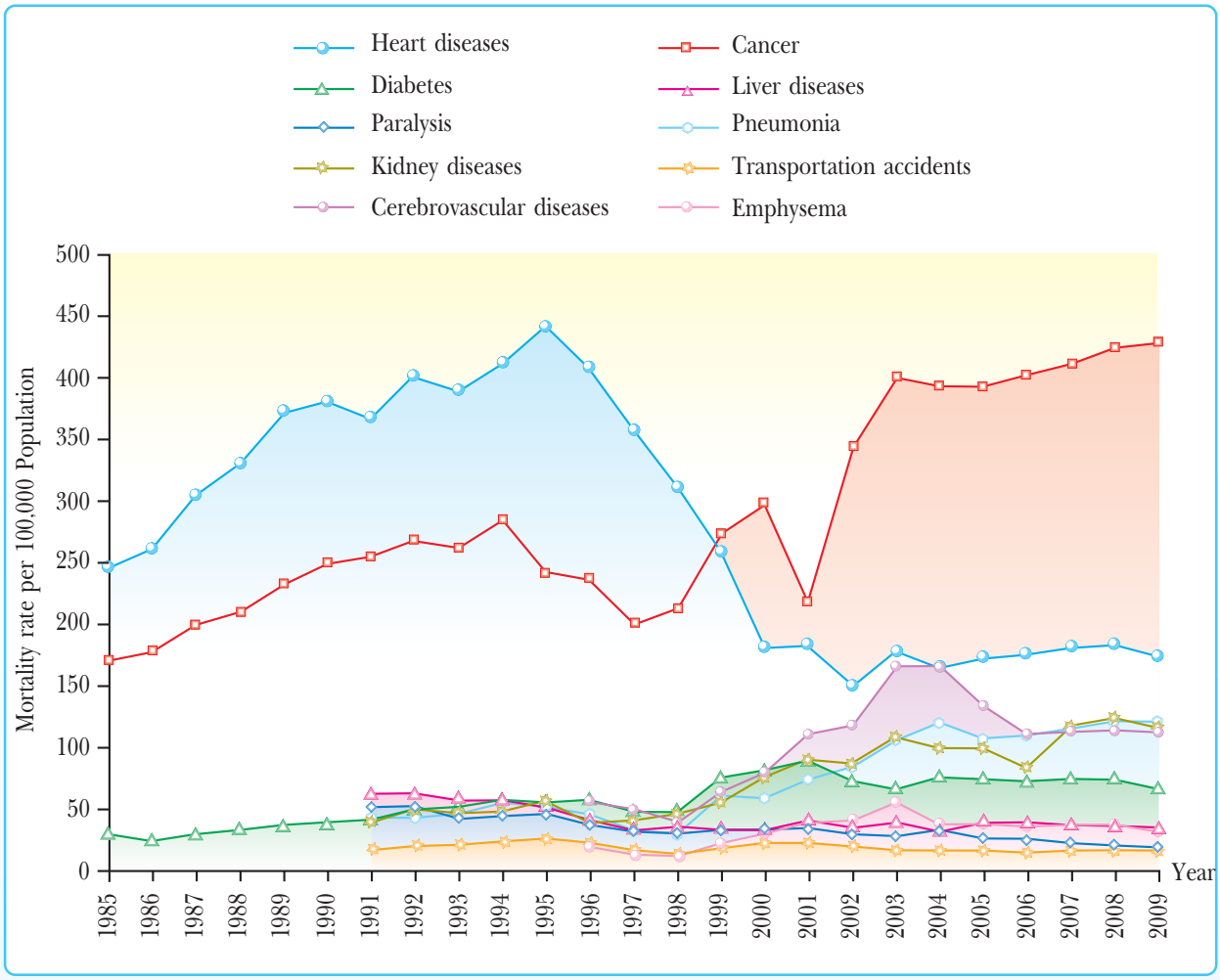
Rank	Male			Female		
	Disease	DALY ('000)	%	%	DALY ('000)	Disease
1	Stroke	170	12.1	12.7	203	Stroke
2	COPD	127	9.0	8.9	141	Diabetes
3	Liver cancer	114	8.1	6.2	99	Ischemic heart disease
4	Ischemic heart disease	96	6.8	6.1	97	Osteoarthritis
5	Diabetes	69	4.9	5.3	84	Cataracts
6	Osteoarthritis	67	4.8	4.9	78	Dementia
7	Bronchus and lung cancer	64	4.5	4.1	66	Liver and bile duct cancer
8	Deafness	48	3.4	4.0	64	COPD
9	Cataracts	47	3.3	3.8	61	Deafness
10	Dementia	38	2.7	2.8	45	Nephritis & nephrosis

Source: Working Group on Burden of Disease, Thailand, 2004.

2.10.2 Major Causes of Death in the Elderly

Among the elderly, the most common causes of death are, in order of magnitude, cancer, heart disease, cerebrovascular disease, pneumonia, kidney disease and diabetes. It has been found that the mortality rate (per 100,000 population) from cancer has risen from 169.1 in 1985 to 427.9 in 2009. The rate of mortality due to cerebrovascular disease (per 100,000 population) has also risen from 54.9 in 1996 to 112.8 in 2009; and the rates of mortality have also risen for diabetes from 28.8 to 66.4 for the same period and for pneumonia from 42.0 in 1991 to 119.9 in 2009 (Figure 5.62).

Figure 5.62 Mortality rates due to major causes of death in the elderly, 1985–2009



Source: Mortality Report, Bureau of Policy and Strategy, MoPH.

