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# Demographic Characteristics of Lichen Simplex Chronicus and Prurigo Nodularis Patients: 5-Year Polyclinic Evaluation

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## ABSTRACT

**Background:** Lichen simplex chronicus (LSC) and prurigo nodularis (PN) are two similar diseases of the psychocutaneous dermatoses group. Several factors play a role in the pathogenesis of these two diseases. The aim of our study was to evaluate the demographic characteristics of LSC and PN.

**Materials and Methods:** We investigated the cases of LSC and PN in 63,206 patients who applied to the outpatient clinic of the Dermatology Department of Istanbul University Cerrahpasa-Cerrahpasa Faculty of Medicine between 01.11.2007 and 01.12.2011. The data was recorded in a computer data entry program based on the International Statistical Classification of Diseases and Related Health Problems diagnostic code system and were retrospectively reviewed.

**Results:** In LSC, the distribution of the disease by age was found to be statistically significant with the highest frequency was the 50-59 age group. PN was found to be most frequent in the third decade in our clinic patients. In both diseases, women were more effected than men. We also found that the frequency of both diseases varied seasonally.

**Conclusion:** In this retrospective study, we evaluated the LSC and PN patients that applied to our outpatient clinic; the parameters were the disease frequency, average age, age distribution, sex distribution, month and season of application and the frequency of applying to the outpatient clinic. The frequency of LSC was 1.94% and PN was 0.14%. The average age of LSC patients was 46.37±16 and that of PN patients was 45.22±19. These data are in compliance with previous literature. In terms of gender distribution, both of the diseases affect women more frequently. LSC has a 71% women and 29% male prevalence. PN has a 64% women and 36% male prevalence. The results are in compliance with previous literature. Age based gender distribution was statistically insignificant. LSC is seen more frequently during winter and PN is seen more frequently during autumn. This difference was statistically significant for LSC but insignificant for PN. The yearly average of out-patient clinic application for both diseases was 1.2. The results were based upon the retrospective evaluation of the patients that applied to the outpatient clinic of Istanbul University Cerrahpasa-Cerrahpasa Faculty of Medicine Dermatology Department. Further multicenter studies with longer follow up intervals and greater sample sizes are needed in order to reach nation-based conclusions.

**Keywords:** Lichen simplex chronicus, Prurigo nodularis, Age, Gender, Demographic

## Introduction

Lichen simplex chronicus (LSC) and prurigo nodularis (PN) are two similar diseases of the psychocutaneous dermatoses group. Approximately one-third of the dermatological diseases are

associated with psychiatric or psychosocial problems. Stress affects both health and longevity negatively, especially when it gets chronic. Several factors play a role in the pathogenesis of these two diseases. In general, it is very difficult to define the interaction between



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mental factors and the diseases. However due this type of skin diseases are visible and are accompanied by a very uncomfortable itch, individuals have a difficulty in accepting the disease and its persistent and repetitive features.

## Materials and Methods

In this study, we investigated the cases of LSC and PN in 63206 patients who applied to the outpatient clinic of the Dermatology Department of Istanbul University Cerrahpasa-Cerrahpasa Faculty of Medicine between 01.11.2007 and 01.12.2011. The informed consent of the patients were taken beforehand. Approval of the Cerrahpasa Medical Faculty Ethics Committee was taken (13.03.2012-B.30.2.IST.0.30.11.06/108).

In patients with LSC or PN; frequency, age, gender and the distribution of the disease according to months of application were taken into account.

### Statistical Analysis

The data were recorded in a computer data entry program based on the International Statistical Classification of Diseases and Related Health Problems (ICD) diagnostic code system and were retrospectively reviewed. The data were evaluated by statistical study.

Statistical analyzes were performed using Statistical Package for the Social Sciences V.15 and Number Cruncher Statistical System 2007 programs.  $P < 0.05$  was considered statistically significant. Chi-square test was applied in the analyzes and frequency tables and descriptive statistics were used.

## Results

In this section, the findings were evaluated separately for LSC and PN.

