

Prevalence and Disease Experience Rates in Korean Physicians

This study aimed to find out the morbid status of Korean physicians living in Korea, as one part of a feasibility study on the Korean physician cohort. It was performed by mail survey using a self-administered questionnaire from Jan. 1, 1995 through Dec. 31, 1995. Study subjects were 21,552 including 17,877 (81.1%) males and 3,384 (15.5%) females. Person based prevalence rate of disease was 17.7% (18.3% for males and 13.8% for females) with the rate increasing with age. The disease group showing the highest prevalence rate was circulatory diseases (5.16%) for males, and respiratory disease (3.13%) for females. The individual disease showing the highest prevalence rates was hypertension (3.77%) for males and allergic rhinitis (2.25%) for females. The person based disease experience rate was 36.2% (36.9% for males, 32.7% for females) with the rate increasing with age. The disease group showing the highest disease experience rate was digestive disease for both sexes (10.05% for males, 7.42% for females). Individual disease showing the highest disease experience rate was hypertension (5.00%) for males and allergic rhinitis (4.08%) for females. There were different ranks of both prevalence and disease experience rate depending on age in both sexes.

Key Words : Korea; Physicians; Prevalence; Disease experience rate; Sociology, medical

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INTRODUCTION

It is well known that patterns of morbidity and mortality rates change depending on the level of advanced medicine, socioeconomic levels, and change of demographic factors. In Korea, it was in the nineteen seventies that the leading causes of death were changed from infectious diseases to chronic diseases such as neoplasm, cerebrovascular disease, heart disease etc (1-3).

As chronic diseases increase, there are many diseases of which the duration of illness is getting longer and little affecting the mortality data, i.e. chronic diseases do not affect the death rate but affect the quality of life. Many investigators (1, 4-8) recognized that the qualities of chronic diseases are changing. But these changing patterns of disease appear only in mortality data. There is not enough data on morbidity status.

Therefore, a morbidity study could be very helpful to make the important health index, measuring the health status of the country and will be an important piece of data to support a national health plans.

Usually, morbidity data on certain populations can be obtained from health interview surveys, medical records, health examinations, or by a combination of them. The

prevalence rates are estimated by the diagnosis or by the symptoms based on the data obtained by these methods.

In Korea, most of the prevalence studies on the general population in a certain community were estimations from the data obtained by symptom survey or diagnosis from the medical records. There is no nationwide prevalence survey. There are only some morbidity studies estimated from symptoms in a defined community such as rural or urban areas (9-11) or a few studies on a single disease by sampling methods.

Since 1989 when nationwide medical insurance was started in Korea, there have been a few morbidity studies from medical insurance data claimed to the insurance company for reimbursement by local clinics or hospitals (12, 13). There are also some studies on disease from health screening data on the employees of government and private schools provided by medical insurance companies (14, 15).

The important thing to be considered in these prevalence studies is the precision of diagnosis. Because most studies use the estimation from symptoms, they are considered somewhat dubious in terms of their precision. Even the studies from the insurance data are also somewhat dubious in regards to precision of diagnosis because

insurance data comes from reimbursement claims made by local clinics or hospitals. And in screening data, they are limited to a few diseases to be diagnosed.

There are few morbidity studies on specific populations in Korea except for one morbidity study on Korean physicians (16). Korean physicians have a heavy workload and lots of stress, thus we can assume that they may suffer from specific diseases or death because of their jobs. But there is no information on morbidity or mortality on this population. It is important to find out the health status or morbid status of Korean physicians and its related factors. And also it will be a very valuable piece of information on morbidity status because of the expectation of its precise diagnosis as the subjects are physicians.

Therefore, this study was performed to find out the morbid status of Korean physicians living in Korea as one part of a feasibility study for the Korean physician cohort to investigate the incidence and related factors on chronic diseases in Korea.

MATERIALS AND METHODS

The study subjects were Korean physicians living in Korea. There were 39,583 civilian physicians and 740

military physicians registered in the Korean Medical Association as of 1995. This was 68.0% of the 59,292 physicians licensed from the Ministry of Health and Welfare (except for the deceased). Table 1 shows distribution of the subjects registered in the Korean Medical Association by age group and sex.

Study period

This study was performed from Jan. 1995 to Dec. 1995.

Study methods

This study was performed by mail survey with a self-administered questionnaire. Structured questionnaires designed by the authors were sent to each physician accompanied by a physicians' annual report to be filled out. The questionnaires and annual reports were separated by responders themselves and they were returned to the Korean Medical Association through branches in the provinces (i.e. city, do, ku). Authors collected and coded the questionnaires.

The total numbers of respondents were 21,552 (17,877 males, 3,384 females) (Table 2). The response rate was 54.4% (53.7% for males, 54.0% for females). The highest

Table 1. Distribution of Korean physicians registered by age and sex

Age (year)	Male		Female		Total	
	No.	(%)	No.	(%)	No.	(%)
- 29	4,725	(14.2)	1,710	(27.3)	6,435	(16.3)
30 - 39	14,457	(43.4)	2,794	(44.6)	17,251	(43.5)
40 - 49	7,809	(23.4)	972	(15.5)	8,781	(22.2)
50 - 59	3,293	(9.9)	337	(5.4)	3,630	(9.2)
60 -	3,034	(9.1)	452	(7.2)	3,486	(8.8)
Total	33,318	(100.0)	6,265	(100.0)	39,583	(100.0)
		(84.2)		(15.8)		(100.0)

740 military physicians were excluded.

Source: Report on the distribution of members of the Korean Medical Association in Korea (1995.5.1-1996.4.30)

Table 2. Distribution of the subjects and response rates by age and sex

Age (year)	Male		Female		Not specified		Total		Response rate(%)		
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	Male	Female	Total
- 29	2,699	(15.1)	1,082	(32.0)	41	(14.1)	3,822	(17.7)	57.1	63.3	57.4
30 - 39	7,640	(42.8)	1,436	(42.4)	68	(23.3)	9,144	(42.4)	52.8	51.4	53.0
40 - 49	4,334	(24.2)	487	(14.4)	34	(11.7)	4,855	(22.5)	55.5	50.1	55.3
50 - 59	1,765	(9.9)	201	(5.9)	29	(10.0)	1,995	(9.3)	53.6	59.6	55.0
60 -	1,415	(7.9)	176	(5.2)	22	(7.6)	1,613	(7.5)	46.6	38.9	46.3
Not specified	24	(0.1)	2	(0.1)	97	(33.3)	123	(0.6)			
Total	17,877	(100.0)	3,384	(100.0)	291	(100.0)	21,552	(100.0)	53.7	54.0	54.4
		(81.1)		(15.5)		(1.4)		(100.0)			

response rate was by physicians age under 29 for both sexes (57.1%, 63.3% respectively)

Contents of the questionnaire comprised of demographic factors including age, sex, specialty, type of work, and list of diseases by ICD classification. Diseases to be checked off were defined as the diseases experienced during the last 5 years (i.e. since Jan. 1, 1990), and treatment status (cured or under treatment), occurrence year, and diagnosis in detail were also asked.

The 10th International Classification of Diseases (ICD-10) revised by WHO was used for the selection of diseases. Each diagnosis answered was transformed to ICD-10 code by the authors.

Data analysis

The FOXPRO program and the SAS package were used for data collection and analysis. Distribution of demographic factors, prevalence rate and disease experience rate were demonstrated.

Definition

Prevalence rate was defined as a percentage of the number of diseases answered as 'under treatment' divid-

ed by the total number of respondents. Rate of past illness was defined as a percentage of the number of diseases answered as 'cured' divided by the total number of respondents. The disease experience rate was defined as a percentage of the total number of disease not only answered as either 'under treatment' or 'cured' but also checked off or recorded only by diagnosis, divided by the total number of respondents.

RESULTS

General characteristics

Study subjects totaled 21,552 including 17,877 (81.1%) male and 3,384 (15.5%) female. The 30-39 age group had the highest proportion in both sexes, i.e. 42.4% (n=9,114) in total, 42.8% (n=7,640) for males, 42.4% (n=1,436) for females (Table 2). By work area, the Seoul area had the highest proportion in both sexes (35.0% in total, 32.7% for males, 45.8% for females) and the Pusan area had the next highest proportion (12.4% in total, 12.7% for males, 11.7% for females) (Table 3). Most of the physicians (96.2% in total, 96.5% for males, 95.1% for females) worked in patient care (Table 4).

Table 3. Distribution of the subjects by work area

Residential area	Male		Female		Total*		Response rate(%)		
	No.	(%)	No.	(%)	No.	(%)	Male	Female	Total
Seoul	5,848	(32.7)	1,549	(45.8)	7,541	(35.0)	46.9	46.7	47.7
Pusan	2,272	(12.7)	396	(11.7)	2,682	(12.4)	66.7	75.4	68.0
Taegu	1,677	(9.4)	291	(8.6)	1,978	(9.2)	70.8	67.2	70.6
Taejon	911	(5.1)	133	(3.9)	1,057	(4.9)	88.1	88.1	89.2
Inchon	378	(2.1)	63	(1.9)	441	(2.0)	36.8	39.1	37.1
Kwangju	491	(2.7)	84	(2.5)	581	(2.7)	32.3	42.9	38.4
Kyunggido	1,746	(9.8)	370	(10.9)	2,156	(10.0)	51.1	55.6	52.8
Chollado	1,385	(7.7)	153	(4.5)	1,559	(7.2)	62.4	63.8	63.4
Kyongsangdo	1,232	(6.9)	116	(3.4)	1,371	(6.4)	40.5	45.3	41.5
Chungchongdo	1,067	(6.0)	126	(6.0)	1,210	(5.6)	59.9	71.2	61.8
Kangwondo	642	(3.6)	80	(2.4)	725	(3.4)	66.0	67.2	66.2
Chejudo	228	(1.3)	23	(0.7)	251	(1.2)	96.6	95.8	96.5
Total	17,877	(100.0)	3,384	(100.0)	21,552	(100.0)	53.7	54.0	54.4

* Included persons who did not specify sex.

Table 4. Distribution of the subjects by the type of work

Type of work	Male		Female		Total*	
	No.	(%)	No.	(%)	No.	(%)
Patient care	17,257	(96.5)	3,220	(95.1)	20,758	(96.2)
Research & education	312	(1.8)	83	(2.5)	401	(1.9)
Administration	106	(0.6)	31	(0.9)	140	(0.7)
Others	202	(1.1)	50	(1.5)	253	(1.2)
Total	17,877	(100.0)	3,384	(100.0)	21,552	(100.0)

* Included persons who did not specify sex.

