Prevalence and Pattern of Diseases of The Skin and Subcutaneous Tissue in A Primary Care Area in Thailand

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ABSTRACT

Objective: Information on the population-based prevalence study of skin diseases is still lacking. The study explores the prevalence and pattern of diagnosed skin diseases of the population in a primary care area of a university hospital in Thailand.

Materials and Methods: Skin disease patients were identified using the International Statistical Classification of Diseases and Related Health Problems 10th Revision codes (L00-L99). Retrospective data were obtained from the hospital electronic medical record between 2015-2019. The number of clinic visits and the number of skin disease diagnoses were counted. The five-year period prevalence was calculated by dividing the number of cases by the population in the primary care area.

Results: During the five-year period, in a population of 29,969, we found 3,770 patients (12.6% of 29,969 population) who made 7,433 outpatient visits with the diagnoses of skin diseases. Infections of the skin and subcutaneous tissues were the most common (37.3%), followed by dermatitis (29.7%), urticaria and erythema (13.9%), other disorders of the skin and subcutaneous tissue (8.6%), and papulosquamous disorders (1.7%). The five-year period prevalence of skin diseases per 100,000 persons was as following: cellulitis (2,296), urticaria (1,682), psoriasis (177), atopic dermatitis (420), seborrheic dermatitis (227), alopecia areata (50), vitiligo (23), and pemphigus (10).

Conclusion: Infection and dermatitis were the two most common skin diseases in the primary care area population. Atopic dermatitis, psoriasis, seborrheic dermatitis, and decubitus ulcer were less commonly found. Our prevalence data should be the "at least" prevalence of skin diseases due to possible underreporting.

Keywords: Prevalence; skin disease; Thailand (Siriraj Med J 2021; 73: 357-362)

INTRODUCTION

Skin diseases are one of the most common presentations clinicians encountered in the daily practice. They are accounted for approximately 10.0% of a general practitioner's workload and 6.0% of outpatient referrals.[1] Skin conditions contributed 1.8% to the global burden of disease measured in Disability-Adjusted Life Year from 306 diseases and injuries in 2013. Excluding mortality, skin diseases were the fourth leading cause of disability worldwide.[2]

There is still a lack of information on the population-based prevalence study of skin diseases. Most studies on the prevalence of skin disease report the percentage of various skin diseases and use the medical record data from mostly the tertiary care hospital which may not reflect the population they serve, therefore the prevalence

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of skin disease in the population could not be accurately calculated.

Thai national health insurance was overseen by three different schemes: (i) the civil servants' medical benefit scheme (ii) the social security scheme and (iii) the universal coverage health scheme (72.0% of the population).[3] Naresuan university hospital provided health care for patients from all health scheme and also had their primary care area covering five subdistricts surrounding the hospital. The population in these five subdistricts in year 2017 was 46,474. Among 46,474, there were 29,969 who were registered under tax-funded universal coverage health scheme. This study aimed to explore the prevalence of skin disease in the population of 29,969 in the primary care area of the hospital whom were registered under the universal coverage health scheme.

MATERIALS AND METHODS

We conducted a retrospective study using the hospital electronic medical record database. All visits of skin diseases diagnosed with the International Statistical Classification of Diseases and Related Health Problems 10th Revision code for Diseases of the skin and subcutaneous tissue (L00-L99) from January 2015 to December 2019 were collected. The given diagnosis, sex, age, date of diagnosis, address, and health scheme were recorded for each patient visit. At the date of the first recorded diagnosis, individuals were considered as prevalent cases from that date onward. A patient who was seen for the same diagnosis during the five-year period was counted as one case, regardless of the number of visits. On the other hand, patients who received more than one skin disease diagnosis were considered and counted as separate cases for each of the diagnosis. The five-year period prevalence per 100,000 persons of various skin diseases was calculated by dividing the accumulated number of diagnosis cases from 2015 to 2019 with the 2017 year's population (29,969 persons) which is in the median of the five years. Visits and cases of patients from other health schemes were also analyzed and compared with the universal coverage health scheme patients in the primary care area. Statistical analysis was performed using Stata, version 9.0 IC (Stata Corp LP, College Station, TX, USA). This study was approved by the institutional ethics review board with an IRB no. P3-007/2020.

