

APPENDIX

E

KHON KAEN
CANCER
REGISTRY*Surapon Wiangnon, M.D.***Registration area**

Khon Kaen is one of the 19 provinces of the northeastern region of Thailand, located at latitude 16:30 N and longitude 102:47 E, 163 meters above the sea level. It covers an area of about 10 886 km.² with a population of 1.8 million (Figure 1) (National Statistics Office: Khon Kaen Province. 1998-2000). It has a common boundary with Loei and Udon Thani provinces to the north, Kalasin and Maha Sarakham to the east, Nakhon Ratchasima and Buri Ram to the south, and Phetchabun and Chaiyaphum to the west. Khon Kaen is divided into 20 sanitary districts, 5 new-districts and 4 municipal areas. The climate is generally hot and dry. The mean temperature is 28 Celcius and the average annual rainfall is 1 188 millimeters. The traditional occupation of the people is rice farming. New industrial plants have been established in this area causing problems of environmental pollution.

Cancer care facilities

Most of the public hospitals in Khon Kaen belong to the Ministry of Public Health; others are a university hospital and an army hospital. There are three large private hospitals. Attempts to improve the referral system have gained some support, but many patients still refer themselves according to their preference.

Registry structure and methods

The data on cancer patients

are collected by both active and passive methods from one university hospital (Srinagarind hospital), 1 regional hospital (Khon Kaen provincial hospital), 1 military hospital, three private hospitals, 20 community hospitals, the provincial Chief Medical Officer's Office and Civil Registration Section of all districts. The registry staff visit all registered site by regular schedule.

The data of those who are registered as Khon Kaen residents are extracted from the hospital-based cancer registry of Srinagarind hospital. The medical charts of patients diagnosed as having cancer from other hospital are reviewed and registered by registry personnel. Any questionable cases are traced to the original source(s) of information for clarification. Multiple primary cases are checked by physicians using their original records and with any other physicians concerned.

Death certificates with a mention of cancer are collected from the office of the Ministry of the Interior. The registry staff visit these sources to notify and recheck with health personnel in that area. The vital status of registered cases has been recently checked with the population registration of Ministry of Interior by using personal identification number. The data are reviewed and checked with existing registry files before data entry.

All the data are verified, checked for duplication coded and entered into the CANREGT software.