Prevalence rates

Table 5 shows the distribution of the numbers of diseases reported. 63.8% of physicians reported none of diseases and 36.2% in total (36.9% for males, 32.6% for females) reported more than one disease.

Person based prevalence rates were 17.7% (n=3,807) in total (18.3% for males and 13.8% for females). Prevalence rates by age group in total were 9.4% (n=359) in the under 29 age group, 14.6% (1,334) in the 30-39 age group, 19.3% (n=935) in the 40-49 age group, 28.0% (n=559) in the 50-59 age group, 36.9% (n=596) in the over 60 age group, which showed increasing prev-

alence rate by age.

For males, the prevalence rates were 10.4% in the under 29 age group, 14.7% in the 30-39 age group, 19.6% in the 40-49 age group, 27.9% in the 50-59 age group, 37.4% in the over 60 age group. For females, prevalence rates were 6.9% in the under 29 age group, 14.2% in the 30-39 age group, 16.0% in the 40-49 age group, 27.4% in the 50-59 age group, 31.3% in the over 60 age group. Prevalence rates also increased by age in both sexes (Table 6).

According to the disease groups indicated by the 21 disease groups of ICD-10, disease groups showing high prevalence rates were circulatory disease (4.76%), diges-

Table 5. Distribution of the number of diseases reported by sex

No. of diseases complained	Male		Female		Total*	
	No.	(%)	No.	(%)	No.	(%)
None	11,288	(63.1)	2,279	(67.4)	13,745	(63.8)
1	4,302	(24.1)	753	(22.3)	5,128	(23.8)
2	1,562	(8.7)	234	(6.9)	1,821	(8.4)
3	475	(2.7)	78	(2.3)	561	(2.6)
4	156	(0.9)	24	(0.7)	183	(0.8)
5	53	(0.3)	11	(0.3)	66	(0.3)
6	18	(0.1)	4	(0.1)	23	(0.1)
7	11	(0.1)	1	(0.0)	12	(0.1)
8	12	(0.1)	0	(0.0)	13	(0.1)
Total	17,877	(100.0)	3,384	(100.0)	21,552	(100.0)

* Included persons who did not specify sex.

Table 6. Age-sex specific morbidity rates[†]

Sex / Age group	Prevalence (under treatment)		Past illness (cured)		Disease experience (total*)	
	No.	(%)	No.	(%)	No.	(%)
Male						
- 29	282	(10.4)	262	(9.7)	626	(23.2)
30 - 39	1,123	(14.7)	1,020	(13.4)	2,477	(32.4)
40 - 49	849	(19.6)	756	(17.4)	1,764	(40.7)
50 - 59	492	(27.9)	343	(19.4)	879	(49.8)
60 -	529	(37.4)	291	(20.6)	839	(59.3)
Total	3,279	(18.3)	2,672	(14.9)	6,589	(36.9)
Female						
- 29	75	(6.9)	92	(8.5)	207	(19.1)
30 - 39	204	(14.2)	222	(15.5)	476	(33.1)
40 - 49	78	(16.0)	100	(20.5)	205	(42.1)
50 - 59	55	(27.4)	43	(21.4)	111	(55.2)
60 -	55	(31.3)	39	(22.2)	105	(59.7)
Total	467	(13.8)	496	(14.7)	1,105	(32.7)
Total						
- 29	359	(9.4)	354	(9.3)	837	(21.9)
30 - 39	1,334	(14.6)	1,247	(13.6)	2,971	(32.5)
40 - 49	935	(19.3)	864	(17.8)	1,981	(40.8)
50 - 59	559	(28.0)	394	(19.7)	1,008	(50.5)
60 -	596	(36.9)	333	(20.6)	959	(59.5)
Total	3,807	(17.7)	3,207	(17.8)	7,807	(36.2)

[†] Person based morbidity rates

* Included diseases under treatment and past illness and diseases that status not specified.

tive disease (3.53%), respiratory disease (3.27%), musculoskeletal disease (3.17%), skin and subcutaneous disease (2.19%). For males, they were circulatory disease (5.16%), digestive disease (3.70%), respiratory disease (3.32%), musculoskeletal disease (3.13%), infectious and parasitic disease (2.19%). For females they were respiratory disease (3.13%), digestive disease (2.63%), musculoskeletal disease (2.57%), skin disease (2.45%), circulatory disease (2.42%) (Table 7).

But they ranked differently according to age. Disease groups showing high prevalence rates in males were infectious and parasitic disease (2.96%), respiratory disease (2.11%), skin disease (2.04%), digestive disease (1.78%) in the under 29 age group, digestive disease (4.19%), respiratory disease (3.27%), infectious and parasitic disease (2.43%), musculoskeletal disease (2.41%) in the 30-39 age group, circulatory disease (5.15%), respiratory disease (4.11%), digestive disease (3.90%), musculoskeletal disease (3.81%) in the 40-49 age group. In the 50-59 age group, and over 60 age group, they were circulatory disease (12.97%, 23.46%), endocrine and metabolic disease (6.12%, 10.25%), musculoskeletal disease (5.10%, 5.51%) in same order respectively (Table 8, 10). For females, they were respiratory disease (1.85%), skin and subcutaneous disease (1.85%), digestive disease (0.92%), infectious and parasitic disease (0.83%) in the under 29 age group, respiratory disease (4.11%), digestive disease (3.69%), skin and subcutaneous disease (2.72%) in the 30-39 age group, musculoskeletal disease (5.13%), respiratory

disease (3.90%), circulatory disease (2.67%) in the 40-49 age group. Circulatory disease (12.44%), digestive disease (5.47%), musculoskeletal disease (5.47%) in the 50-59 age group, circulatory disease (19.89%), musculoskeletal disease (9.66%), endocrine and metabolic disease (4.55%) in the over 60 age group (Table 8, 11).

Individual diseases indicated by the three-character categories of ICD-10, showing high prevalence rates in males were hypertension (3.77%), allergic rhinitis (2.13%), diabetes mellitus (1.95%) (Table 10), but different age groups showed different disease order. For example, dermatophytosis (1.59%), allergic rhinitis (1.41%), viral hepatitis including carrier (0.93%) in the under 29 age group, allergic rhinitis (2.21%), gastritis and duodenitis (1.78%), dermatophytosis (1.43%), intervertebral disc disorders (1.30%) in the 30-39 age group, hypertension (3.95%), allergic rhinitis (2.77%), intervertebral disc disorders (1.96%) in the 40-49 age group, hypertension (10.54%), diabetes mellitus (5.89%), intervertebral disc disorders (2.61%) in the 50-59 age group, hypertension (16.18%), diabetes mellitus (9.82%), ischemic heart disease (3.75%) in the over 60 age group (Table 9, 10). For females, they were allergic rhinitis (2.25%), hypertension (1.83%), intervertebral disc disorder (0.92%), thyroid disease (0.71%) (Table 11), but also different age groups showed different disease order. For example, allergic rhinitis (1.29%), thyroid disease and atopic dermatitis (0.55% each) in the under 29 age group, allergic rhinitis (3.06%), gastritis and duodenitis (2.92%), intervertebral disc

Table 7. Prevalence rates by disease group and sex

Disease group Classified by ICD-10	Male		Female		Total*	
	No.	(%)	No.	(%)	No.	(%)
No. of subjects	17,877		3,384		21,552	
I. & XXI. Infectious & parasitic dis.	393	(2.19)	29	(0.86)	427	(1.99)
II. Neoplasm	43	(0.24)	14	(0.41)	58	(0.27)
III. Dis. of blood	3	(0.02)	3	(0.09)	6	(0.03)
IV. Endocrine & metabolic dis.	397	(2.23)	42	(1.24)	456	(2.12)
V. Mental & behavioural disorders	19	(0.11)	1	(0.03)	20	(0.09)
VI. Dis. of the nervous system	6	(0.03)	4	(0.12)	10	(0.05)
VII. Dis. of the eye	28	(0.16)	3	(0.09)	31	(0.14)
VIII. Dis. of the ear	11	(0.06)	1	(0.03)	13	(0.06)
IX. Dis. of the circulatory system	922	(5.16)	82	(2.42)	1,025	(4.76)
X. Dis. of the respiratory system	594	(3.32)	106	(3.13)	705	(3.27)
XI. Dis. of the digestive system	661	(3.70)	89	(2.63)	760	(3.53)
XII. Dis. of skin and subcut. tissue	389	(2.18)	76	(2.45)	472	(2.19)
XIII. Dis. of the musculoskeletal system	560	(3.13)	87	(2.57)	684	(3.17)
XIV. Dis. of genitourinary system	83	(0.46)	19	(0.56)	104	(0.48)
XV. Pregnancy, childbirth, puerperium	0	(0.00)	1	(0.03)	1	(0.00)
XVII. Congenital malformations	5	(0.03)	1	(0.03)	6	(0.03)
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	8	(0.04)	1	(0.03)	9	(0.04)
XIX. & XX. Injury including traffic accident	133	(0.74)	16	(0.47)	148	(0.69)

Prevalence means diseases under treatment.

* Included persons who did not specify sex.