Year	Mortality rate (per 100,000 population) among the elderly									
	Diabetes	Heart diseases	Cancer	Liver diseases	Kidney diseases	Paralysis	Pneumo-nia	Transporta-tion accidents	Cerebrovas-cular diseases	Emphy-sema
1985	28.8	245.0	169.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1986	24.9	259.3	177.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1987	30.3	304.3	199.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1988	32.4	331.1	209.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1989	37.2	372.3	231.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1990	39.4	379.2	248.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1991	39.9	386.7	253.9	62.6	38.3	49.5	42.0	16.9	n.a.	n.a.
1992	49.5	400.3	266.8	63.4	48.0	51.5	42.3	20.1	n.a.	n.a.
1993	50.8	389.7	262.9	57.1	45.9	42.4	45.3	19.5	n.a.	n.a.
1994	57.2	412.2	283.9	56.3	47.5	44.9	56.0	24.1	n.a.	n.a.
1995	56.2	440.7	242.1	52.2	55.3	45.5	51.0	26.3	n.a.	n.a.
1996	57.4	407.5	236.2	41.4	38.2	37.4	46.8	22.4	54.9	18.4
1997	48.5	356.1	199.4	33.1	40.5	32.0	33.7	17.1	49.1	13.3
1998	47.7	310.0	213.0	34.4	46.7	31.3	28.9	13.3	38.0	11.0
1999	74.8	257.7	273.7	34.0	56.1	32.3	61.1	18.5	63.8	23.0
2000	82.1	179.9	297.6	34.0	75.5	33.9	59.9	22.6	79.7	29.5
2001	88.4	182.2	218.2	40.6	89.6	34.8	73.0	21.5	110.1	38.8
2002	72.1	149.4	342.6	35.5	87.2	29.2	85.5	18.9	118.7	40.2
2003	66.7	177.1	399.5	38.3	108.0	26.8	107.4	16.7	166.8	54.9
2004	75.8	163.8	393.1	30.7	98.9	32.8	119.2	17.3	166.3	37.7
2005	73.0	172.3	393.6	39.5	100.3	26.6	107.8	16.2	134.3	37.4
2006	71.3	175.3	402.5	39.2	83.0	25.9	110.3	15.2	110.9	35.1
2007	74.1	179.9	411.0	36.1	117.3	22.6	116.3	16.3	112.6	37.3
2008	73.3	183.0	424.8	36.3	124.3	20.3	121.5	16.0	113.9	36.2
2009	66.4	173.2	427.9	34.4	116.9	18.2	119.9	16.9	112.8	30.7

Source: Bureau of Policy and Strategy, MoPH.

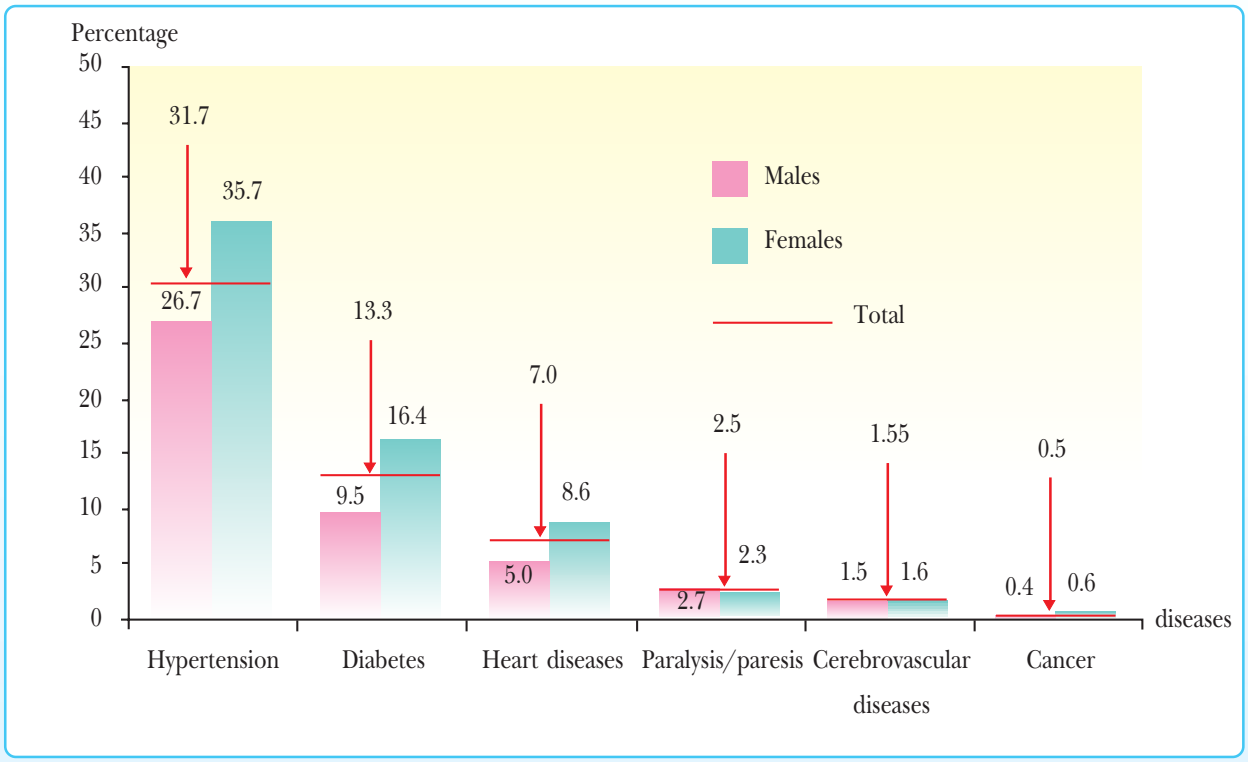
Note: n.a. = Data not available

2.10.3 Health Status of the Elderly

1) Prevalence of Chronic Diseases and Deficiencies in the Elderly

The 2006 risk survey among Thai elderly persons conducted by the Ministry of Social Development and Human Security revealed that three-thirds of them had chronic illnesses, mostly including hypertension, bone/joint diseases, diabetes, eyes diseases, and cardiovascular disease. And according to the 2007 survey conducted by the National Statistical Office, 31.7% of Thai elders had hypertension, followed by diabetes (13.3%), heart diseases (7.0%), paralysis/paresis (2.5%), cerebrovascular disease (1.6%), and cancer (0.5) (Figure 5.63). It is noteworthy that the prevalence of chronic diseases and deficiencies in the elderly has a rising trend even though revealed by different surveys conducted during periods of time; however, such a trend is consistent with their causes of death.