### Lichen Simplex Chronicus

A total of 63,206 patients who admitted to Istanbul University Cerrahpasa-Cerrahpasa Faculty of Medicine of Dermatology between 01.11.2007-31.12.2011, 1,225 (1.94%) of them were diagnosed with LSC. The mean age of the patients was  $46.37 \pm 16.4$  (0-88 years) years. These patients with the diagnosis of LSC were divided into nine groups according to their age. The age group with the highest frequency was the 50-59 age group and second most frequent was the 40-49 age group. The distribution of the disease by age was found to be statistically significant ( $p < 0.05$ ). Of the 1,225 patients diagnosed, 361 (29%) were male and 864 (71%) were female. The ratio of female patients bearing the disease was significantly higher than the male patients ( $p < 0.05$ ).

Gender distribution among the patients were analysed and it was determined that the number of women in all age groups

was higher than the number of men. The difference between the gender distribution of this disease in terms of age groups between men and women ( $p = 0.205$ ) was found to be statistically insignificant. Gender distribution by age groups in LSC is shown in Table 1.

The patients were also evaluated according to their application months. Between 01.11.2007-31.12.2011, the patients were admitted to our outpatient clinic mostly in December, January and February. It was found that the frequency of the disease varied seasonally ( $p < 0.05$ ). The distribution of patients according to the months and seasons is shown in Figure 1.

A total of 1,225 patients entered the outpatient clinic 1,476 times. The average frequency of a patient with LSC applying to our outpatient clinic is 1.2 times a year.

### Prurigo Nodularis

Between the dates of 01.11.2007-31.12.2011, out of 63,206 patients who applied to Cerrahpasa Medical Faculty Department of Dermatology, 90 were diagnosed as PN (0.14%). The mean age of the patients diagnosed with PN was  $45.22 \pm 19$  years.

PN was found to be most frequent in the third decade, and second most frequent in the fifth decade. The distribution of disease by age was found to be statistically significant ( $p < 0.05$ ).

Of the 90 patients diagnosed, 32 (36%) were male and 58 (64%) were female. The ratio of female patients in the disease was significantly higher than the male patients ( $p < 0.05$ ).

Gender distribution was also evaluated separately among the patients according to age groups. We found that the number of women in the 30-39 and 50-59, 60-69 age groups were higher compared to the number of men. There was no statistically significant difference between the sex distribution of this disease and the age groups among women and men ( $p = 0.475$ ). Gender distribution by age groups is shown in Table 2.

The patients with PN were examined according to their application months and seasons. We found that more patients applied to our clinic in autumn compared to other seasons. However, seasonal distribution of the disease was not statistically significant ( $p = 0.107$ ). The distribution of patients by application months is shown in Figure 2.

The patients with PN were examined in the period between 01.11.2007-31.12.2011; it was found that a total of 90 patients entered the clinic 111 times. On average, a patient with PN was admitted to our outpatient clinic 1.2 times a year.

## Discussion

LSC is a disease characterized by hyperpigmented and depigmented plaques due to chronic pruritus and friction. It is grouped under

**Table 1. Gender and age distribution of the patients with lichen simplex chronicus**

			Gender		Total
			Male	Female	
Age	0-9	Frequency	0	6	6
		%	0%	7%	5%
	10-19	Frequency	19	32	51
		%	5.3%	3.7%	4.2%
	20-29	Frequency	42	119	161
		%	11.6%	13.8%	13.1%
	30-39	Frequency	56	159	215
		%	15.5%	18.4%	17.6%
	40-49	Frequency	81	183	264
		%	22.4%	21.2%	21.6%
	50-59	Frequency	75	195	270
		%	20.8%	22.6%	22.0%
	60-69	Frequency	51	104	155
		%	14.1%	12.0%	12.7%
	70-79	Frequency	29	46	75
		%	8.0%	5.3%	6.1%
	80-89	Frequency	8	20	28
		%	2.2%	2.3%	2.3%
Total		Frequency	361	864	1225
%		100.0%	100.0%	100.0%	