Table 8. Ten leading disease groups in prevalence by age group

Order	Age group				
	Under 29	30 - 39	40 - 49	50 - 59	60 and over
Male					
1	I&XXI. Infectious & parasitic dis	XI. Dis. of the digestive system	IX. Dis. of the circulatory system	IX. Dis. of the circulatory system	IX. Dis. of the circulatory system
2	X. Dis. of the respiratory system	X. Dis. of the respiratory system	X. Dis. of the respiratory system	IV. Endocrine & metabolic dis.	IV. Endocrine & metabolic dis.
3	XII. Dis. of skin and subcut. tissue	I&XXI. Infectious & parasitic dis.	XI. Dis. of the digestive system	XIII. Dis. of the musculoskeletal sys.	XIII. Dis. of the musculoskeletal sys.
4	XI. Dis. of the digestive system	XIII. Dis. of the musculoskeletal sys.	XIII. Dis. of the musculoskeletal sys.	X. Dis. of the respiratory system	X. Dis. of the respiratory system
5	XIII. Dis. of the musculoskeletal sys.	XII. Dis. of skin and subcut. tissue	XII. Dis. of skin and subcut. tissue	X. Dis. of the respiratory system	XI. Dis. of the digestive system
6	XIX&XX. Injury incl. traffic accident	IX. Dis. of the circulatory system	IV. Endocrine & metabolic dis.	XII. Dis. of skin and subcut. tissue	XIV. Dis. of genitourinary system
7	IX. Dis. of the circulatory system	XIX&XX. Injury incl. traffic accident	I&XXI. Infectious & parasitic dis.	I&XXI. Infectious & parasitic dis.	XI. Dis. of skin and subcut. tissue
8	XIV. Dis. of genitourinary system	IV. Endocrine & metabolic dis.	XIX&XX. Injury incl. traffic accident	II. Neoplasm	I&XXI. Infectious & parasitic dis.
9	IV. Endocrine & metabolic dis.	II. Neoplasm	XIV. Dis. of genitourinary system	XIX&XX. Injury incl. traffic accident	XIX&XX. Injury incl. traffic accident
10	VII. Dis. of the eye	XIV. Dis. of genitourinary system VII. Dis. of the eye	VII. Dis. of the eye	XIV. Dis. of genitourinary system	II. Neoplasm
Female					
1	X. Dis. of the respiratory sys. XII. Dis. of skin and subcut. tissue	X. Dis. of the respiratory system	XIII. Dis. of the musculoskeletal sys.	IX. Dis. of the circulatory system	IX. Dis. of the circulatory system
2	XI. Dis. of the digestive sys.	XI. Dis. of the digestive sys.	X. Dis. of the respiratory sys.	XI. Dis. of the digestive system	XIII. Dis. of the musculoskeletal sys.
3	I&XXI. Infectious & parasitic dis.	XII. Dis. of skin & subcut. tissue	IX. Dis. of the circulatory sys.	XIII. Dis. of the musculoskeletal sys.	IV. Endocrine & metabolic dis.
4	IV. Endocrine & metabolic dis. XIII. Dis. of the musculoskeletal sys.	XIII. Dis. of the musculoskeletal sys.	XI. Dis. of the digestive sys.	XII. Dis. of skin & subcut. tissue	IV. Endocrine & metabolic dis.
5	XIV. Dis. of genitourinary sys. XIX&XX. Injury incl. traffic accident	I&XXI. Infectious & parasitic dis.	IV. Endocrine & metabolic dis.	IV. Endocrine & metabolic dis.	XI. Dis. of the digestive system
6	III. Dis. of blood IX. Dis. of the circulatory sys.	IV. Endocrine & metabolic dis.	XII. Dis. of skin & subcut. tissue	X. Dis. of the respiratory system. XIV. Dis. of genitourinary system	X. Dis. of the respiratory system XIV. Dis. of genitourinary system
7	II. Neoplasm VII. Dis. of the eye XV. Pregnancy, childbirth, puerperium	XIV. Dis. of genitourinary sys. XIX&XX. Injury incl. traffic accident	II. Neoplasm	XIX&XX. Injury incl. traffic accident	II. Neoplasm VII. Dis. of the eye XII. Dis. of skin & subcut. tissue XIX&XX. Injury incl. traffic accident
8		II. Neoplasm IX. Dis. of the circulatory sys.	XIV. Dis. of genitourinary sys.		
9		VI. Dis. of the nervous sys.	XIX&XX. Injury incl. traffic accident		
10		III. Dis. of blood V. Mental & behavioral disorders	I&XXI. Infectious & parasitic dis. VII. Dis. of the eye		

Prevalence means diseases under treatment.

disorders (1.04%) in the 30-39 age group, allergic rhinitis (2.67%), hypertension (1.85%), osteoarthritis (1.64%) in the 40-49 age group, hypertension (11.44%), gastritis and duodenitis, allergic rhinitis, allergic contact dermatitis (2.49% each) in the 50-59 age group, hypertension (15.91%), osteoarthritis (3.98%), diabetes mellitus, intervertebral disc disorder (2.84%, each) in the over 60 age group (Table 9, 11).

Disease experience rates

Person based disease experience rates of subjects were 36.2% (n=7,807) in total, 36.9% (n=6,589) for males, 32.7% (n=1,105) for females. By age groups, they were 21.9% (n=837) in the under 29 age group, 32.5% (n=2,971) in the 30-39 age group, 40.8% (n=1,981) in the 40-49 age group, 50.5% (n=1,008) in the 50-59 age group, 59.5% (n=959) in the over 60 age group, which showed increasing disease experience rate with age.

In males, disease experience rates were 23.2% in the under 29 age group, 32.4% in the 30-39 age group, 40.7% in the 40-49 age group, 49.8% in the 50-59 age group, 59.3% in the over 60 age group. In female, they were 19.1% in the under 29 age group, 33.1% in the

30-39 age group, 42.1% in the 40-49 age group, 55.2% in the 50-59 age group, 59.7% in the over 60 age group. Disease experience rates increased with age in both sexes (Table 6).

According to the disease groups indicated by the 21 chapters of ICD-10, experienced disease groups showing high rates were digestive disease (9.64%), circulatory disease (7.55%), infectious and parasitic disease (7.36%), respiratory disease (7.19%), musculoskeletal disease (6.44%) in that order. In males, they were digestive disease (10.05%), circulatory disease (8.16%), infectious and parasitic disease (7.83%), respiratory disease (7.23%), musculoskeletal disease (6.60%) in that order. In females, they were digestive disease (7.42%), respiratory disease (7.21%), skin and subcutaneous disease (6.53%), musculoskeletal disease (5.32%), infectious and parasitic disease (5.08%) in that order (Table 12).

They ranked differently according to age in both sexes. Disease groups showing high disease experience rates by age group in males were infectious and parasitic disease (8.45%), digestive disease (4.67%), respiratory disease (4.56%) in the under 29 age group, digestive disease (9.61%), infectious and parasitic disease (8.43%), respiratory disease (7.43%) in the 30-39 age group, digestive

Table 9. Ten leading specific diseases in prevalence by age group

Order	Age group				
	Under 29	30 - 39	40 - 49	50 - 59	60 and over
Male					
1	Dermatophytosis	Allergic rhinitis	Hypertensive dis.	Hypertensive dis.	Hypertensive dis.
2	Allergic rhinitis	Gastritis and duodenitis	Allergic rhinitis	Diabetes mellitus	Diabetes mellitus
3	Viral hepatitis incl. carrier	Dermatophytosis	Intervertebral disc disorder	Intervertebral disc disorders	Ischemic heart dis.
4	Gastritis & duodenitis Intervertebral disc disorders	Intervertebral disc disorders	Diabetes mellitus	Gastric & duodenal ulcer	Gout
5	Urticaria & erythema	Gastric & duodenal ulcer	Gastritis and duodenitis	Allergic rhinitis	Allergic rhinitis
6	Disease of liver Atopic dermatitis	Hypertensive disease	Gastric and duodenal ulcer	Gastritis and duodenitis	Intervertebral disc disorders
7	Pulm. tuberculosis Bronchial asthma	Viral hepatitis incl. carrier	Dermatophytosis	Ischemic heart disease	Dis. of prostate
8	Gastric & dudodenal ulcer	Disease of liver Urticaria & erythema	Bronchial asthma	Dermatophytosis	Gastric & duodenal ulcer
9	Hyperteive disease Allergic contact dermatitis	Irritable bowel syndrome	Viral hepatitis incl. carrier	Osteoarthritis	Cardiac arrhythmia
10	Osteoarthritis Eczema	Bronchial athma	Urticaria & erythema	Malignant tumor	Bronchial asthma
Female					
1	Allergic rhinitis	Allergic rhinitis	Allergic rhinitis	Hypertensive dis.	Hypertensive dis.
2	Thyroid disease Atopic dermatitis	Gastritis and duodenitis	Hypertensive dis.	Gastritis and duodenitis Allergic rhinitis Allergic contact dermatitis	Osteoarthritis
3	Gastritis & duodenitis	Intervertebral disc disorder	Osteoarthritis	Gastric and duodenal ulcer	Diabetes mellitus Intervertebral disc disorder
4	Dermatophytosis	Urticaria & erythema	Thyroid diseases Gastritis & duodenitis Intervertebral disc disorder	Diabetes mellitus Osteoarthritis Intervertebral disc disorder	Ischemic heart disease
5	Viral hepatitis incl. carrier Gastric & duodenal ulcer Allergic contact dermatitis	Viral hepatitis incl. carrier Bronchial asthma Allergic contact dermatitis	Diabetes mellitus Benign tumor Bronchitis Urticaria & erythema Pelvic inflammatory dis.	Thyroid diseases	Gastritis & duodenitis Rheumatoid arthritis
6	Pulm tuberculosis Bronchial asthma Urticaria & erythema Back pain	Thyroid disease	Malignant tumor Cardiac arrhythmia Bronchial asthma Gastric & duodenal ulcer Allergic contact dermatitis Back pain	Cardiac arrhythmia Disease of liver Eczema Urticaria & erythema Rheumatoid arthritis Gout Tenosynovitis	Thyroid disease Cardiac arrhythmia Bronchial asthma Bronchitis Gastric & duodenal ulcer Gall stone Urticaria & erythema Back pain
7		Benign tumor Atopic dermatitis Osteoarthritis	Dermatophytosis Ischemic heart disease Atopic dermatitis Rheumatoid arthritis Tenosynovitis		
8		Pulm. tuberculosis Dermatophytosis			
9		Diabetes mellitus Seborrheic dermatitis			

Prevalence means diseases under treatment.

disease (12.41%), circulatory disease (8.68%), respiratory disease (8.44%) in the 40-49 age group, circulatory disease (19.09%), digestive disease (12.58%), musculoskeletal disease (12.07%) in the 50-59 age group, circulatory disease (33.22%), musculoskeletal disease (13.36%), endocrine and metabolic disease (13.22%) in the over 60 age group (Table 13, 15). In females, they were infectious and parasitic disease (5.18%), skin and subcutaneous disease (5.08%), respiratory disease (3.70%) in the under 29 age group, respiratory disease (9.05%), digestive disease

(8.50%), skin and subcutaneous disease (6.48%) in the 30-39 age group, musculoskeletal disease (10.06%), respiratory disease (9.86%), digestive disease (8.83%) in the 40-49 age group, circulatory disease (17.41%), digestive disease and musculoskeletal disease (14.43% each) in the 50-59 age group, circulatory disease (28.40%), musculoskeletal disease (20.45%), digestive disease (10.80%) in the over 60 age group (Table 13, 16).