Figure 5.63 Percentage of elderly persons with chronic diseases by disease and sex, 2007

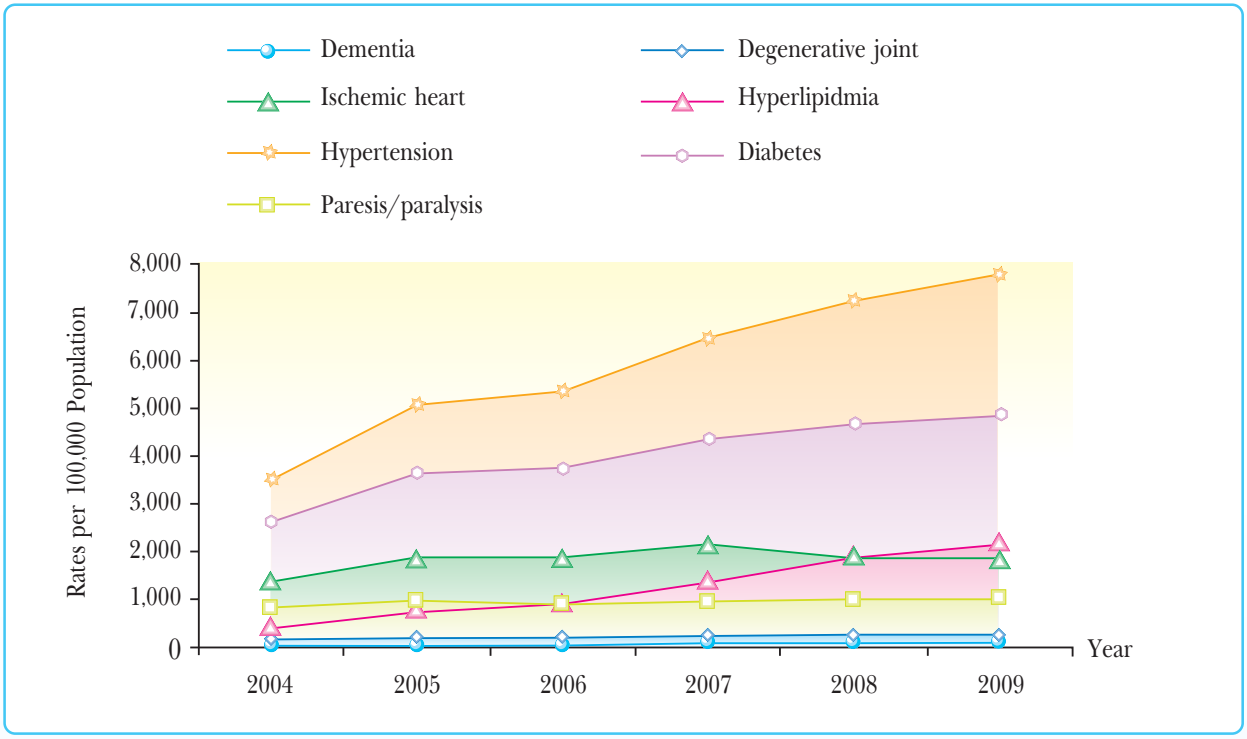


Source: Report on Elderly Population Survey in Thailand, 2007. National Statistical Office.

2) Common Causes of Illness in Elderly Persons

According to the report on common illnesses among Thai elderly persons between 2004 and 2009, based on the analysis of individual inpatients' data from the National Health Security Office, the Comptroller General's Department of the Ministry of Finance, and the Social Security Office, most of them sought medical services for hypertension, followed by diabetes, ischemic heart disease, paresis/paralysis, heperlipidemia, degenerative joint disease and dementia; and their rates of hospitalization (per 100,000 population) are rising each year (Figure 5.64).

Figure 5.64 Rates of hospitalization due to common illnesses among elderly persons, 2004–2009



Disease	Hospitalization rate (per 100,000 population)					
	2004	2005	2006	2007	2008	2009
- Dementia	57.66	76.61	72.88	90.38	99.31	113.9
- Degenerative joint	156.27	218.06	211.67	239.07	265.54	272.9
- Ischemic heart disease	1,420.07	1,873.15	1,868.28	2,156.14	1,856.54	1,898.6
- Hyperlipidemia	446.59	787.18	984.17	1,437.68	1,909.20	2,180.2
- Hypertension	3,511.72	5,027.00	5,330.04	6,419.47	7,213.10	7,741.8
- Diabetes	2,627.40	3,663.68	3,732.38	4,328.11	4,655.91	4,852.7
- Paresis/paralysis	795.56	975.88	895.23	969.15	994.57	1,013.7

Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH

Data sources: Data for 2004–2007, Individual Inpatients Data, National Health Security Office and Comptroller General's Department.