RESULTS

During the five-year period (2015-2019), out of 29,969 population living within the service areas and registering with the universal coverage health scheme, there were 3,770 cases and 7,433 visits with the diagnosis of diseases of the skin and subcutaneous tissue (L00-L99). The five-year period prevalence of skin disease (L00-L99) was 12,579 per 100,000 persons (3,770 x 100,000/29,969) or 12.6 percent for these population. Forty-six percent of the patients were male. The mean, median, and interquartile range of age were 33 years, 30 years, and 7-58 years, respectively.

The frequency of skin disease diagnosis cases was shown in Table 1. Infections of the skin and subcutaneous tissues were the most common skin diseases (36.2%), followed by dermatitis and eczema (31.3%), urticaria and erythema (13.5%), other disorders of the skin and subcutaneous tissue (8.6%), disorders of skin appendages (8.3%) and papulosquamous disorders (1.7%). Papulosquamous disorder patients and bullous disorder patients had a high number of visits per case with 6 visits per case and 9 visits per case, respectively.

A list of the prevalence of some selected skin disorders is presented in Table 2. Dermatitis diagnosis was the most common (19.6% of all skin diseases), followed by cellulitis (18.2%) and urticaria (13.4%). Alopecia areata, vitiligo, lupus erythematosus, lichen planus, and pemphigus were more commonly seen in female than male patients.

Fig 1 shows the distribution of age of patients with various skin diseases. Fig 2 shows the seasonal variation of skin disease with cellulitis becoming more common during the rainy season.

The data of skin disease patients from other health schemes who visited the hospital during the same period was also analyzed. There were 14,233 cases (28,977 visits) which consist of dermatitis (35.8%), infections of the skin and subcutaneous tissues (21.0%), urticaria and erythema (16.2%), disorders of skin appendages (10.0%), papulosquamous disorders (2.9%), bullous disorder (0.7%), radiation-related disorder (0.7%), and other disorder (12.6%).

DISCUSSION

In our study, the five-year period prevalence of diseases of the skin and subcutaneous tissue skin diseases (ICD10 L00-L99) in the primary care area population was 12,579 per 100,000 persons which translated into approximately twelve percent of the population affected by any skin diseases during the five-year period. Infections of the skin and subcutaneous tissues (36.2%), dermatitis (31.3%), and urticaria (13.5%) were among the most common skin diseases. A study from a hospital in Iran, infections of the skin and subcutaneous tissues were found to be the most common skin diseases (32.1%),

TABLE 1. Frequency of diagnosed skin disease groups of population in the primary care area.

ICD-10 code	ICD-10 description	Visits	%	Cases	%	Prevalence*
L00-L08	Infections of the skin	2,382	32.4	1,366	36.2	4,560
L10-L14	Bullous disorder	89	1.2	10	0.3	30
L20-L30	Dermatitis	2,070	27.8	1,180	31.3	3,940
L40-L45	Papulosquamous	395	5.3	63	1.7	210
L50-L54	Urticaria and erythema	905	12.2	508	13.5	1,700
L55-L59	Radiation-related disorders	9	0.1	7	0.2	20
L60-L78	Disorders of skin appendages	543	7.3	312	8.3	1,040
L80-L99	Other disorders**	1,040	14.0	324	8.6	1,080
Total		7,433		3,770		12,579

*five-year period prevalence per 100,000 persons calculated by (number of case / population of 29,969) x 100,000
**L80-L99 including such as vitiligo, seborrheic keratosis, lupus erythematosus, vasculitis, etc. ICD-10= International Statistical Classification of Diseases and Related Health Problems 10th Revision

TABLE 2. Five-year period prevalence of selected skin diseases among universal coverage scheme population in the primary care area.