According to individual disease indicated by the three-character categories of ICD-10, diseases showing high

Table 10. Disease specific prevalence rates by age group in males

Classification by ICD-10 & it's specific diseases	Age group		- 29		30 - 39		40 - 49		50 - 59		60 -		Total*	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
No. of Subjects	2,699		7,640		4,334		1,765		1,415		17,877			
I&XXI. Infectious & parasitic dis.	80	(2.96)	186	(2.43)	82	(1.89)	27	(0.53)	18	(1.27)	393	(2.20)		
Pulm. tuberculosis	10	(0.37)	10	(0.13)	4	(0.09)	0	(0.00)	1	(0.07)	25	(0.14)		
Viral hepatitis incl. carrier	25	(0.93)	64	(0.84)	27	(0.62)	6	(0.34)	6	(0.42)	128	(0.72)		
Dermatophytosis	43	(1.59)	109	(1.43)	51	(1.18)	20	(1.13)	11	(0.78)	234	(1.31)		
II. Neoplasm	3	(0.11)	16	(0.21)	6	(0.14)	12	(0.68)	6	(0.42)	43	(0.24)		
Malignant tumor	0	(0.00)	8	(0.10)	3	(0.07)	10	(0.57)	5	(0.35)	26	(0.15)		
Benign tumor	3	(0.11)	8	(0.10)	3	(0.07)	2	(0.11)	1	(0.07)	17	(0.10)		
III. Dis. of blood	1	(0.04)	0	(0.00)	1	(0.02)	0	(0.00)	1	(0.07)	3	(0.02)		
IV. Endocrine & metabolic dis.	5	(0.19)	47	(0.62)	90	(2.08)	108	(6.12)	145	(10.25)	397	(2.22)		
Diabetes mellitus	1	(0.34)	29	(0.38)	74	(1.71)	104	(5.89)	139	(9.82)	348	(1.95)		
Thyroid diseases	2	(0.07)	7	(0.09)	10	(0.23)	4	(0.22)	3	(0.21)	26	(0.15)		
V. Mental & behavioural disorders	0	(0.00)	4	(0.05)	6	(0.14)	4	(0.22)	5	(0.35)	19	(0.11)		
VI. Dis. of the nervous system	1	(0.04)	2	(0.03)	2	(0.05)	1	(0.06)	0	(0.00)	6	(0.03)		
VII. Dis. of the eye	4	(0.15)	11	(0.14)	8	(0.19)	1	(0.06)	4	(0.28)	28	(0.16)		
VIII. Dis. of the ear	2	(0.07)	5	(0.07)	2	(0.05)	2	(0.11)	0	(0.00)	11	(0.06)		
IX. Dis. of the circulatory system	16	(0.59)	120	(1.57)	223	(5.15)	229	(12.97)	332	(23.46)	922	(5.16)		
Hypertensive dis.	7	(0.26)	79	(1.03)	171	(3.95)	186	(10.54)	229	(16.18)	674	(3.77)		
Ischemic heart dis.	0	(0.00)	5	(0.07)	13	(0.30)	22	(1.25)	53	(3.75)	93	(0.52)		
Cerebrovascular dis.	0	(0.00)	1	(0.01)	1	(0.02)	6	(0.34)	13	(0.92)	21	(0.12)		
Cardiac arrhythmia	3	(0.11)	9	(0.12)	16	(0.37)	7	(0.40)	18	(1.27)	53	(0.30)		
Hemorrhoid	4	(0.15)	19	(0.25)	14	(0.32)	5	(0.28)	10	(0.71)	52	(0.29)		
X. Dis. of the respiratory system	57	(2.11)	250	(3.27)	178	(4.11)	52	(2.95)	57	(4.03)	594	(3.32)		
Allergic rhinitis	38	(1.41)	169	(2.21)	120	(2.77)	27	(1.53)	27	(1.91)	381	(2.13)		
Bronchial athma	10	(0.37)	32	(0.42)	30	(0.69)	9	(0.51)	17	(1.20)	98	(0.55)		
Bronchitis	4	(0.15)	29	(0.38)	14	(0.32)	7	(0.40)	9	(0.64)	63	(0.35)		
XI. Dis. of the digestive system	48	(1.78)	320	(4.19)	169	(3.90)	76	(4.31)	48	(3.39)	661	(3.70)		
Gastric and duodenal ulcer	9	(0.33)	85	(1.11)	60	(1.38)	33	(1.87)	19	(1.34)	206	(1.15)		
Gastritis and duodenitis	14	(0.52)	136	(1.78)	66	(1.52)	25	(1.42)	11	(0.78)	252	(1.41)		
Irritable bowel syndrome	4	(0.15)	33	(0.43)	14	(0.32)	2	(0.11)	3	(0.21)	56	(0.31)		
Disease of liver	11	(0.41)	44	(0.58)	11	(0.25)	6	(0.34)	4	(0.28)	76	(0.43)		
Gall stone	0	(0.00)	0	(0.00)	4	(0.09)	0	(0.00)	3	(0.21)	7	(0.04)		
XII. Dis. of skin and subcut. tissue	55	(2.04)	147	(1.92)	110	(2.54)	43	(2.44)	34	(2.40)	389	(2.18)		
Atopic dermatitis	11	(0.41)	14	(0.18)	8	(0.18)	3	(0.17)	3	(0.21)	39	(0.22)		
Allergic contact dermatitis	7	(0.26)	18	(0.24)	10	(0.23)	8	(0.45)	4	(0.28)	47	(0.26)		
Eczema	6	(0.22)	11	(0.14)	10	(0.23)	2	(0.11)	1	(0.07)	3	(0.02)		
Seborrheic dermatitis	5	(0.19)	22	(0.29)	19	(0.44)	3	(0.17)	0	(0.00)	49	(0.27)		
Urticaria & erythema	12	(0.44)	44	(0.58)	26	(0.60)	9	(0.51)	4	(0.28)	95	(0.53)		
Psoriasis	2	(0.07)	14	(0.18)	9	(0.21)	4	(0.23)	2	(0.14)	31	(0.17)		
XIII. Dis. of the musculoskeletal sys.	37	(1.37)	184	(2.41)	165	(3.81)	90	(5.10)	78	(5.51)	560	(3.13)		
Rheumatoid arthritis	2	(0.07)	3	(0.04)	10	(0.23)	6	(0.34)	8	(0.57)	29	(0.16)		
Osteoarthritis	6	(0.22)	20	(0.26)	18	(0.42)	17	(0.96)	31	(2.19)	92	(0.51)		
Gout	1	(0.04)	11	(0.14)	11	(0.25)	8	(0.45)	11	(0.78)	42	(0.23)		
Tenosynovitis	2	(0.07)	3	(0.04)	9	(0.21)	5	(0.28)	2	(0.14)	21	(0.12)		
Intervertebral disc disorders	14	(0.52)	99	(1.30)	85	(1.96)	46	(2.61)	26	(1.84)	270	(1.51)		
Backpain	1	(0.04)	11	(0.14)	9	(0.21)	9	(0.51)	5	(0.35)	35	(0.20)		
XIV. Dis. of genitourinary system	8	(0.30)	16	(0.21)	13	(0.30)	10	(0.57)	36	(2.54)	83	(0.46)		
Kidney and ureter stone	5	(0.19)	7	(0.09)	7	(0.16)	1	(0.06)	2	(0.14)	22	(0.12)		
Disease of prostate	1	(0.04)	3	(0.04)	1	(0.02)	6	(0.34)	23	(1.63)	34	(0.19)		
XVII. Congenital Malformations	1	(0.04)	4	(0.05)	0	(0.00)	0	(0.00)	0	(0.00)	5	(0.03)		
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	2	(0.07)	3	(0.04)	1	(0.02)	0	(0.00)	2	(0.14)	8	(0.04)		
XIX&XX. Injury incl. traffic accident	21	(0.78)	59	(0.78)	31	(0.72)	12	(0.68)	10	(0.71)	133	(0.74)		

Prevalence means diseases under treatment.

* Included persons who did not specify ages.