**Table 2. Gender and age distribution of the patients with prurigo nodularis**

			Gender		Total
			Male	Female	
Age	0-9	Frequency	1	1	2
		%	3.1%	1.7%	2.2%
	10-19	Frequency	2	1	3
		%	6.3%	1.7%	3.3%
	20-29	Frequency	3	11	14
		%	9.4%	19.0%	15.6%
	30-39	Frequency	6	14	20
		%	18.8%	24.1%	22.2%
	40-49	Frequency	6	8	14
		%	18.8%	13.8%	15.6%
	50-59	Frequency	6	12	18
		%	18.8%	20.7%	20.0%
	60-69	Frequency	1	6	7
		%	3.1%	10.3%	7.8%
	70-79	Frequency	5	3	8
		%	15.6%	5.2%	8.9%
	80-89	Frequency	2	2	4
		%	6.3%	3.4%	4.4%
Total		Frequency	32	58	90
%		100.0%	100.0%	100.0%	

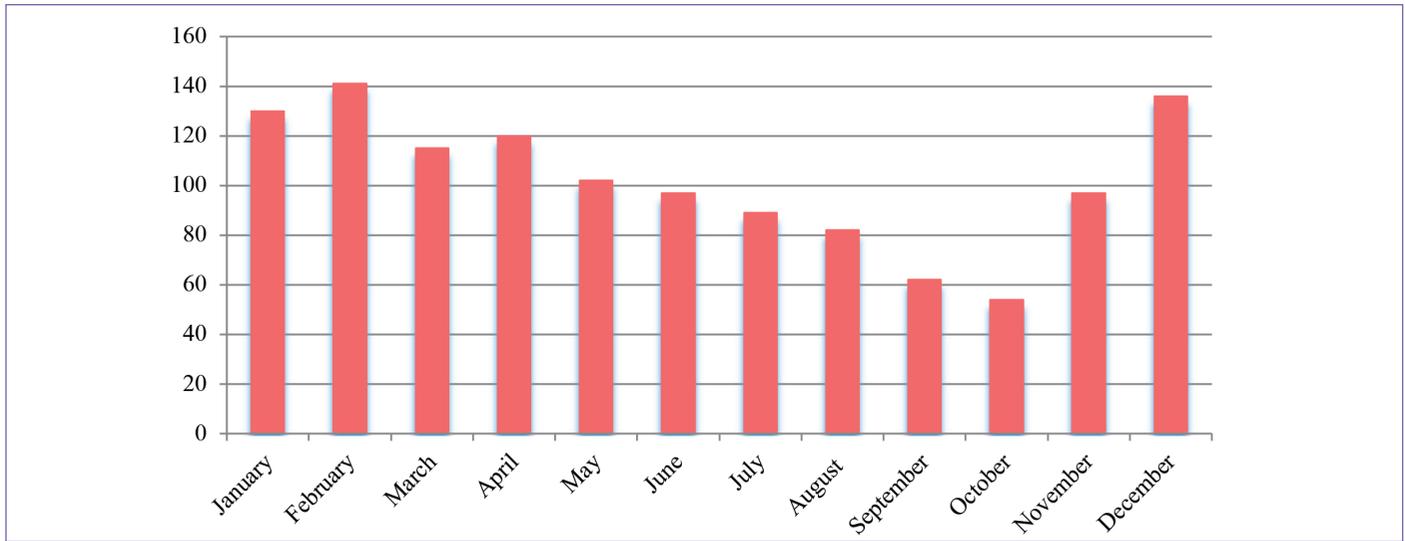


Figure 1. The distribution of lichen simplex chronicus patients according to the months