Figure 1 Population pyramid, Khon Kaen, 1999

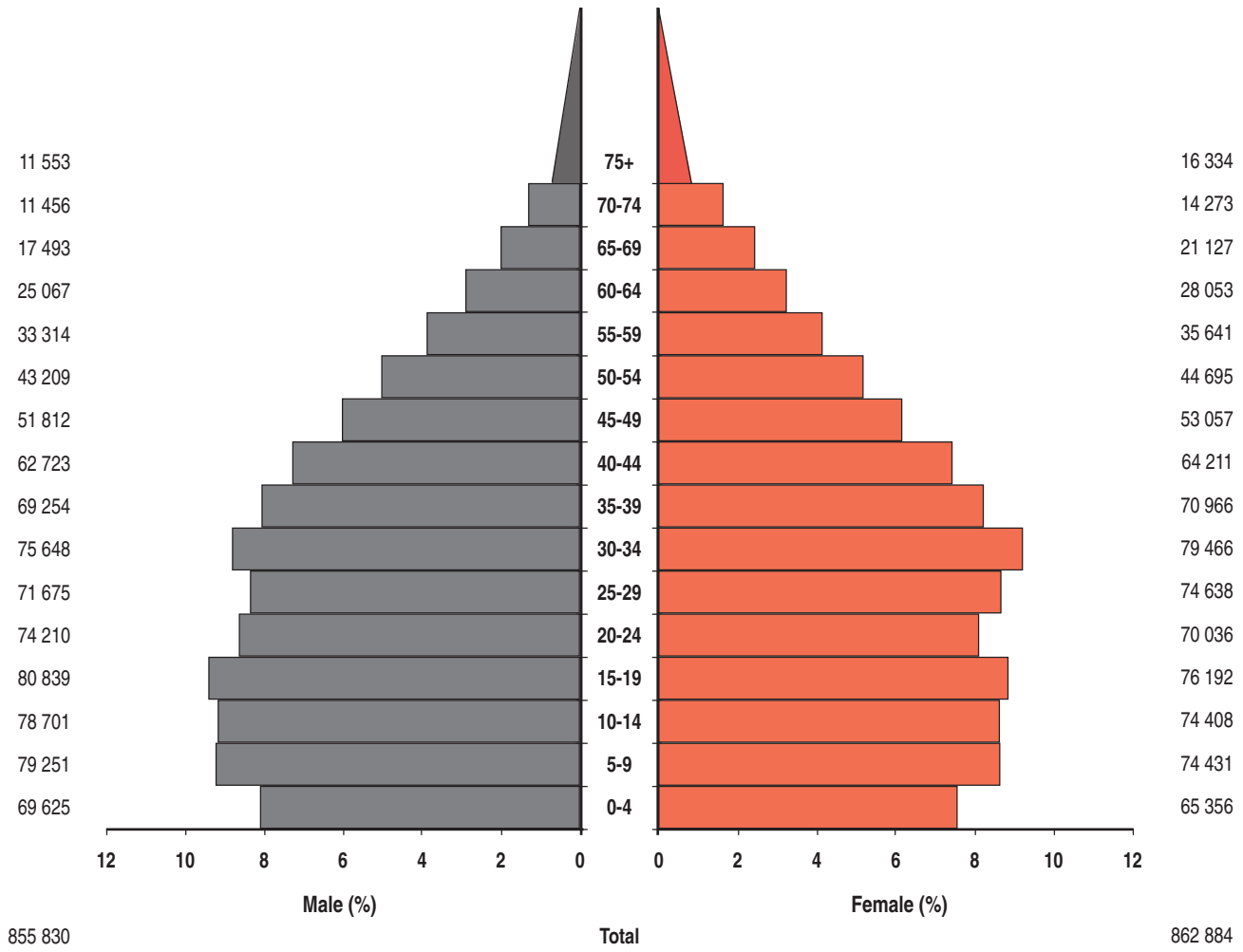


Table 1 Annual incidence, Khon Kaen, 1998-2000

	Male						Female						ICD-10
	No.	Freq.	Crude	ASR	Cum. rates		No.	Freq.	Crude	ASR	Cum. rates		
	cases	(%)	rate	world	0-64	0-74	cases	(%)	rate	world	0-64	0-74	
		(per 100,000)	(per 100,000)	(percent)	(percent)			(per 100,000)	(per 100,000)	(percent)	(percent)		
Lip	5	0.1	0.2	0.2	0.01	0.01	65	2.0	2.5	2.9	0.10	0.38	C00
Tongue	34	1.0	1.3	1.6	0.09	0.16	21	0.6	0.8	0.8	0.06	0.08	C01-02
Salivary gland	8	0.2	0.3	0.3	0.02	0.04	10	0.3	0.4	0.4	0.02	0.03	C07-C08
Mouth	27	0.8	1.1	1.3	0.06	0.12	62	1.9	2.4	2.6	0.11	0.33	C03-C06
Oropharynx	15	0.4	0.6	0.7	0.03	0.06	2	0.1	0.1	0.1	0.01	0.01	C09-C10
Nasopharynx	65	1.8	2.5	2.8	0.22	0.35	36	1.1	1.4	1.3	0.09	0.14	C11
Hypopharynx	8	0.2	0.3	0.4	0.01	0.05	4	0.1	0.2	0.2	0.01	0.01	C12-C13
Pharynx unspecified	0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.0	0.0	0.00	0.00	C14
Esophagus	35	1.0	1.4	1.8	0.07	0.24	15	0.5	0.6	0.6	0.05	0.06	C15
Stomach	78	2.2	3.0	3.6	0.20	0.48	56	1.7	2.2	2.3	0.15	0.30	C16
Small intestine	7	0.2	0.3	0.4	0.01	0.06	3	0.1	0.1	0.1	0.01	0.02	C17
Colon	113	3.2	4.4	5.3	0.29	0.65	116	3.5	4.5	4.7	0.30	0.55	C18
Rectum	71	2.0	2.8	3.3	0.18	0.39	59	1.8	2.3	2.4	0.15	0.27	C19-21
Liver and bile duct	1652	46.3	64.3	78.4	4.79	10.00	797	24.3	30.8	33.3	2.20	4.14	C22,C24
Gallbladder	47	1.3	1.8	2.3	0.14	0.29	51	1.6	2.0	2.1	0.14	0.27	C23
Pancreas	22	0.6	0.9	1.0	0.05	0.12	22	0.7	0.8	0.9	0.05	0.09	C25
Nose, sinuses etc.	15	0.4	0.6	0.7	0.04	0.08	7	0.2	0.3	0.3	0.02	0.03	C30-C31
Larynx	42	1.2	1.6	2.1	0.13	0.23	5	0.2	0.2	0.2	0.01	0.03	C32
Bronchus, lung	426	11.9	16.6	20.6	1.15	2.60	171	5.2	6.6	7.1	0.44	0.89	C33-C34
Other thoracic organs	10	0.3	0.4	0.4	0.03	0.04	2	0.1	0.1	0.1	0.01	0.01	C37-C38