Table 11. Disease specific prevalence rates by age group in females

Classification by ICD-10 & it's specific diseases	- 29	30 - 39	40 - 49	50 - 59	60 -	Total*
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
No. of Subjects	1,082	1,436	487	201	176	3,384
I&XXI. Infectious & parasitic dis.	9 (0.83)	18 (1.25)	1 (0.21)	0 (0.00)	0 (0.00)	28 (0.83)
Pulm. tuberculosis	2 (0.18)	4 (0.28)	0 (0.00)	0 (0.00)	0 (0.00)	6 (0.18)
Viral hepatitis incl. carrier	3 (0.28)	9 (0.63)	0 (0.00)	0 (0.00)	0 (0.00)	12 (0.36)
Dermatophytosis	4 (0.37)	4 (0.28)	1 (0.21)	0 (0.00)	0 (0.00)	9 (0.26)
II. Neoplasm	1 (0.09)	7 (0.49)	5 (1.03)	0 (0.00)	1 (0.57)	14 (0.41)
Malignant tumor	0 (0.00)	2 (0.14)	2 (0.41)	0 (0.00)	0 (0.00)	4 (0.12)
Benign tumor	1 (0.09)	5 (0.35)	3 (0.62)	0 (0.00)	1 (0.57)	10 (0.30)
III. Dis. of blood	2 (0.18)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	3 (0.09)
IV. Endocrine & metabolic dis.	6 (0.55)	11 (0.77)	10 (2.05)	7 (3.48)	8 (4.55)	42 (1.24)
Diabetes mellitus	0 (0.00)	3 (0.21)	3 (0.62)	3 (1.49)	5 (2.84)	14 (0.41)
Thyroid diseases	6 (0.55)	8 (0.56)	7 (1.44)	2 (1.00)	1 (0.57)	24 (0.71)
V. Mental & behavioural disorders	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
VI. Dis. of the nervous system	0 (0.00)	4 (0.28)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.12)
VII. Dis. of the eye	1 (0.09)	0 (0.00)	1 (0.21)	0 (0.00)	1 (0.57)	3 (0.09)
VIII. Dis. of the ear	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
IX. Dis. of the circulatory system	2 (0.18)	7 (0.49)	13 (2.67)	25 (12.44)	35 (19.89)	82 (2.42)
Hypertensive dis.	0 (0.00)	2 (0.14)	9 (1.85)	23 (11.44)	28 (15.91)	62 (1.83)
Ischemic heart dis.	0 (0.00)	2 (0.14)	1 (0.21)	0 (0.00)	4 (2.27)	7 (0.21)
Cerebrovascular dis.	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Cardiac arrhythmia	0 (0.00)	2 (0.14)	2 (0.41)	1 (0.50)	1 (0.57)	6 (0.18)
Hemorrhoid	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
X. Dis. of the respiratory system	20 (1.85)	59 (4.11)	19 (3.90)	7 (3.48)	3 (1.70)	109 (3.22)
Allergic rhinitis	14 (1.29)	44 (3.06)	13 (2.67)	5 (2.49)	0 (0.00)	76 (2.25)
Bronchial athma	2 (0.18)	9 (0.63)	2 (0.41)	0 (0.00)	1 (0.57)	14 (0.39)
Bronchitis	0 (0.00)	2 (0.14)	3 (0.62)	0 (0.00)	1 (0.57)	6 (0.18)
XI. Dis. of the digestive system	10 (0.92)	53 (3.69)	11 (2.34)	11 (5.47)	4 (2.27)	89 (2.63)
Gastric and duodenal ulcer	3 (0.28)	2 (0.14)	2 (0.41)	4 (1.99)	1 (0.57)	12 (0.35)
Gastritis and duodenitis	5 (0.46)	42 (2.92)	7 (1.44)	5 (2.49)	2 (1.14)	61 (1.80)
Irritable bowel syndrome	0 (0.00)	6 (0.42)	1 (0.21)	0 (0.00)	0 (0.00)	7 (0.21)
Disease of liver	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	1 (0.03)
Gall stone	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.57)	1 (0.03)
XII. Dis. of skin and subcut. tissue	20 (1.85)	39 (2.72)	7 (1.44)	9 (4.48)	1 (0.57)	76 (2.25)
Atopic dermatitis	6 (0.55)	5 (0.35)	1 (0.21)	0 (0.00)	0 (0.00)	12 (0.35)
Allergic contact dermatitis	3 (0.28)	9 (0.63)	2 (0.41)	5 (2.49)	0 (0.00)	19 (0.56)
Eczema	1 (0.09)	1 (0.07)	0 (0.00)	1 (0.50)	0 (0.00)	3 (0.09)
Seborrheic dermatitis	0 (0.00)	3 (0.21)	0 (0.00)	0 (0.00)	0 (0.00)	3 (0.09)
Urticaria & erythema	2 (0.18)	14 (0.97)	3 (0.62)	1 (0.50)	1 (0.57)	20 (0.59)
Psoriasis	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
XIII. Dis. of the musculoskeletal sys.	6 (0.55)	28 (1.95)	25 (5.13)	11 (5.47)	17 (9.66)	87 (2.57)
Rheumatoid arthritis	1 (0.09)	2 (0.14)	1 (0.21)	1 (0.50)	2 (1.14)	7 (0.21)
Osteoarthritis	1 (0.09)	5 (0.35)	8 (1.64)	3 (1.49)	7 (3.98)	24 (0.71)
Gout	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	1 (0.03)
Tenosynovitis	0 (0.00)	1 (0.07)	1 (0.21)	1 (0.50)	0 (0.00)	3 (0.09)
Intervertebral disc disorders	1 (0.09)	15 (1.04)	7 (1.44)	3 (1.49)	5 (2.84)	31 (0.92)
Backpain	2 (0.18)	1 (0.07)	2 (0.41)	0 (0.00)	1 (0.57)	6 (0.18)
XIV. Dis. of genitourinary system	3 (0.28)	8 (0.56)	4 (0.82)	1 (0.50)	3 (1.70)	19 (0.56)
Kidney and ureter stone	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
Pelvic inflammatory disease	1 (0.09)	2 (0.14)	3 (0.62)	0 (0.00)	0 (0.00)	6 (0.18)
Endometriosis	0 (0.00)	2 (0.14)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.06)
XV. Pregnancy, childbirth, puerperium	1 (0.09)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
XIX&XX. Injury incl. traffic accident	3 (0.28)	8 (0.56)	3 (0.62)	1 (0.50)	1 (0.57)	16 (0.47)

Prevalence means diseases under treatment.

* Included persons who did not specify ages.

Table 12. Disease experience rates by disease group and sex

Disease group Classified by ICD-10	Male		Female		Total*	
	No.	(%)	No.	(%)	No.	(%)
No. of subject	17,877		3,384		21,552	
I&XXI. Infectious & parasitic dis.	1,399	(7.83)	172	(5.08)	1,586	(7.36)
II. Neoplasm	166	(0.93)	95	(2.81)	263	(1.22)
III. Dis. of blood	5	(0.03)	7	(0.21)	12	(0.06)
IV. Endocrine & metabolic dis.	562	(3.14)	92	(2.72)	675	(3.13)
V. Mental & behavioural disorders	59	(0.33)	7	(0.21)	68	(0.32)
VI. Dis. of the nervous system	19	(0.11)	5	(0.15)	24	(0.11)
VII. Dis. of the eye	67	(0.37)	8	(0.24)	76	(0.35)
VIII. Dis. of the ear	24	(0.13)	1	(0.03)	27	(0.13)
IX. Dis. of the circulatory system	1,458	(8.16)	138	(4.08)	1,628	(7.55)
X. Dis. of the respiratory system	1,293	(7.23)	244	(7.21)	1,549	(7.19)
XI. Dis. of the digestive system	1,797	(10.05)	251	(7.42)	2,077	(9.64)
XII. Dis. of skin and subcut. tissue	958	(5.36)	221	(6.53)	1,197	(5.55)
XIII. Dis. of the musculoskeletal sys.	1,179	(6.60)	180	(5.32)	1,387	(6.44)
XIV. Dis. of genitourinary system	397	(2.22)	111	(3.28)	515	(2.39)
XV. Pregnancy, childbirth, puerperium	8	(0.24)				
XVII. Congenital malformations	17	(0.10)	4	(0.12)	21	(0.10)
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	32	(0.18)	6	(0.18)	38	(0.18)
XIX&XX. Injury incl. traffic accident	554	(3.10)	83	(2.45)	651	(3.02)

Disease experience rates included diseases under treatment and past illness and diseases that status was not specified.

* Included persons who did not specify sexes.

Table 13. Ten leading disease groups in disease experience rates by age group

Order	Age group				
	Under 29	30 - 39	40 - 49	50 - 59	60 and over
Male					
1	I&XXI. Infectious & parasitic dis.	XI. Dis. of the digestive sys.	XI. Dis. of the digestive sys.	IX. Dis. of the circulatory sys.	IX. Dis. of the circulatory system
2	XI. Dis. of the digestive sys.	I&XXI. Infectious & parasitic dis.	IX. Dis. of the circulatory system	XI. Dis. of the digestive sys.	XIII. Dis. of the musculoskeletal sys.
3	X. Dis. of the respiratory sys.	X. Dis. of the respiratory sys.	X. Dis. of the respiratory system	XIII. Dis. of the musculoskeletal sys.	IV. Endocrine & metabolic dis.
4	XII. Dis. of skin and subcut. tissue	XIII. Dis. of the musculoskeletal sys.	XIII. Dis. of the musculoskeletal sys.	IV. Endocrine & metabolic dis.	XI. Dis. of the digestive system
5	XIX&XX. Injury incl. traffic accident	XII. Dis. of skin and subcut. tissue	I&XXI. Infectious & parasitic dis.	XII. Dis. of skin & subcut. tissue	XII. Dis. of skin and subcut. tissue
6	XIII. Dis. of the musculoskeletal sys.	IX. Dis. of the circulatory sys.	XII. Dis. of skin & subcut. tissue	X. Dis. of the respiratory system	X. Dis. of the respiratory sys.
7	IX. Dis. of the circulatory system	XIX&XX. Injury incl. traffic accidents	XIX&XX. Injury incl. traffic accident	I&XXI. Infectious & parasitic disease	I&XXI. Infectious & parasitic dis.
8	XIV. Dis. of genitourinary sys.	XIV. Dis. of genitourinary sys.	IV. Endocrine & metabolic dis.	XIX&XX. Injury incl. traffic accident	XIX&XX. Injury incl. traffic accident
9	II. Neoplasm	IV. Endocrine & metabolic dis.	XIV. Dis. of genitourinary system	XIV. Dis. of genitourinary sys.	II. Neoplasm
10	VII. Dis. of the eye				
10	IV. Endocrine & metabolic dis.	II. Neoplasm	II. Neoplasm	II. Neoplasm	VII. Dis. of the eye
Female					
1	I&XXI. Infectious & parasitic dis.	X. Dis. of the respiratory system	XIII. Dis. of the musculoskeletal sys.	IX. Dis. of the circulatory system	IX. Dis. of the circulatory system
2	XII. Dis. of skin and subcut. tissue	XI. Dis. of the digestive system	X. Dis. of respiratory system	XI. Dis. of the digestive system	XIII. Dis. of the musculoskeletal sys.
3	X. Dis. of respiratory system	XII. Dis. of skin & subcut. tissue	XI. Dis. of the digestive system	XIII. Dis. of the musculoskeletal sys.	XI. Dis. of the digestive system
4	XI. Dis. of the digestive system	I&XXI. Infectious & parasitic dis.	XII. Dis. of skin & subcut. tissue	XII. Dis. of skin & subcut. tissue	V. Endocrine & metabolic dis.
5	XIII. Dis. of the musculoskeletal sys.	XIII. Dis. of the musculoskeletal sys	XIV. Dis. of genitourinary system	IV. Endocrine & metabolic dis.	XII. Dis. of skin & subcut. tissue
6	XIX&XX. Injury incl. traffic accident	XIV. Dis. of genitourinary system	X. Dis. of respiratory system	X. Dis. of respiratory system	X. Dis. of respiratory system
7	IV. Endocrine & metabolic dis.	II. Neoplasm	IX. Dis. of the circulatory system	II. Neoplasm	XIV. Dis. of genitourinary system
8	XIV. Dis. of genitourinary system	IX. Dis. of the circulatory sys.	II. Neoplasm	II. Neoplasm	II. Neoplasm
9	II. Neoplasm	XIX&XX. Injury incl. traffic accident	XIX&XX. Injury incl. traffic accident	XIX&XX. Injury incl. traffic accident	XIX&XX. Injury incl. traffic accident
10	IX. Dis. of the circulatory sys.	IV. Endocrine & metabolic dis.	I&XXI. Infectious & parasitic dis.	I&XXI. Infectious & parasitic dis.	I&XXI. Infectious & parasitic dis.
10	XV. Pregnancy, childbirth, puerper.	IX. Dis. of the circulatory sys.	IV. Endocrine & metabolic dis.	IV. Endocrine & metabolic dis.	IV. Endocrine & metabolic dis.
		III. Dis. of blood	VII. Dis. of the eye	I&XXI. Infectious & parasitic dis.	I&XXI. Infectious & parasitic dis.
		XV. Pregnancy, childbirth, puerperium	V. Mental & behavioral disorders	XIV. Dis. of the genitourinary sys.	VII. Dis. of the eye
				V. Mental & behavioral disorders	V. Mental & behavioral disorders