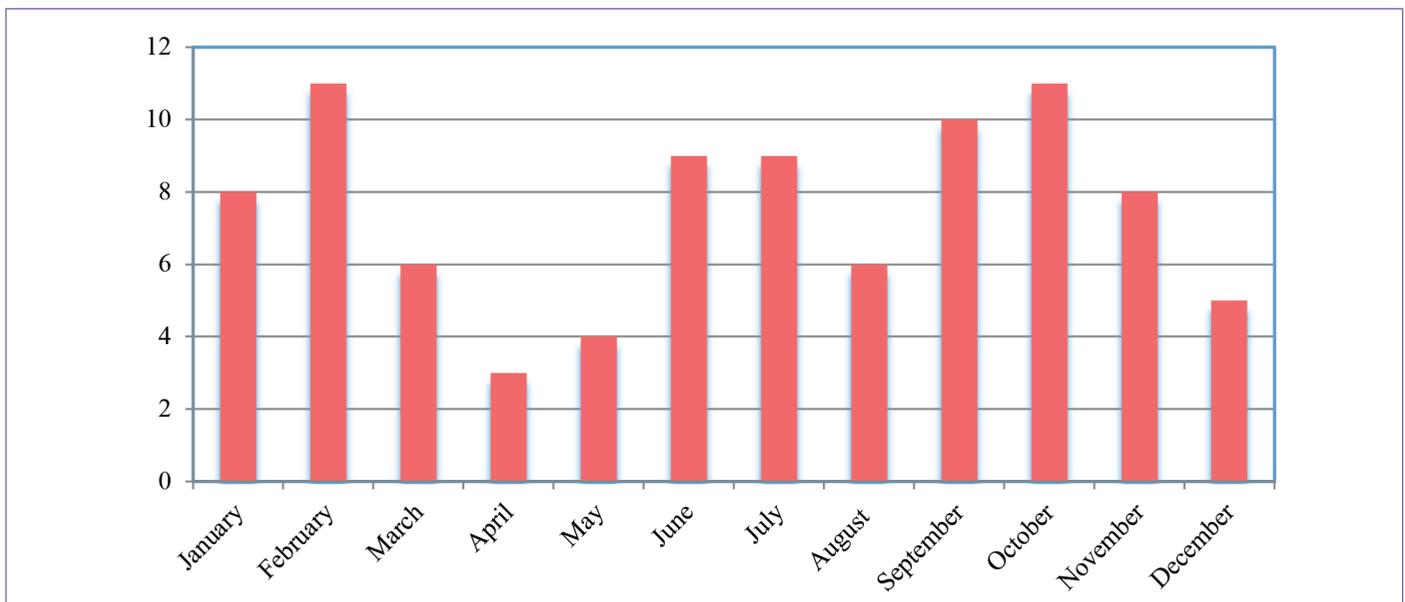


Figure 2. The distribution of prurigo nodularis patients according to the months

psychocutaneous dermatoses. The disease usually starts insidiously and slowly, the main symptom is paroxysmal pruritus. A strong feeling of itching and a sense of relief as it scratches are the most common symptoms. Since there is no definite cure for the disease, patients suffer from LSC for a long time [1,2,3,4].

PN is a chronic skin disease that manifests itself with severely pruritic papules and nodules. The lesions may be located at any part of the body; however there is a predilection for extensor aspects of extremities, face and trunk. Psychogenic factors such as stress, depression and anxiety are common etiologic factors for both LSC and PN [5,6,7,8].

Literature was reviewed for both of the diseases in English and in Turkish; however an epidemiologic study and source was not found. In this retrospective study, we evaluated the LSC and PN patients that applied to our outpatient clinic; the parameters were the disease frequency, average age, age distribution, sex distribution, month and season of application and the frequency of applying to the outpatient clinic. A total of 63,206 patients with the matching ICD codes were included in this study. Of these patients, 1,225 were diagnosed with LSC and 90 were diagnosed with PN.

Among the total number of patients that applied to our outpatient clinic 1.94% were diagnosed with LSC and 0.14% were diagnosed with PN. LSC is considered to be a common disease according to the

previous literature, although a definite prevalence and incidence was not calculated. Compared to LSC, PN is a rarer disease [1,5,6,9]. However, in our opinion, the prevalence that was calculated in this study is an underestimation; it projects the prevalence among the outpatients clinic but not the general population.

The average age of LSC patients is  $46.37 \pm 16$  (0-88) and the average age of PN patients is  $45.22 \pm 19$  (0-90). Although a definite age range was not described in literature, most of the studies show that the diseases are seen in the middle age population [1,10]. Our study showed similar results. LSC is seen most commonly in the range of 50-59 years, second most commonly in 40-49. PN is seen most commonly in the range of 30-39, second most commonly in 50-59. The age distribution was statistically significant. The disease is seen more frequently after the age of 40. This might be due to the increased stress due to increasing responsibilities.