ICD-10 code	Disease description	Age Mean Median (IQR)	Sex % male	Cases Number	Percent*	Prevalence per 100,000 persons**
L30	Dermatitis	26, 13 (3-51)	44.5	738	19.6	2463
L03	Cellulitis	46, 53(25-65)	48.7	688	18.2	2296
L50	Urticaria	25, 18 {5-42)	42.4	504	13.4	1682
L23-L25	Contact dermatitis	30, 26 (7-49)	43.0	167	4.4	557
L20	Atopic dermatitis	17, 5 (0.6-25)	57.1	126	3.3	420
L40	Psoriasis	48, 52 (37-61)	49.1	53	1.4	177
L89	Decubitus ulcer	69, 73 (60-80)	38.9	49	1.3	164
L21-L22	Seborrheic dermatitis	20, 5 (0.2-38)	51.5	44	1.1	227
L63	Alopecia areata	29, 21 (15-47)	20.0	15	0.4	50
L80	Vitiligo	35, 18 (14-61)	28.6	7	0.2	23
L93	Lupus erythematosus	53, 55 {47-59)	33.3	6	0.2	20
L43	Lichen planus	61, 59 (56-65)	25.0	4	0.1	13
L10	Pemphigus	70, 66 (64-79)	0.0	3	0.1	10

*percent of all skin diseases (ICD-10 L00-L99) cases in primary care area ** five-year period prevalence per 100,000 persons calculated by (number of case/population of 29,969) x 100,000 IQR=interquartile range

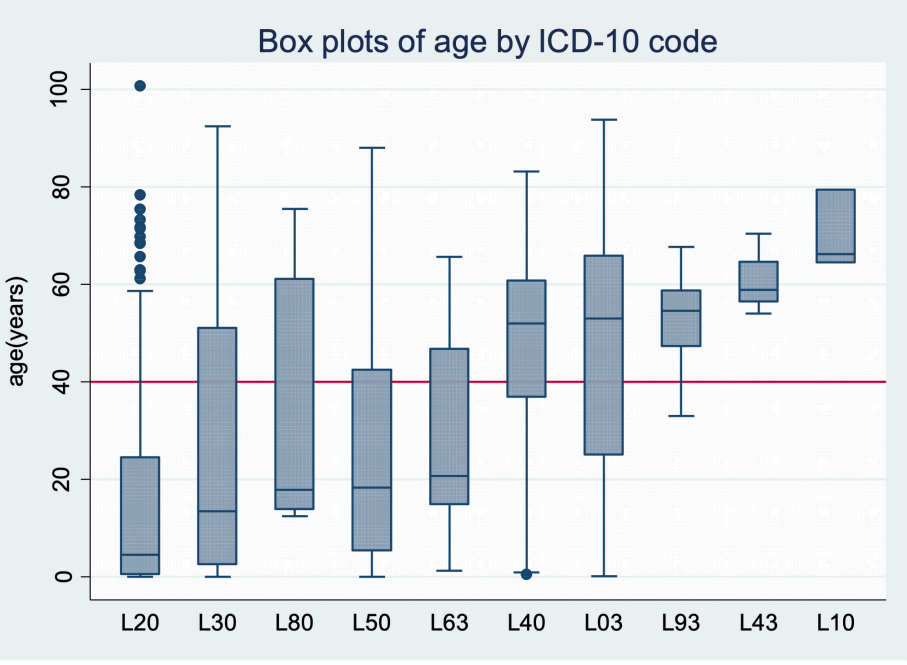

Fig 1. Age at the first visit of skin disease diagnosis (ICD-10 code) in five-year period sorted by the median of age. L20=atopic dermatitis L30=unspecified dermatitis L80=vitiligo L50=urticaria L63=alopecia areata L40=psoriasis L03=Cellulitis L93=lupus erythematosus L43=lichen planus L10=pemphigus