Disease experience rates included diseases under treatment and past illness and diseases that status was not specified.

experience rates in males were hypertension (5.00%), allergic rhinitis (3.67%), gastritis and duodenitis (3.46%), intervertebral disc disorder (3.33%), gastric and duodenal ulcer (2.95%), viral hepatitis including carrier (2.77 %) in

that order (Table 15). In females, they were allergic rhinitis (4.08%), gastritis and duodenitis (3.96%), hypertension (2.57%), pulmonary tuberculosis (2.51%), intervertebral disc disorders (1.98%) in that order (Table 16).

Table 14. Ten leading specific diseases in disease experience rates by age group

Order	Age group				
	Under 29	30 - 39	40 - 49	50 - 59	60 and over
Male					
1	Pulm. tuberculosis	Allergic rhinitis	Hypertensive disease	Hypertensive dis.	Hypertensive dis.
2	Dermatophytosis	Gastritis and duodenitis	Gastritis & duodenitis	Diabetes mellitus	Diabetes Mellitus
3	Allergic rhinitis	Viral hepatitis incl. carrier	Allergic rhinitis	Intervertebral disc disorders	Ischemic heart disease
4	Viral hepatitis incl. carrier	Pulm. tuberculosis	Intervertebral disc disorder	Gastric & duodenal ulcer	Intervertebral disc disorders
5	Gastric & duodenal ulcer	Gastric & duodenal ulcer	Gastric and duodenal ulcer	Gastritis & duodenitis	Osteoarthritis
6	Gastritis & duodenitis	Intervertebral disc disorders	Viral hepatitis incl. carrier	Allergic rhinitis	Disease of prostate
7	Intervertebral disc disorders	Dermatophytosis	Diabetes Mellitus	Pulm. tuberculosis	Pulm. tuberculosis
8	Urticaria & erythema	Hypertensive disease	Pulm. tuberculosis	Ischemic heart disease	Gastric & duodenal ulcer
9	Disease of liver	Urticaria & erythema	Kidney & ureter stone	Viral hepatitis incl. carrier	Gastritis & duodenitis
10	Atopic dermatitis	Disease of liver	Dermatophytosis	Kidney & ureter stone	Allergic rhinitis
	Allergic contact dermatitis			Osteoarthritis	Gall stone
					Cerebrovascular disease
Female					
1	Pulmonary tuberculosis	Allergic rhinitis	Allergic rhinitis	Hypertensive dis.	Hypertensive dis.
2	Allergic rhinitis	Gastritis and duodenitis	Gastritis and duodenitis	Gastritis and duodenitis	Osteoarthritis
3	Viral hepatitis incl. carrier	Pulm. tuberculosis	Benign tumor	Intervertebral disc disorders	Diabetes mellitus
4	Gastritis and duodenitis	Viral hepatitis incl. carrier	Osteoarthritis	Osteoarthritis	Intervertebral disc disorders
5	Thyroid diseases	Benign tumor	Intervertebral disc disorders	Benign tumor	Benign tumor
6	Benign tumor	Urticaria & erythema		Thyroid disease	
		Intervertebral disc disorder	Hypertensive dis.	Diabetes mellitus	Ischemic heart disease
7	Atopic dermatitis	Thyroid diseases	Thyroid diseases		Bronchial asthma
	Allergic contact dermatitis			Gall stone	Gastritis and duodenitis
8	Urticaria & erythema	Bronchial Asthma	Urticaria & erythema	Allergic contact dermatitis	
		Allergic contact dermatitis	Pelvic inflammatory dis.	Allergic rhinitis	Gall stone
				Gastric and duodenal ulcer	
9	Dermatophytosis	Gastric and duodenal ulcer	Malignant tumor	Urticaria & erythema	
	Gastric & duodenal ulcer		Pulm. tuberculosis	Viral hepatitis incl. carrier	Allergic rhinitis
	Intervertebral disc disorders				
10	Bronchial asthma	Pelvic inflammatory dis.	Viral hepatitis incl. carrier	Bronchial Asthma	Viral hepatitis incl. carrier
			Bronchial asthma	Kidney & renal stone	Urticaria & erythema
					Rheumatoid arthritis

Disease experience rates included diseases under treatment and past illness and diseases that status was not specified.

But they ranked differently depending on the age in both sexes. In males the rates were, pulmonary tuberculosis (3.26%), dermatophytosis (2.48%), allergic rhinitis (2.33%) in the under 29 age group, allergic rhinitis (3.91%), gastritis and duodenitis (3.60%), viral hepatitis including carrier (3.17%) in the 30-39 age group, hypertension (5.42%), gastritis and duodenitis (4.78%), allergic rhinitis (4.73%), intervertebral disc disorders (4.31%) in the 40-49 age group, hypertension (13.09%), diabetes mellitus (7.82%), intervertebral disc disorders (6.69%), in the 50-59 age group, hypertension (20.28%), diabetes mellitus (12.44%), ischemic heart disease (5.87%), intervertebral disc disorders (4.95%) in the over 60 age group (Table 14, 15).

In females the rates were, pulmonary tuberculosis (2.77%), allergic rhinitis (2.22%), viral hepatitis including carrier (1.48%) in the under 29 age group, allergic rhinitis (5.50%), gastritis and duodenitis (5.43%), pulmonary tuberculosis (2.99%) in the 30-39 age group, allergic rhinitis (5.34%), gastritis and duodenitis (5.13%), benign tumor (4.31%) in the 40-49 age group, hypertension (15.92%), gastritis and duodenitis (5.47%), inter-

vertebral disc disorders (4.98%), in the 50-59 age group, hypertension (21.02%), osteoarthritis (9.66%), diabetes mellitus (7.39%) in the over 60 age group (Table 14, 16).

DISCUSSION

The rates increased with age for both prevalence and disease experience rates as in other studies (11, 12, 15, 17).

Prevalence rates defined as 'disease under treatment' were 18.3% in males, 13.8% in females, 17.7% in total. This was similar to rural community studies which showed 192.2/1,000 (9), 20.8% (11), 22.7% (12), respectively. But Woo (10) and Kang et al. (17) showed 134/1,000, 57.1/1,000 in a low income population and 89/1,000, 24.2/1,000 in a control population, respectively. This was significantly different from our study. Also morbid status for last 1 year (17) which was 83.0/1,000 in a low income population, 28.0/1,000 in a control population exhibited a significant difference from disease experience rates in our study.