Bone	16	0.4	0.6	0.7	0.05	0.06	12	0.4	0.5	0.5	0.03	0.04	C40-C41
Connective tissue	24	0.7	0.9	1.1	0.07	0.10	33	1.0	1.3	1.4	0.09	0.11	C47,C49
Melanoma of skin	10	0.3	0.4	0.5	0.03	0.07	14	0.4	0.5	0.6	0.03	0.06	C43
Other skin	77	2.2	3.0	3.8	0.20	0.45	86	2.6	3.3	3.7	0.13	0.44	C44
Breast	2	0.1	0.1	0.1	0.01	0.01	381	11.6	14.7	13.7	1.14	1.37	C50
Uterus unspecified							1	0.0	0.0	0.0	0.00	0.00	C55
Cervix uteri							427	13.0	16.5	15.9	1.29	1.75	C53
Placenta							25	0.8	1.0	0.9	0.06	0.06	C58
Corpus uteri							64	2.0	2.5	2.5	0.22	0.28	C54
Ovary							165	5.0	6.4	6.2	0.50	0.65	C56
Other female genital							16	0.5	0.6	0.6	0.04	0.06	C51,C52,C57
Prostate	53	1.5	2.1	2.9	0.06	0.32							C61
Testis	15	0.4	0.6	0.5	0.04	0.05							C62
Penis	42	1.2	1.6	1.9	0.11	0.24							C60
Bladder	81	2.3	3.2	4.1	0.19	0.51	15	0.5	0.6	0.6	0.05	0.06	C67
Kidney etc.	34	1.0	1.3	1.6	0.10	0.21	27	0.8	1.0	1.0	0.07	0.13	C64-C66:C68
Eye	7	0.2	0.3	0.4	0.01	0.04	6	0.2	0.2	0.3	0.02	0.03	C69
Brain, nervous system	56	1.6	2.2	2.3	0.16	0.19	69	2.1	2.7	2.6	0.18	0.24	C70-C72
Thyroid	29	0.8	1.1	1.2	0.09	0.12	129	3.9	5.0	4.6	0.35	0.43	C73
Other endocrine	16	0.4	0.6	0.6	0.04	0.04	14	0.4	0.5	0.5	0.04	0.04	C74-C75
Hodgkin disease	10	0.3	0.4	0.4	0.03	0.03	4	0.1	0.2	0.1	0.01	0.01	C81
Non-Hodgkin lymphoma	121	3.4	4.7	5.1	0.31	0.55	76	2.3	2.9	3.0	0.20	0.39	C82-C85,C96
Multiple myeloma	24	0.7	0.9	1.1	0.06	0.13	15	0.5	0.6	0.6	0.05	0.09	C88,C90
Lymphoid leukemia	53	1.5	2.1	2.3	0.14	0.14	30	0.9	1.2	1.5	0.07	0.10	C91
Myeloid leukemia	37	1.0	1.4	1.5	0.11	0.16	27	0.8	1.0	1.0	0.07	0.10	C92
Leukemia unspecified	19	0.5	0.7	0.7	0.04	0.07	15	0.5	0.6	0.6	0.04	0.05	C95
Other and unspecified	161	4.5	6.3	7.5	0.45	0.91	126	3.8	4.9	5.2	0.33	0.66	O&U
All sites	3567	100.0	138.9	167.6	9.83	20.35	3281	100.0	126.7	129.7	8.96	14.80	ALL