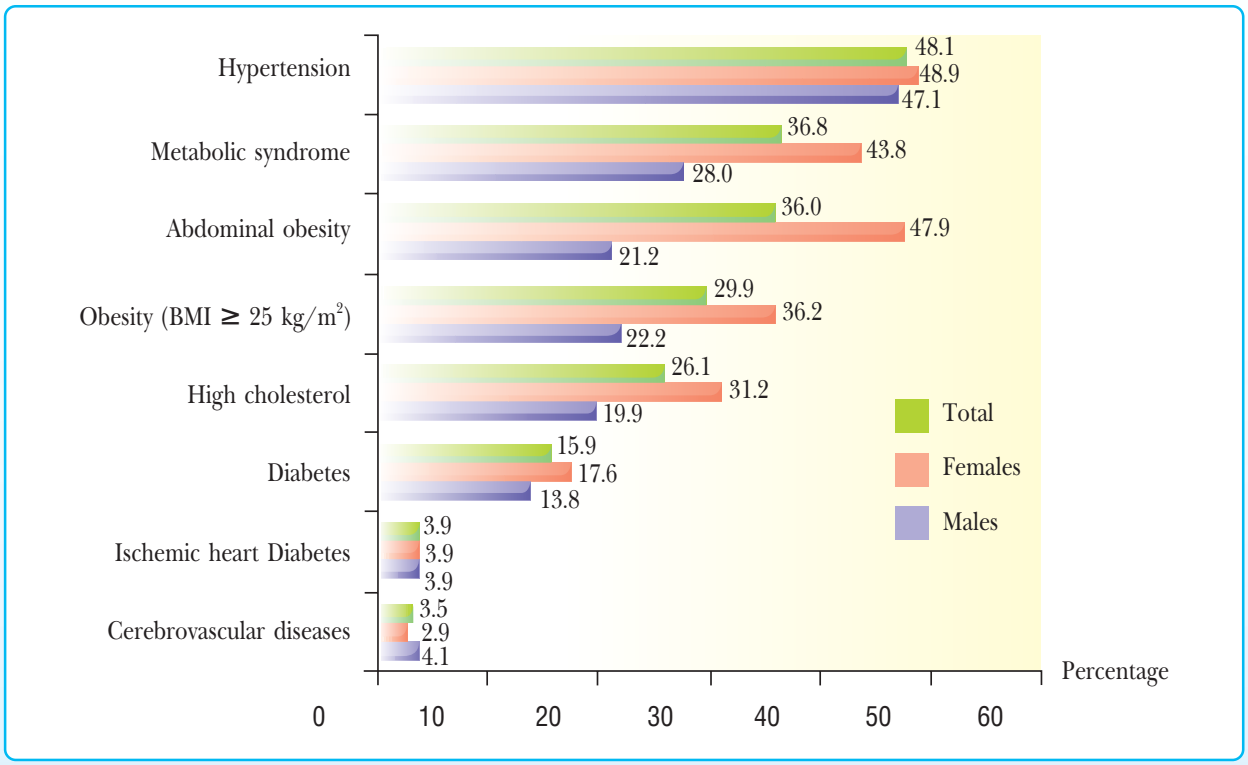
Data for 2008–2009, Individual Inpatients Data, National Health Security Office and Social Security Office.

3) Chronic Diseases as Risk Factors for Cardiovascular Disease in the Elderly

According to the analysis of data on chronic illness and major disease burden among elderly persons, obtained from the Fourth National Health Examination Survey (2008–2009) conducted by the National Health Examination Survey Office of the Health Systems Research Institutes, nearly half of the elderly had hypertension, one-third had metabolic syndrome (with pot belly or obesity, BMI ≥25 hg/m2), one-fourth had high blood cholesterol (cholesterol ≥240 mg/dl), and 15% had diabetes (Figure 5.65).

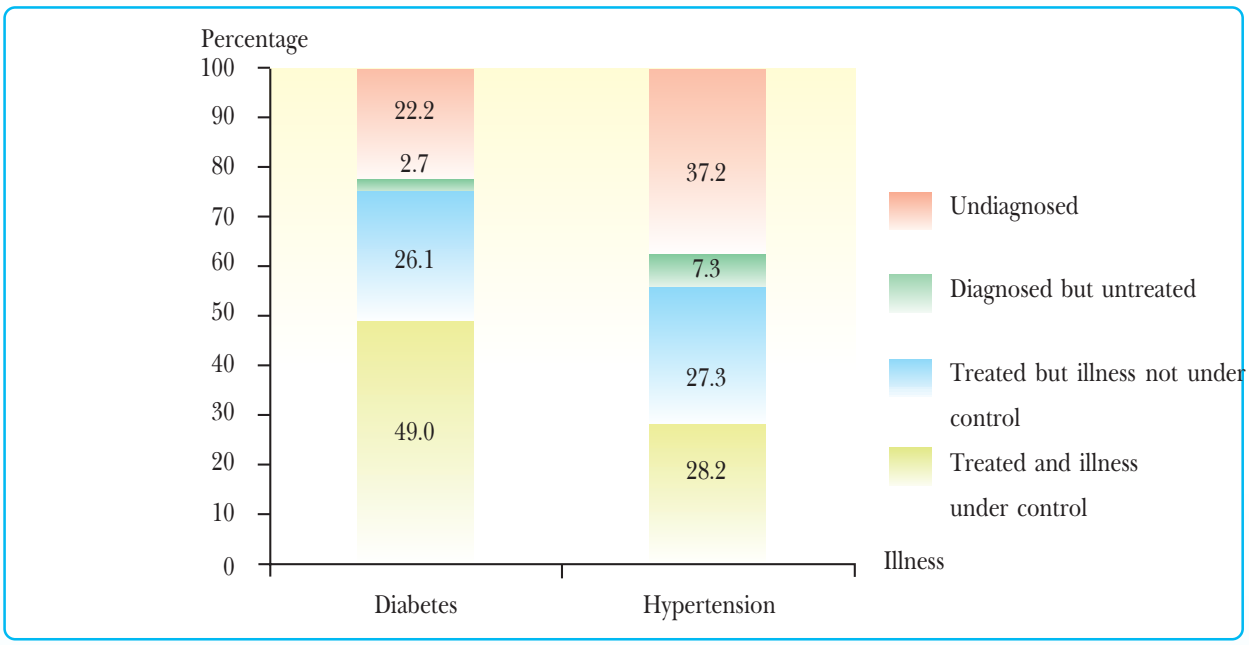
However, 22.2% of the elderly had diabetes but were unaware of their own diabetic condition, while 50% of the elders with diabetes could control their blood sugar level; and 37.2% of elderly persons with hypertension were unaware of their high blood pressure, but only 28.2% of would control their blood pressure level (Figure 5.66).