Table 15. Disease experience rates by age group in males

Age group Classification by ICD-10 & it's specific diseases	- 29	30 - 39	40 - 49	50 - 59	60 -	Total*
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
No. of subjects	2,699	7,640	4,334	1,765	1,415	17,877
I&XXI. Infectious & parasitic dis.	228 (8.45)	644 (8.43)	315 (7.27)	123 (6.97)	89 (6.29)	1,399 (7.83)
Pulm. tuberculosis	88 (3.26)	206 (2.70)	99 (2.28)	52 (2.95)	45 (3.18)	490 (2.74)
Viral hepatitis incl. carrier	57 (2.11)	242 (3.17)	127 (2.93)	39 (2.21)	30 (2.12)	495 (2.77)
Dermatophytosis	67 (2.48)	172 (2.25)	73 (1.68)	31 (1.76)	13 (0.92)	356 (1.99)
II. Neoplasm	12 (0.44)	45 (0.59)	34 (0.78)	44 (2.49)	31 (2.19)	166 (0.93)
Malignant tumor	1 (0.04)	14 (0.18)	12 (0.28)	29 (1.64)	24 (1.70)	80 (0.45)
Benign tumor	11 (0.41)	31 (0.41)	22 (0.51)	15 (0.85)	7 (0.49)	86 (0.48)
III. Dis. of blood	1 (0.04)	2 (0.03)	1 (0.02)	0 (0.00)	1 (0.07)	5 (0.03)
IV. Endocrine & metabolic dis.	6 (0.22)	76 (0.99)	140 (3.23)	151 (8.56)	187 (13.22)	562 (3.14)
Diabetes mellitus	1 (0.04)	37 (0.48)	105 (2.42)	138 (7.82)	176 (12.44)	458 (2.56)
Thyroid diseases	2 (0.08)	21 (0.27)	21 (0.48)	11 (0.62)	8 (0.57)	63 (0.35)
V. Mental & behavioural disorders	2 (0.08)	17 (0.22)	20 (0.46)	10 (0.57)	10 (0.71)	59 (0.33)
VI. Dis. of the nervous system	1 (0.04)	10 (0.13)	4 (0.09)	3 (0.17)	1 (0.07)	19 (0.11)
VII. Dis. of the eye	12 (0.44)	18 (0.24)	16 (0.37)	9 (0.51)	12 (0.85)	67 (0.37)
VIII. Dis. of the ear	3 (0.11)	10 (0.13)	4 (0.09)	5 (0.28)	2 (0.14)	24 (0.13)
IX. Dis. of the circulatory system	34 (1.26)	239 (3.13)	376 (8.68)	337 (19.09)	470 (33.22)	1,458 (8.16)
Hypertensive dis.	10 (0.37)	129 (1.69)	235 (5.42)	231 (13.09)	287 (20.28)	894 (5.00)
Ischemic heart dis.	2 (0.07)	17 (0.22)	31 (0.72)	43 (2.44)	83 (5.87)	176 (0.98)
Cerebrovascular dis.	0 (0.00)	2 (0.03)	8 (0.18)	16 (0.91)	33 (2.33)	59 (0.33)
Cardiac arrhythmia	5 (0.19)	33 (0.43)	44 (1.02)	19 (1.77)	32 (2.26)	133 (0.74)
Hemorrhoid	5 (0.19)	27 (0.35)	29 (0.67)	10 (0.57)	9 (0.64)	80 (0.45)
X. Dis. of the respiratory system	123 (4.56)	568 (7.43)	366 (8.44)	127 (7.20)	109 (7.70)	1,293 (7.23)
Allergic rhinitis	63 (2.33)	299 (3.91)	205 (4.73)	53 (3.00)	36 (2.54)	656 (3.67)
Bronchial asthma	16 (0.59)	77 (1.01)	54 (1.25)	28 (1.59)	31 (2.19)	206 (1.15)
Bronchitis	11 (0.41)	72 (0.94)	46 (1.06)	15 (0.85)	17 (1.20)	161 (0.90)
XI. Dis. of the digestive system	126 (4.67)	734 (9.61)	538 (12.41)	222 (12.58)	177 (12.51)	1,797 (10.05)
Gastric and duodenal ulcer	34 (1.26)	204 (2.67)	172 (3.97)	73 (4.14)	45 (3.18)	528 (2.95)
Gastritis and duodenitis	33 (1.22)	275 (3.60)	207 (4.78)	67 (3.80)	37 (2.61)	619 (3.46)
Irritable bowel syndrome	10 (0.37)	56 (0.73)	29 (0.67)	4 (0.23)	6 (0.42)	104 (0.58)
Disease of liver	17 (0.63)	84 (1.10)	39 (0.90)	11 (0.62)	11 (0.78)	162 (0.91)
Gall stone	2 (0.07)	7 (0.09)	23 (0.53)	20 (1.13)	36 (2.54)	88 (0.49)
XII. Dis. of skin and subcut. tissue	114 (4.22)	364 (4.76)	237 (5.47)	128 (7.25)	115 (8.13)	958 (5.36)
Atopic dermatitis	15 (0.56)	34 (0.45)	20 (0.46)	7 (0.40)	4 (0.28)	80 (0.45)
Allergic contact dermatitis	15 (0.56)	40 (0.52)	24 (0.55)	21 (1.19)	8 (0.57)	108 (0.60)
Eczema	8 (0.30)	18 (0.24)	15 (0.35)	11 (0.62)	5 (0.35)	57 (0.32)
Seborrheic dermatitis	6 (0.22)	37 (0.48)	22 (0.51)	6 (0.34)	1 (0.07)	72 (0.40)
Urticaria & erythema	25 (0.93)	101 (1.32)	55 (1.27)	22 (1.25)	18 (1.27)	221 (1.24)
Psoriasis	4 (0.15)	15 (0.20)	12 (0.28)	4 (0.23)	4 (0.28)	39 (0.22)
XIII. Dis. of the musculoskeletal sys.	65 (2.41)	368 (4.82)	344 (7.94)	213 (12.07)	189 (13.36)	1,179 (6.60)
Rheumatoid arthritis	3 (0.11)	5 (0.07)	14 (1.32)	9 (0.51)	11 (0.78)	42 (0.23)
Osteoarthritis	8 (0.30)	41 (0.54)	38 (0.88)	36 (2.04)	59 (4.17)	182 (1.02)
Gout	1 (0.04)	12 (0.15)	13 (0.30)	10 (0.57)	13 (0.92)	49 (0.27)
Tenosynovitis	3 (0.11)	9 (0.12)	14 (0.32)	8 (0.45)	8 (0.57)	42 (0.23)
Intervertebral disc disorders	31 (1.15)	190 (2.49)	187 (4.31)	118 (6.69)	70 (4.95)	596 (3.33)
Back pain	3 (0.11)	22 (0.29)	22 (0.51)	20 (1.13)	12 (0.85)	79 (0.44)
XIV. Dis. of genitourinary system	23 (0.85)	104 (1.36)	98 (2.26)	63 (3.57)	109 (7.70)	397 (2.22)
Kidney and ureter stone	14 (0.52)	70 (0.92)	75 (1.73)	39 (2.21)	27 (1.91)	225 (1.26)
Disease of prostate	1 (0.04)	4 (0.06)	5 (0.12)	9 (0.51)	47 (3.32)	66 (0.37)
XVII. Congenital malformations	2 (0.08)	10 (0.13)	3 (0.07)	1 (0.06)	1 (0.07)	17 (0.10)
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	4 (0.15)	9 (0.12)	10 (0.23)	4 (0.23)	5 (0.35)	32 (0.18)
XIX&XX. Injury incl. traffic accident	70 (2.59)	225 (2.95)	142 (3.28)	64 (3.63)	53 (3.75)	554 (3.10)

Disease experience rates included diseases under treatment and past illness and diseases that status was not specified.

* Included persons who did not specify age.

Table 16. Disease experience rates by age group in females

Age group Classification by ICD-10 & it's specific diseases	- 29	30 - 39	40 - 49	50 - 59	60 -	Total*
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
No. of subjects	1,082	1,436	487	201	176	3,384
I. Infectious & parasitic dis.	56 (5.18)	89 (6.20)	18 (3.70)	6 (2.99)	5 (2.84)	174 (5.14)
Pulm. tuberculosis	30 (2.77)	43 (2.99)	9 (1.85)	1 (0.50)	2 (1.14)	85 (2.51)
Viral hepatitis incl. carrier	16 (1.48)	31 (2.16)	8 (1.64)	4 (1.99)	3 (1.70)	62 (1.83)
Dermatophytosis	6 (0.55)	8 (0.56)	1 (0.21)	1 (0.50)	0 (0.00)	16 (0.47)
II. Neoplasm	11 (1.02)	35 (2.44)	30 (6.16)	9 (4.48)	10 (5.68)	95 (2.81)
Malignant tumor	1 (0.09)	5 (0.35)	9 (1.85)	1 (0.50)	2 (1.14)	18 (0.53)
Benign tumor	10 (0.92)	30 (2.09)	21 (4.31)	8 (3.98)	8 (4.55)	77 (2.28)
III. Dis. of blood.	2 (0.18)	5 (0.35)	0 (0.00)	0 (0.00)	0 (0.00)	7 (0.21)
IV. Endocrine & metabolic dis.	13 (1.20)	29 (2.02)	16 (3.29)	16 (7.96)	18 (10.23)	92 (2.72)
Diabetes mellitus	0 (0.00)	6 (0.42)	3 (0.62)	7 (3.48)	13 (7.39)	29 (0.86)
Thyroid diseases	12 (1.11)	23 (1.60)	12 (2.46)	8 (3.98)	4 (2.27)	59 (1.74)
V. Mental & behavioural disorders	0 (0.00)	2 (0.14)	2 (0.41)	1 (0.50)	2 (1.14)	7 (0.21)
VI. Dis. of the nervous system	0 (0.00)	4 (0.28)	0 (0.00)	0 (0.00)	1 (0.57)	5 (0.15)
VII. Dis. of the eye	1 (0.09)	0 (0.00)	4 (0.82)	0 (0.00)	3 (1.70)	8 (0.24)
VIII. Dis. of the ear	0 (0.00)	1 (0.07)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.03)
IX. Dis. of the circulatory system	4 (0.37)	19 (1.32)	30 (6.16)	35 (17.41)	50 (28.40)	138 (4.08)
Hypertensive dis.	1 (0.09)	4 (0.28)	13 (2.67)	32 (15.92)	37 (21.02)	87 (2.57)
Ischemic heart dis.	0 (0.00)	3 (0.21)	3 (0.62)	0 (0.00)	7 (3.98)	13 (0.38)
Cerebrovascular dis.	0 (0.00)	0 (0.00)	1 (0.21)	0 (0.00)	0 (0.00)	1 (0.03)
Cardiac arrhythmia	0 (0.00)	6 (0.42)	4 (0.82)	1 (0.50)	1 (0.57)	12 (0.35)
Hemorrhoid	0 (0.00)	3 (0.21)	2 (0.41)	0 (0.00)	0 (0.00)	5 (0.15)
X. Dis. of the respiratory system	40 (3.70)	130 (9.05)	48 (9.86)	12 (5.97)	13 (7.39)	244 (7.21)
Allergic rhinitis	24 (2.22)	79 (5.50)	26 (5.34)	5 (2.49)	4 (2.27)	138 (4.08)
Bronchial asthma	5 (0.46)	21 (1.46)	8 (1.64)	3 (1.49)	7 (3.98)	44 (1.30)
Bronchitis	1 (0.09)	6 (0.46)	5 (1.03)	0 (0.00)	1 (0.57)	13 (0.38)
XI. Dis. of the digestive system	38 (3.51)	122 (8.50)	43 (8.83)	29 (14.43)	19 (10.80)	251 (7.42)
Gastric and duodenal ulcer	6 (0.55)	16 (1.11)	5 (1.03)	5 (2.49)	1 (0.57)	33 (0.98)
Gastritis and duodenitis	14 (1.29)	78 (5.43)	25 (5.13)	11 (5.47)	6 (3.41)	134 (3.96)
Disease of liver	0 (0.00)	1 (0.07)	1 (0.21)	1 (0.50)	1 (0.57)	4 (0.12)
Irritable bowel syndrome	3 (0.28)	9 (0.63)	2 (0.41)	0 (0.00)	1 (0.57)	15 (0.44)
Gall stone	0 (0.00)	1 (0.07)	4 (0.82)	6 (2.99)	5 (2.84)	16 (0.47)
XII. Dis of skin and subcut. tissue	55 (5.08)	93 (6.48)	35 (7.09)	20 (9.95)	18 (10.23)	221 (6.53)
Atopic dermatitis	9 (0.83)	10 (0.70)	2 (0.41)	0 (0.00)	1 (0.57)	22 (0.65)
Allergic contact dermatitis	9 (0.83)	21 (1.46)	7 (1.44)	6 (2.99)	0 (0.00)	43 (1.27)
Eczema	3 (0.28)	4 (0.28)	2 (0.41)	1 (0.50)	0 (0.00)	10 (0.30)
Seborrheic dermatitis	1 (0.09)	3 (0.21)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.12)
Urticaria & erythema	8 (0.74)	30 (2.09)	10 (2.05)	5 (2.49)	3 (1.70)	56 (1.65)
Psoriasis	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	1 (0.03)
XIII. Dis. of the musculoskeletal sys.	16 (1.48)	50 (3.48)	49 (10.06)	29 (14.43)	36 (20.45)	180 (5.32)
Rheumatoid arthritis	1 (0.09)	2 (0.14)	2 (0.41)	1 (0.50)	3 (1.70)	9 (0.26)
Osteoarthritis	4 (0.37)	9 (0.63)	16 (3.29)	9 (4.48)	17 (9.66)	55 (1.63)
Gout	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.50)	0 (0.00)	1 (0.03)
Tenosynovitis	0 (0.00)	3 (0.21)	2 (0.41)	2 (1.00)	0 (0.00)	7 (0.21)
Intervertebral disc disorders	6 (0.55)	25 (1.74)	15 (3.08)	10 (4.98)	11 (6.25)	67 (1.98)
Backpain	2 (0.18)	5 (0.35)	4 (0.82)	1 (0.50)	2 (1.14)	14 (0.41)
XIV. Dis. of genitourinary system	13 (1.20)	50 (3.63)	31 (6.37)	5 (2.49)	12 (6.82)	111 (3.28)
Kidney and ureter stone	0 (0.00)	6 (0.70)	3 (0.62)	3 (1.49)	1 (0.57)	13 (0.38)
Pelvic inflammatory disease	1 (0.09)	11 (0.77)	10 (2.05)	0 (0.00)	2 (1.14)	25 (0.74)
Endometriosis	0 (0.00)	4 (0.28)	3 (0.62)	1 (0.50)	1 (0.57)	9 (0.27)
XV. Pregnancy, childbirth, puerperium	2 (0.18)	5 (0.35)	1 (0.21)	0 (0.00)	0 (0.00)	8 (0.24)
XVII. Congenital malformations	0 (0.00)	4 (0.28)	0 (0.00)	0 (0.00)	0 (0.00)	4 (0.12)
XVIII. Symptoms, signs & abnormal clinical and laboratory findings	0 (0.00)	3 (0.21)	1 (0.21)	1 (0.50)	1 (0.57)	6 (0.18)
XIX. Injury incl. traffic accident	14 (1.29)	33 (2.30)	18 (3.70)	8 (3.98)	10 (5.68)	83 (2.45)