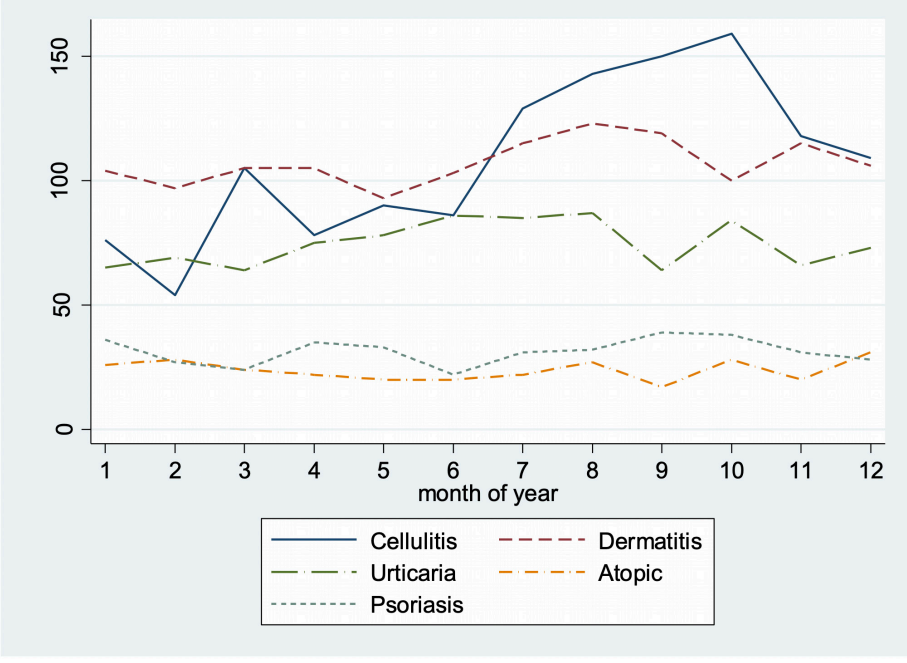

Fig 2. Skin disease visits by the month of the year

followed by dermatitis (24.5%), papulosquamous disorders (3.8%), urticaria and erythema (2.8%).[4] A large hospital network database study from Mexico, a study in a pediatric dermatologic clinic in Thailand, a study in Thai elderly patients showed infections as 32.1%, 21.9, and 21.9% of all skin diseases, respectively.[5,6,7]

The most common skin disease in a questionnaire survey were warts (41.3%), followed by acne (19.2%) and contact dermatitis (15.0%).[8] The global burden of disease study showed 0.4% of burden for dermatitis (atopic, contact, and seborrheic dermatitis), 0.3% for acne vulgaris, 0.2% for psoriasis, 0.2% for urticaria, 0.1% for pyoderma and cellulitis.[2]

In our study, the proportion of patients with bullous disorder and papulosquamous disorder in other health schemes was higher than universal coverage scheme in the primary care area, 2.9% versus 1.7 %, and 0.7% versus 0.3%, respectively. A referral bias might explain the difference between two groups as patients with more complex and serious diseases were more likely to require a referral to our tertiary care hospitals.

Pemphigus, lichen planus, lupus erythematosus, cellulitis, and psoriasis, tend to be the disease of adult and elderly population as the median ages were above 40 years. Where as the median ages in patients with the diagnosis of atopic dermatitis, unspecified dermatitis,

vitiligo, urticaria, and alopecia areata were below 40 years. A study from the United States found that the incidence rates of many skin diseases were affected by age of the population.[9]

In our study, dermatitis was the most common skin problem; however, the terminology is often nonspecific, and may reflect a variety of dermatitis conditions. The prevalence of dermatitis is 2,463 per 100,000 persons. A postal community survey from the United Kingdom found dermatitis in 6,100 per 100,000 persons[10], which is higher than our study which used data from the electronic medical record