Figure 5.65 Prevalence of chronic diseases and cardiovascular disease among Thais aged 60 years and over, 2008–2009



Source: Fourth National Health Examination Survey (2008–2009) conducted by the National Health Examination Survey Office of the Health System Research Institute.

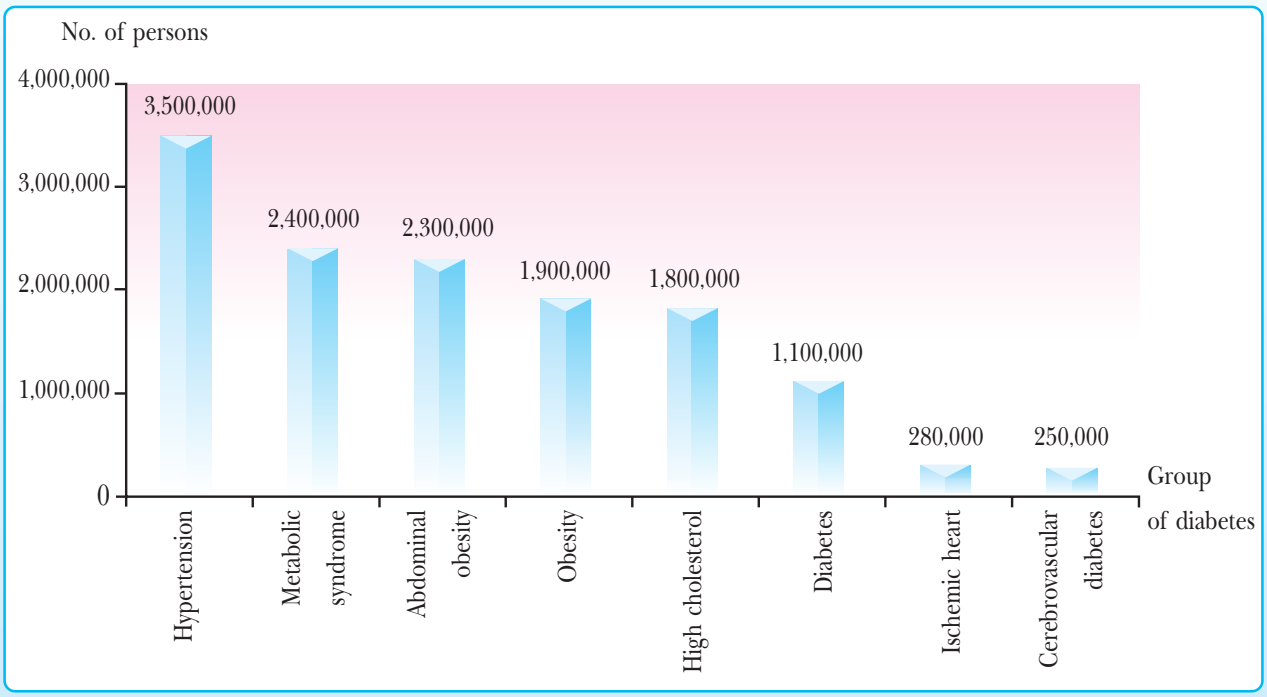
Figure 5.66 Proportions of diagnosis and treatment efficacy 2008-2009 among elderly persons with diabetes and hypertension



Source: Fourth National Health Examination Survey (2008–2009) conducted by the National Health Examination Survey Office of the Health System Research Institute.

It has been estimated that there are as many as 5.4 million chronically ill elderly persons who are at risk for cardiovascular disease (based on a total of 7.3 million people aged 60 and over in 2009) (Figure 5.67).

Figure 5.67 Estimated numbers of elderly persons aged 60 years and over with chronic diseases rated to cardiovascular diseases, 2008–2009