Disease experience rates included diseases under treatment and past illness and diseases that status not specified.

* Included persons who did not specify age.

Most morbidity studies have different definitions of morbid status, methods, survey periods, subjects and areas, designs of questionnaire, measurement tools etc. A national health survey report from the Institute of Korean Population and Health (29) defined morbid status as 'a visit for health care or a feeling of the need for health care', acute disease as 'occurrence of disease for 15 days before the interview or a disease treated for 15 days in the last 3 months before interview', chronic disease as 'disease persisting for more than 3 months in the last year before the interview'. Kang *et al.* (17), Woo (10) and Hwang (11) cited similar definitions which were 'physical and mental discomfort for the last 15 days'. Ahn (9) defined morbid status as 'occurrence of morbid state among family members for the last 30 days' and interviewed housewives, Yu and Jung (6) and Jung *et al.* (13) studied disease frequency from medical insurance data. Sohn and Kim (15) estimated prevalence from mass screening data.

In our study, authors calculated the prevalence rate as disease under treatment presently and disease experience rate as every disease checked on the questionnaire. Considering these problems, there are lots of limitations in comparing morbidity studies directly.

The contents of morbid status revealed similar findings such as digestive disease, infectious and parasitic disease, respiratory disease (9, 17), digestive disease, respiratory disease, general symptoms in acute state, musculoskeletal disease, digestive disease, hypertension in chronic state (11), circulatory disease, digestive disease, respiratory disease in order in our study.

Considering individual diseases, in Ahn's study (9) that specified the name of individual diseases, most of the respiratory diseases were common colds and bronchitis. Studies from medical insurance data (6, 13) also showed a high prevalence rate in respiratory diseases but most of them were acute URI and bronchitis.

Respiratory diseases in our study were mostly allergic rhinitis, and some bronchial asthma. Allergic rhinitis has allergic properties, so it can be classified in the skin disease group. Actually, most of the physicians in our study themselves answered not with a blank for respiratory disease but with a blank for allergic disease of skin disease and then wrote a diagnosis as allergic rhinitis.

Morbidity studies from medical insurance data can also have errors because people do not visit clinics only for allergic rhinitis, but visit for treatment of combined common cold or URI, and it is highly probable that medical clinics themselves use the disease code as common cold or URI instead of disease code as allergic rhinitis when claiming reimbursement to the medical insurance companies.

Infectious and parasitic disease groups included viral

hepatitis in our study. Viral hepatitis including chronic carrier can be classified as chapter I (infectious diseases), or XI (digestive diseases), or XXII (factors influencing health status). It is highly possible that it can be also classified as chapter XI (digestive diseases), liver disease, in the morbidity studies on the community population or medical insurance data. Therefore when reviewing disease classification and their results from morbidity studies, it is very important to consider these problems.

Overall prevalence and disease experience rates were higher in males but there is a little differences depending on individual diseases. Viral hepatitis including carrier, dermatophytosis, diabetes mellitus, most cardiovascular diseases, gastric ulcer, and gout showed much higher rates in males. On the other hand, pulmonary tuberculosis, benign tumor, thyroid disease, allergic rhinitis, atopic dermatitis, allergic contact dermatitis, gastroduodenitis, arthritis, disease of blood-forming organs showed much higher rates in females.

Also there were different disease ranks depending on sex or age. Ischemic heart disease, cerebrovascular disease, cardiac arrhythmia, and gout increased with age in males. Seborrheic dermatitis is much higher in males in the 40-49 age group, intervertebral disc disorder was slightly higher in males in the 50-59 age group. Interestingly, for intervertebral disc disorder in the over 60 age group, both prevalence and disease experience rates were slightly higher in females.

Gastric and duodenal ulcer was much higher in males, but gastritis and duodenitis was slightly higher in females.

Hypertension, diabetes mellitus, osteoarthritis were increased greatly with age in both sexes. The prevalence and disease experience rates of hypertension were much higher in males than in females especially in the 40-49 age group, but in the 50-59 age group, and in the over 60 age group showed slightly higher rates in females.

Diabetes mellitus was also much higher in males than in females in all age groups, and interestingly, the rates increased sharply in the over forties age group in males but increased in the over fifties age group in females.

Park (18) reported that middle aged groups, regardless of geographic variations, had the highest mortality differential according to sex. Therefore health surveillance on different age groups is important.

In studies on the changes in causes of death in Korea (4, 19) or to epidemiologists observing disease patterns in perspective (8, 20), it has been expected that death caused by hypertensive diseases would decrease which is an avoidable cause of death (7, 21). But the still high morbidity of hypertension in our study warrants attention as an important disease to be controlled especially in the middle and old age groups.

Ischemic heart disease showed a sharp increase in the over 50 age group in males and over 60 age group in females. This is also the leading cause of death at present. Therefore, primary prevention should be focused on. Diabetes mellitus also sharply increased in the over 50 age group in both sexes. Prevention of this should also be focused on.

Prevalence and disease experience rates of thyroid disease or benign tumor were higher in females in all age groups. Prevalence rates of malignant neoplasm were 0.15% in males and 0.12% in females, disease experience rates were 0.45% in males and 0.53% in females. Cancer prevalence in rural communities from medical insurance data (22, 23) was reported as 242/100,000 in males and 228/100,000 in females showing more than twice the level of our study. But investigation of cancer patients listed on bills for reimbursement to medical insurance companies confirmed only 53% to be cancer patients in Kangwha rural community (24). So cancer prevalence rate are similar between these studies.

The prevalence (under treatment) rate of pulmonary tuberculosis was relatively low, but the disease experience rate was very high in both sexes, which suggests not only high cure rates of pulmonary tuberculosis but also still high infectivity in Korea.

Injury including traffic accidents rates were 0.69% in prevalence (0.74% in males, 0.47% in females), 3.02% in disease experience rate (3.10% in males, 2.45% in females) which are slightly lower than 9.6/1,000 (12.4/1,000 in males, 6.7/1,000 in females) in Ahn's study (9), but much higher than 0.2% in males, 0.1% in females in Hwang's study (11). Though traffic accidents are the main cause of injury in our study, details are not specified in other studies (9, 11, 26, 27). Maybe there is a big difference in detail.

There are many mortality studies but not many morbidity studies in our country, probably because of easy accessibility to mortality data. Even among morbidity studies, most of them are from medical insurance data (6, 12, 13, 15), or some on community population (9-11, 17). Medical insurance data come from bills for reimbursement. So they have some problems with the validity of diagnosis and they reflect only part of the morbid status of a community (2, 25). Morbidity studies in a community also have problems in the view point of validity of diagnosis because they are an estimation from a symptom survey. There are many limitations to find exact morbid status in the field. Although these limitations of studies make it hard to compare studies directly, the differences were not so big.

It is expected that disease patterns in the future, compared to the past, will be mainly chronic degenerative diseases (2, 5, 8, 20, 25, 26). And the disease patterns ex-

pected by epidemiologists were confirmed in our studies.

In building up the questionnaire in our study, only some of the 21 disease groups of the ICD-10 and individual diseases were selected and listed. It was assumed that most of the diseases of physicians would be chronic diseases rather than acute infectious diseases considering their socioeconomical status. It was also considered that they answered the self-administered questionnaire sincerely because it revealed whole patterns of diseases.

In terms of response rate of 54.4%, it can be acceptable without bias considering that the distribution of the respondents is similar to the distribution of Korean physicians registered and also the distribution of the response rate is relatively even by sex and age (Table 1, 2).

Although the subjects in our morbidity study were physicians, they may have differences from other specific occupational groups such as people working in a certain confined workplace in a group such as industrial workers, because physicians are scattered nationwide and they are generally in socioeconomically middle class (27, 28, 29). As this study was conducted nationwide, it can be a useful reflection of the morbid status of the socioeconomically middle class population.

We can also expect more precision in diagnosis compared to other existing morbidity studies. Further study on preventive health behaviour and education to prevent disease and promote health will be necessary.

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