Table 2 Percentage of morphologically verified and death certificate only cases, Khon Kaen, 1998-2000

	Male			Female			ICD-10
	Cases	%MV	%DCO	Cases	%MV	%DCO	
Oral cavity	74	82.4	0.0	158	88.0	0.6	C00-C08
Oropharynx, etc.	15	86.7	0.0	2	0.0	0.0	C09-C10;C14
nasopharynx	65	84.6	0.0	36	80.6	0.0	C11
Hypopharynx	8	87.5	0.0	4	100.0	0.0	C12-C13
Esophagus	35	45.7	0.0	15	46.7	0.0	C15
Stomach	78	65.4	0.0	56	53.6	0.0	C16
Small intestine	7	71.4	0.0	3	33.3	0.0	C17
Colon and rectum	184	54.3	0.0	175	60.0	0.0	C18-C21
Liver and bile duct	1652	7.6	0.4	797	8.9	0.1	C22;C24
Gallbladder	47	38.3	0.0	51	43.1	0.0	C23
Pancreas	22	31.8	0.0	22	18.2	0.0	C25
Nose, sinuses etc.	15	80.0	0.0	7	100.0	0.0	C30-C31
Larynx	42	73.8	0.0	5	60.0	0.0	C32
Bronchus, lung	426	37.1	0.5	171	41.5	1.2	C33-C34
Other thoracic organs	10	10.0	0.0	2	0.0	0.0	C37-C38
Bone	16	43.8	0.0	12	41.7	0.0	C40-C41
Connective tissue	24	70.8	0.0	33	84.8	0.0	C47,C49
Skin and melanoma	87	94.3	0.0	100	94.0	0.0	C43-C44
Breast	2	100.0	0.0	381	88.5	0.0	C50
Cervix uteri				427	81.7	0.0	C53
Corpus uteri				64	85.9	0.0	C54
Uterus unspecified				1	0.0	0.0	C55
Ovary				165	66.1	0.0	C56
Other female genital				16	0.0	0.0	C51,C52,C57
Placenta				25	96.0	0.0	C58
Penis	42	73.8	0.0				C60
Prostate	53	69.8	0.0				C61
Testis	15	66.7	0.0				C62
Kidney etc.	34	82.4	0.0	27	59.3	0.0	C64-C66,C68
Bladder	18	72.8	1.2	15	80.0	0.0	C67
Eye	7	71.4	0.0	6	50.0	0.0	C69
Brain, nervous system	56	26.8	0.0	69	20.3	0.0	C70-C72
Thyroid	29	93.1	0.0	129	84.5	0.0	C73
Other endocrine	16	25.0	0.0	14	7.1	0.0	C74-C75
Hodgkin disease	10	100.0	0.0	4	100.0	0.0	C81
Non-Hodgkin lymphoma	121	98.7	0.0	76	97.6	0.0	C82-C85,C96
Multiple myeloma	24	100.0	0.0	15	100.0	0.0	C88;C90
Leukemia	109	98.2	0.9	72	97.2	1.4	C91-C95
Other and unspecified	161	33.1	4.4	126	32.0	5.6	O&U
All sites	3567	35.3	0.5	3281	56.0	0.4	ALL