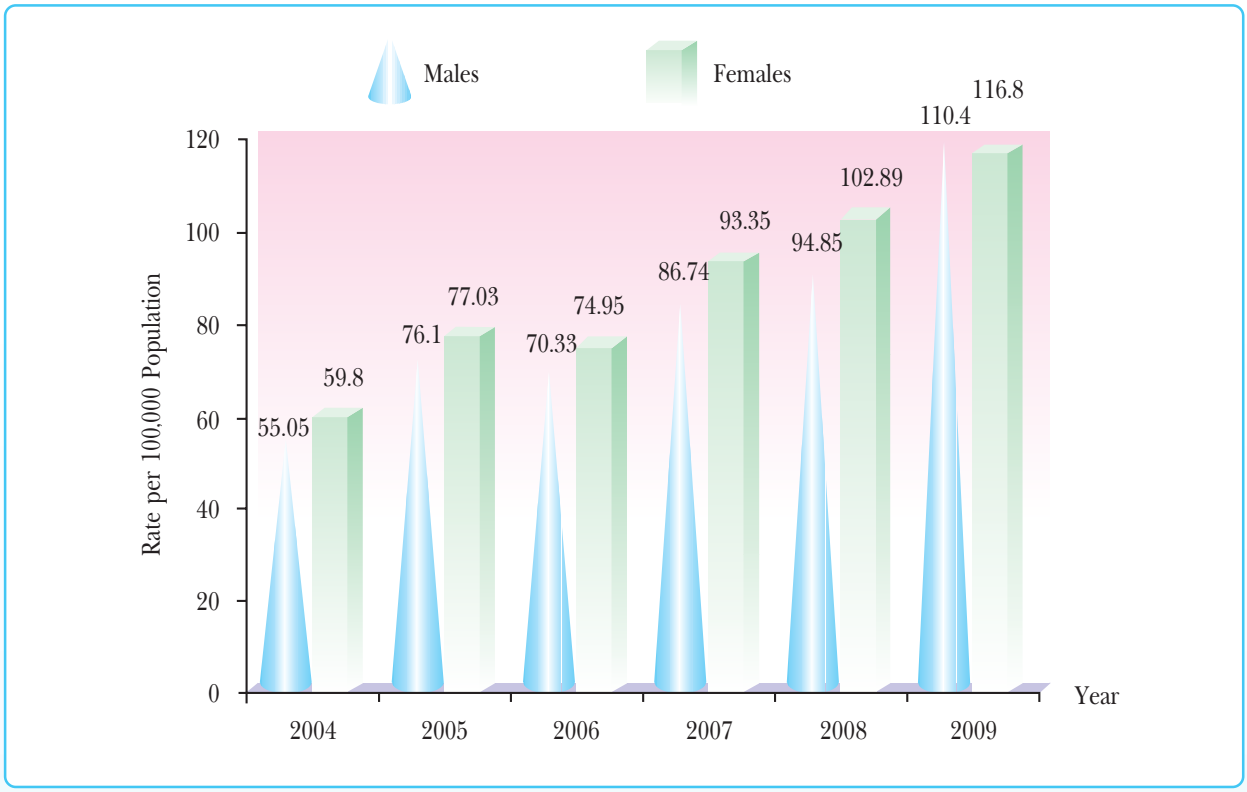


Source: Fourth National Health Examination Survey (2008–2009) conducted by the National Health Examination Survey Office of the Health System Research Institute.

4) Dementia among the Elderly

More and more elderly persons especially females tend to have dementia (Figure 5.68).

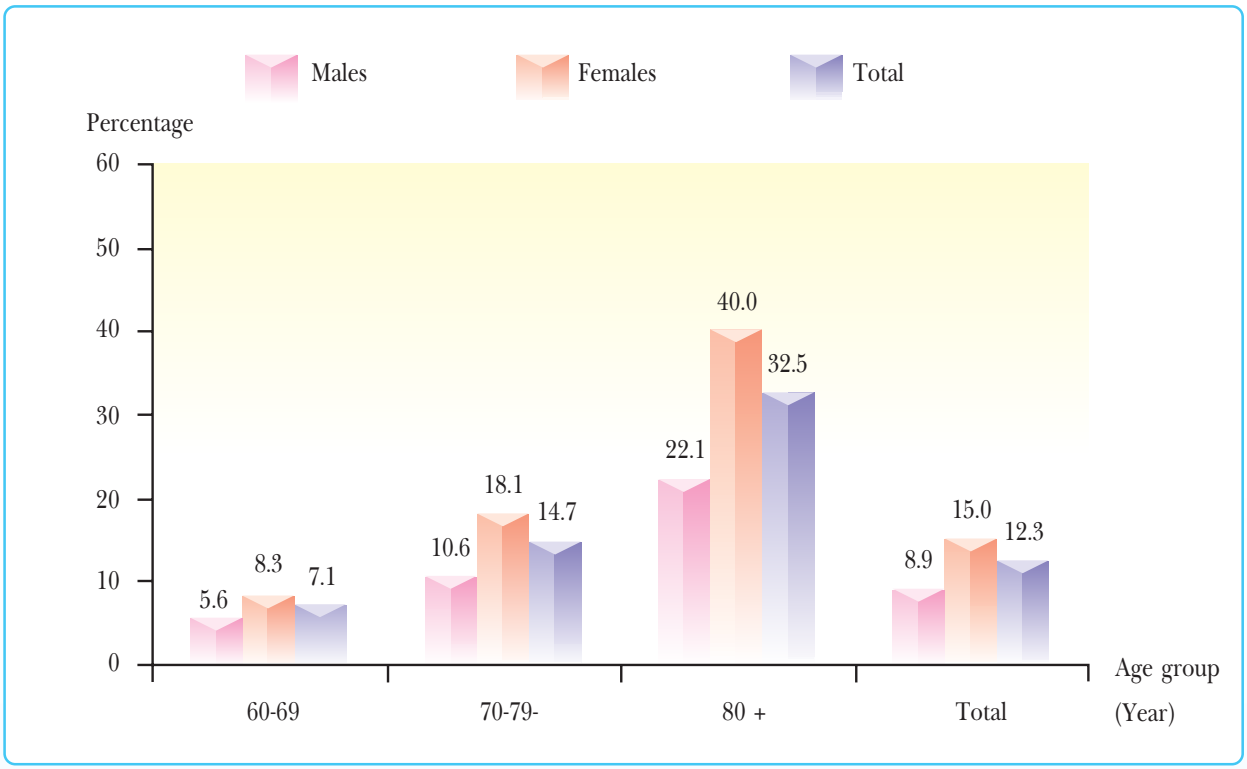
Figure 5.68 Rate of hospitalizations with dementia among elderly persons, 2004-2009



Source: Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.
Data sources:Data for 2004–2007, Individual Inpatients Data, National Health Security Office and Comptroller General's Department.
Data for 2008–2009, Individual Inpatients Data, National Health Security Office and Social Security Office.