The five-year period prevalence of cellulitis was 2,296 per 100,000 persons. The number of cases were higher during the rainy season, which could be related to agricultural activities during the season. The incidence rate of cellulitis in the US was 2,460 per 100, 000 person-years, with a higher incidence among males and individuals aged 45-64 years.[11]

Urticaria prevalence in our study was 1,682 per 100,000 persons. In the studies from South Korea, and Taiwan, the prevalence per 100,000 persons of chronic spontaneous urticaria were 160-450, 690-790, respectively.[12,13] In our study, atopic dermatitis prevalence of all age groups was 420 per 100,000 persons. The School survey study found that the global prevalence per 100,000 persons of atopic dermatitis in children aged 6-7 years was 7900.[14]

The five-year period prevalence per 100,000 persons of psoriasis and seborrheic dermatitis was 177, and 227, respectively. A community study in Turkey showed the prevalence per 100,000 persons of psoriasis in people older than 20 years of age was 1200, and the prevalence of seborrheic dermatitis was 5,200.[15] In the estimation by the Global Psoriasis Atlas website, psoriasis prevalence in Thailand was extrapolated at 0.3% (confidence interval 0.06-1.65) or 300 per 100,000 persons.[16] Whereas seborrheic dermatitis prevalence varies between 2.0% and 12.0% throughout the world.[15]

The five-year period prevalence of alopecia areata is 50 per 100,000 persons. The prevalence of alopecia areata in South Korea was 155 per 100,000 persons.[17] The five-year period prevalence of vitiligo is 20 per 100,000 persons. Previous studies found that the prevalence of vitiligo ranges from 60 to 2,280.[18] The five-year period prevalence of pemphigus is 10 per 100,000 persons. The previous study found standardized point prevalence pemphigus of 5.2 cases per 100,000 adults.[19]

The prevalence of diseases depends on the study design (hospital medical database analysis, cross-sectional survey with medical exam, questionnaire survey), types of measure (point, period, or lifetime prevalence), and case definition (self-reported, physician's, or dermatologist's diagnosis). We chose to report five-year period prevalence which allowed more time to detect more patients, so more accurate data with chronic skin diseases but might mix incident and prevalent case altogether.

The main limitation of our current study is by using the data from the medical record instead of a cross-sectional medical exam survey could lead to an underestimation of the true prevalence. Most five-year prevalence of skin diseases in our study was still lower than prevalence in other previous studies. The prevalence in our study could be underreported from many reasons such as patients with mild diseases might not have sought clinical treatment, some might have tried over-the-counter treatment from local pharmacies, or some may have chosen to go to other health facilities. Our prevalence data should be the "at least" prevalence of skin diseases.

The population included in this study was also relatively small. Our studied population was the universal coverage health scheme which tend to have lower socioeconomic status and educational levels. Skin disease patients were identified using ICD-10 code, L00-L99 (Diseases of the skin, and subcutaneous tissue), which did not include skin tumors, vascular disease such as a venous ulcer, fungal, viral, and parasitic infection.

The strength of the study is the setting of definite population in primary care area of a university tertiary hospital, in which dermatology consultation was highly accessible under the universal health coverage scheme.

CONCLUSION

In conclusion, during a five-year period, 12.6 % of the population in primary care was affected by skin diseases. Among common skin diseases with a five-year period prevalence greater than 1.0% were dermatitis, cellulitis, and urticaria. Atopic dermatitis, psoriasis, seborrheic dermatitis, and decubitus ulcer were less commonly found (prevalence less than 1.0% but more than 0.1%). Vitiligo, alopecia areata, lupus erythematosus, and pemphigus were the least common, less than 0.1%. The finding would help to understand the burden of skin disease for proper healthcare management, proper medical training and disease prevention

Conflict of interest: There are no potential conflicts of interest to declare.

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