In terms of gender differences, women are affected more both in LSC and PN. LSC has a prevalence of 71% in women and 29% in men. PN has a prevalence of 64% in women and 36% in men. These findings are similar to literature [1,2,5,7,9,11]. Both of the diseases are seen more frequently in female patients. Stress and anxiety are common etiologic factors in both of the diseases [12,13,14,15]. We believe that this relationship might be due to the male dominant and suppressive environment against women in Turkey. Stress, if unexplored, may lead to somatization. Due to the suppressive environment, women may not be able to show their stress and thus somatize subconsciously. On the other hand, men are more expressive and have less somatizing symptoms. Furthermore, women have a greater tendency to apply to the outpatient clinics.

In terms of age groups, from 0 to 90 years of age, LSC is seen more commonly in women than in men, in every age group. PN is also seen more frequently in women in every age group from 0 to 90. There is no statistical difference in age related gender differences since the diseases are seen more frequently in women in every age group.

In terms of seasonal differences, LSC patients apply to the outpatient clinics more frequently in december, january and february, i.e. during winter. On the other hand, PN patients apply to the clinic more frequently during autumn. Seasonal differences were found to be statistically significant for LSC patients; however, there is no such difference in PN patients, which might be related to the smaller sample size. Again, there is no study about the seasonal differences in literature. During wintertime, humidity decreases and wind increases; this leads to xerosis cutis, which in turns lead to the itch and scratch cycle and thus increased LSC lesions [15,16]. Furthermore, social isolation increases during wintertime and this leads to decreased expression of stress and increased somatization. On the contrary, during summertime,

stress is relatively decreased and the prevalence of the diseases decreases. In short, both LSC and PN are seen more frequently during wintertime; however, a definite distinction can not be made since both of the diseases are chronic.

Overall, the yearly average of outpatient clinic applications for both of the diseases was 1.2 times, according to the five years data.

In epidemiologic studies, it is important to describe if the study is clinic based or population based. Our study was based on the outpatient clinic applicants and thus is clinic based. Further more, as our clinic is a university hospital, we are a referral center. Additionally, it is important to specify the age distribution of the applicants. Our patients are usually adults and thus children are under-represented in this patient group. Our study was a retrospective study based upon the definitive diagnosis of these two diseases by dermatologists. Even though this study incorporated a long time interval and many patients, prospective studies on this topic would lead to more population-based results.

### Study Limitations

The results were based upon the retrospective evaluation of the patients that applied to the outpatient clinic of Istanbul University Cerrahpasa-Cerrahpasa Faculty of Medicine Dermatology Department. Further multicenter studies with longer follow up intervals and greater sample sizes are needed in order to reach nation-based conclusions.

### Conclusion

In this retrospective study, we evaluated the LSC and PN patients that applied to our outpatient clinic; the parameters were the disease frequency, average age, age distribution, sex distribution, month and season of application and the frequency of applying to the outpatient clinic.

The frequency of LSC was 1.94% and PN was 0.14%. The average age of LSC patients was  $46.37 \pm 16$  and that of PN patients was  $45.22 \pm 19$ . These data are in compliance with previous literature.

In terms of gender distribution, both of the diseases affect women more frequently. LSC has a 71% women and 29% male prevalence. PN has a 64% women and 36% male prevalence. The results are in compliance with previous literature. Age based gender distribution was statistically insignificant.

LSC is seen more frequently during winter and PN is seen more frequently during autumn. This difference was statistically significant for LSC but insignificant for PN.

The yearly average of out-patient clinic application for both diseases was 1.2.

## Ethics

**Ethics Committee Approval:** Approval of the Cerrahpasa Medical Faculty Ethics Committee was taken (13.03.2012-B.30.2.IST.0.30.11.06/108).

**Informed Consent:** The informed consent of the patients were taken beforehand.

**Peer-review:** Internally peer-reviewed.

## Authorship Contributions

Surgical and Medical Practices: Ö.A., B.E., Concept: Ö.A., E.H.A., B.E., Design: Ö.A., S.S., Data Collection or Processing: Ö.A., S.S., Analysis or Interpretation: Ö.A., E.H.A., S.S., Literature Search: Ö.A., Writing: Ö.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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