Besides, according to the Fourth National Health Examination Survey (2008–2009, conducted by the National Health Examination Office of the Health Systems Research Institute, through the dementia screening with the preliminary brain condition testing checklist (developed by the Institute of Geriatric Medicine, Department of Medical Services, MoPH), approximately 880,000 elderly persons were found so have dementia, or a prevalence of 12.3%. The dementia prevalence rises with age, i.e. 7.1% (5.6% and 8.3% in elderly males and females, respectively) in the 60–69 age group and as many as one-third in the 80 and over age group (22% in males and 40% in females) (Figure 5.69).

Figure 5.69 Prevalence of dementia among elderly persons by age and sex, 2008–2009

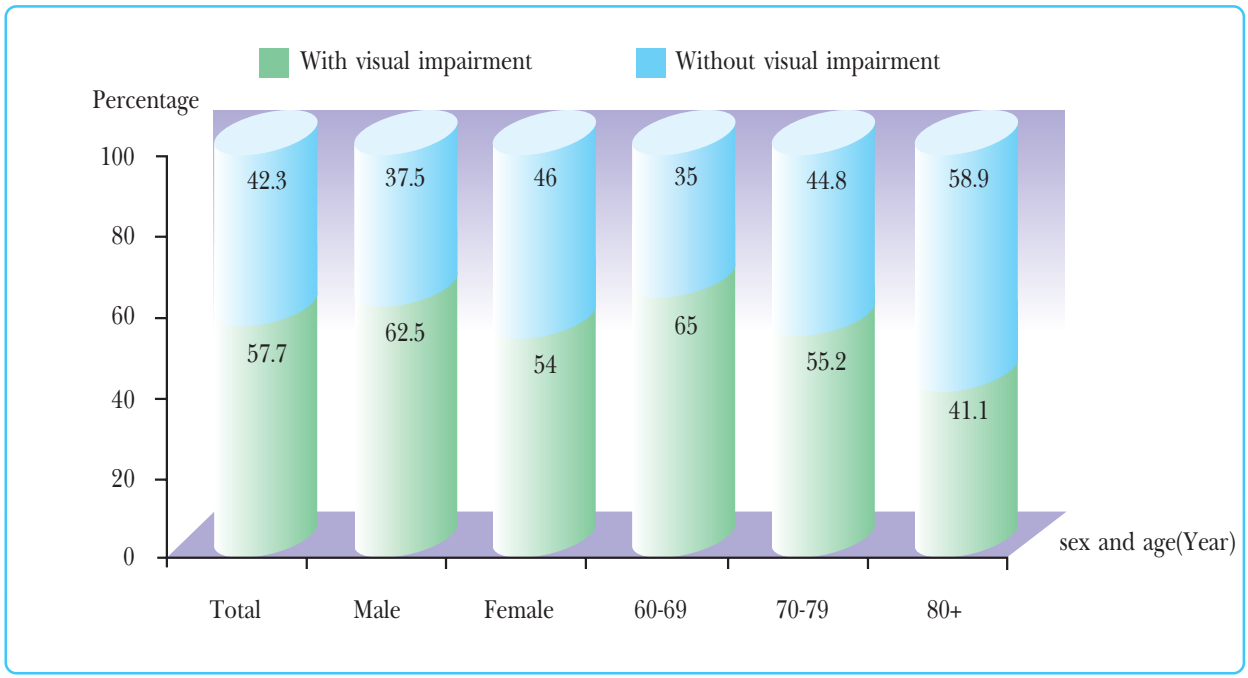


Source: Results of dementia survey in elderly persons in the Fourth National Health Examination Survey (2008–2009) conducted by the National Health Examination Survey Office of the Health System Research Institute.

5) Bodily Degeneration among the Elderly

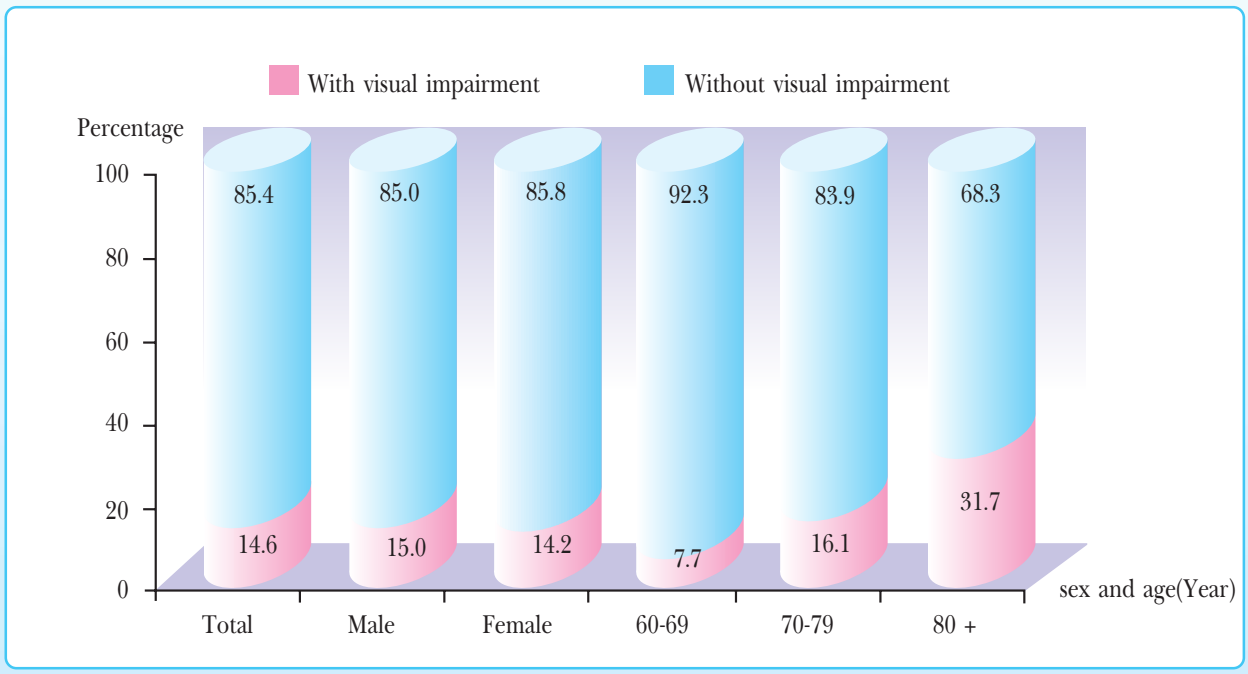
According to the health status assessment focusing on bodily degeneration among elderly persons, more than half of them (57.7%) have a problem with seeing, more males having such a problem than females; and the older they get, the smaller proportion of them having such a problem, probably due to the fact that they have undergone a cataract surgery and thus they can see more clearly (Figure 5.70). Regarding the hearing capacity, 14.6% of them have hearing impairment; not much difference is found between males and females, but the older they become, a much larger proportion of them have such a problem (Figure 5.71).

Figure 5.70 Proportion of elderly persons with visual impairment by sex and age group, 2008



Source: Health Care System for Vulnerable Elderly Persons in Communities, 2008. Institute of Geriatric Medicine, Department of Medical Services, MoPH.

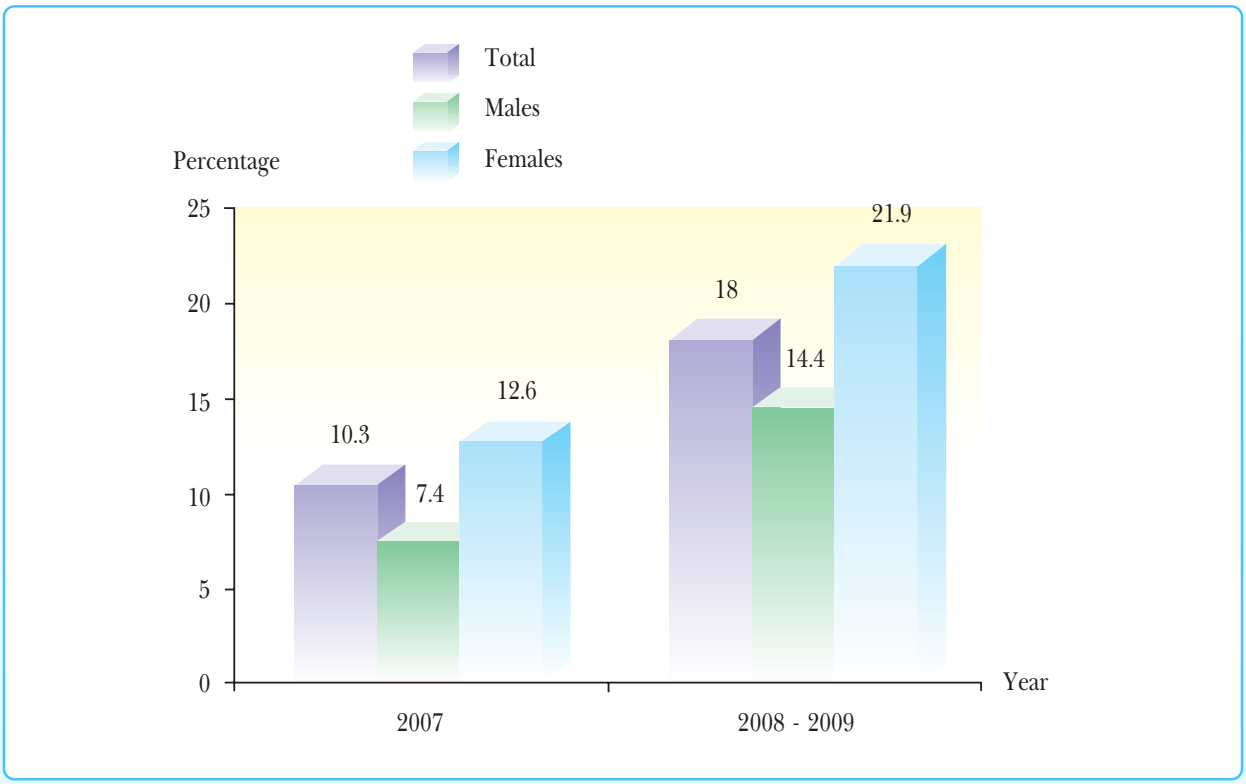
Figure 5.71 Proportion of elderly persons with hearing impairment by sex and age group, 2008



Source: Health Care System for Vulnerable Elderly Persons in Communities, 2008. Institute of Geriatric Medicine, Department of Medical Services, MoPH.

Besides, according to the database on falls among people aged 60 years and over of the National Health Examination Survey Office of the Health Systems Research Institute, under the Fourth National Health Examination Survey (2008–2009), and the 2007 survey among the elderly in Thailand, conducted by the National Statistical Office, the proportion of falls among elderly persons tends to rise from 10.3% in 2007 to 18% in 2008–2009, for both males and females. Among males, the prevalence rose from 7.4% to 14.4% and among females from 12.6% to 21.9% during the same period (Figure 5.72).

Figure 5.72 Prevalence of falls among elderly persons during the past 6 months in 2007 and 2008–2009



Sources: 1. Report on Elderly Population Survey in Thailand, 2007, National Statistical Office.

2. Falls among Elderly Persons in Thailand in the Fourth National Health Examination Survey (2008-2009), National Health Examination Survey Office of the Health Systems Research Institute.