Retrospective evaluation of patients applied to internal diseases polyclinic from rural and urban regions: a sample of Cappadocia

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ABSTRACT

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Purpose: The study takes a retrospective analysis of patients from rural and urban regions visiting an internal diseases polyclinic.

Materials and methods: A total of 139,495 complete cases files were evaluated between January 2013 – December 2017. Annual check-ups were not included in the study as they were not the focus of the study.

Results: It is found that 66.9% of the patients were women, and the number of applications increased according to age groups by year. The highest application rate was 24%, which was over 65 years of age grouping, while the lowest application rate was 10.5% in the 26-33 years old grouping. 65.2% of patients were from urban, 10.3% were from rural, and 25.4% were from outside of the province of Nevşehir (e.g., someone from Istanbul paying a visit to the polyclinic). The most coded diagnoses in the applications were Endocrine, Nutritional, and Metabolic Diseases (21.06%), Gastrointestinal Diseases (16.9%), Symptoms, Signals and Abnormal Clinic, and Laboratory Findings (13.92%), Not classified anywhere and- Circulatory System Diseases (11.85%). The most coded diagnoses for applicants were Hypertension (21.9%), Diabetes Mellitus (14.7%), and Non-insulin Dependent Diabetes Mellitus (9.6%).

Conclusions: When scientific experiences and knowledge about chronic diseases and risk factors are combined with the country's opportunities, the disease burden of the community could decrease significantly. This study is essential in terms of its being the first study in our region, and it is hoped its scientific data can contribute to planning health and nursing care services.

Keywords: Chronic diseases, retrospective evaluation, polyclinic applied

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INTRODUCTION

Chronic disease is a global health problem and is the most crucial reason for the increase in mortality and morbidity rates both in developed and developing countries. Chronic diseases are defined as "prolonged status that could not be cured exactly and not recover" [1,2]. In 2008, 36 million of the 57 million deaths worldwide were due to chronic diseases (NCDs) such as cardiovascular diseases, cancers, diabetes, and chronic lung diseases. It is suggested that over 80 percent of deaths because of chronic diseases were in countries at the low or middle-income level. It is estimated that deaths due to chronic diseases will increase in 2030 and that they will be 52 million [3,4]. The mutual point related to chronic diseases, which are the most critical public health problem, is that most of the underlying causes could be prevented. Like the world as a whole, chronic diseases and risk factors are increasing in Turkey as well. Although Turkey has a comparatively young population, chronic diseases are the leading cause of death, like in other developed countries. According to Turkey Chronic Diseases and Risk Factors Research, 71% of deaths were due to chronic diseases. The possibility of premature death (under 70 years old) due to chronic disease is 18%; in other words, the death of one person in every five is a dire subject in Turkey. According to data of the Health of Ministry in 2016, 22 million people are affected by one or more than one chronic disease in Turkey [5,6,7].

Major risk factors for chronic diseases are unhealthy nutrition, inadequate physical activity, and smoking at all ages and in both genders (WHO 2009). Turkish society's general salt consumption level is three times more than advised by the World Health Organization (WHO) and Food and Agriculture Organization (FAO). In our country, 3.9% of the disease burden is attributed to inadequate vegetable and fruit consumption [8,9]. According to Natural Household Research (2003), it is seen that 20.32% of the Turkish population could be classified as living a sedentary lifestyle and that 15.99% have inadequate physical activity [8,10]. It is determined that one in every four men (25.3%) and almost half of all women (44.2%) were obese [11].

In the Global Adult Tobacco Study (2008), it was found that 47.9% of men and 15.2% of women smoked [7]. Men who live in urban regions are at higher risk of their body mass index (BMI) versus those who live in rural areas. However, women living in rural areas were at risk of their waist circumference and waist-hip ratio (WHO 2009). Chronic diseases impact current health systems both in our country and the international health sectors, and they take up a big part of the budget separated for health services [7,12].

When it is considered that risk factors for chronic diseases are very high in Turkey, the negative socioeconomic impact on our country because of chronic diseases could increase. It is suggested that current and reliable epidemiologic data is needed to plan, follow and evaluate interventions in order to prevent chronic diseases. In the cohort study in which chronic diseases and risk factors were determined in the Cappadocia region, risk factors affecting the modifiable lifestyle were determined at a high level [13].

There is currently no study about this subject in our region. Therefore, this study aims to retrospectively evaluate the patients from rural and urban regions that applied to internal diseases polyclinics in Cappadocia.

MATERIALS AND METHODS

Sample

Hospital records of patients who applied to internal diseases polyclinics of a government hospital in the Cappadocia region between January 2013-December 2017 were evaluated in retrospective.

Universe and sample of the study

A total of 139,495 complete cases files were evaluated between January 2013 – December 2017.

The aim of the study wasn't to simply to record the number of applications made – it was also to investigate them in terms of the ICD-10 code for each one and their demographic features. Annual check-ups were not included in the study as they were not the focus of the study.

Patient data were prepared as individuals by excluding subsequent applications of the same patient. It is thought that some situations, such as annual check-ups, could increase the application number and that the same patients could have the same diagnosis, so this could have affected the application analysis and aim of the study. All of these factors were considered for data.

Data collection

According to their demographic features (gender, application month, place, discharge situation) and International Classification of Diseases -10 (ICD-10), case documents were recorded in the retrospective evaluations.

Age: Their ages on the application were recorded and separated into seven groups as 18-25, 26-33, 34-41, 42-49, 50-57, 58-65, and 66 years and over.

Application factor: A total 10 diagnoses that were applied mostly according to ICD-10 were investigated.

Gender: Applications of the patients were grouped according to their gender.

Place: Their place was grouped as rural, urban and country.

Ethics

Before beginning the study, consent was obtained from the Nevşehir Hacı Bektaş Veli University Ethical Committee (05.12.2017 date 2017.12.01 number decision) as was the consent of the related institute.

RESULTS

Demographic features

It is determined that a total of 139,495 patients applied to the Internal Diseases Polyclinic of a government hospital in the Cappadocia Region between January 2013 – December 2017. Of these cases, 66.9% were women, and 33.1% were men. When age group distribution was investigated, it is seen that the highest application rate was 24%, representing those over the age of 65, and the lowest application rate was 10.5%, which was in the 26-33 years old grouping (Figure 1).

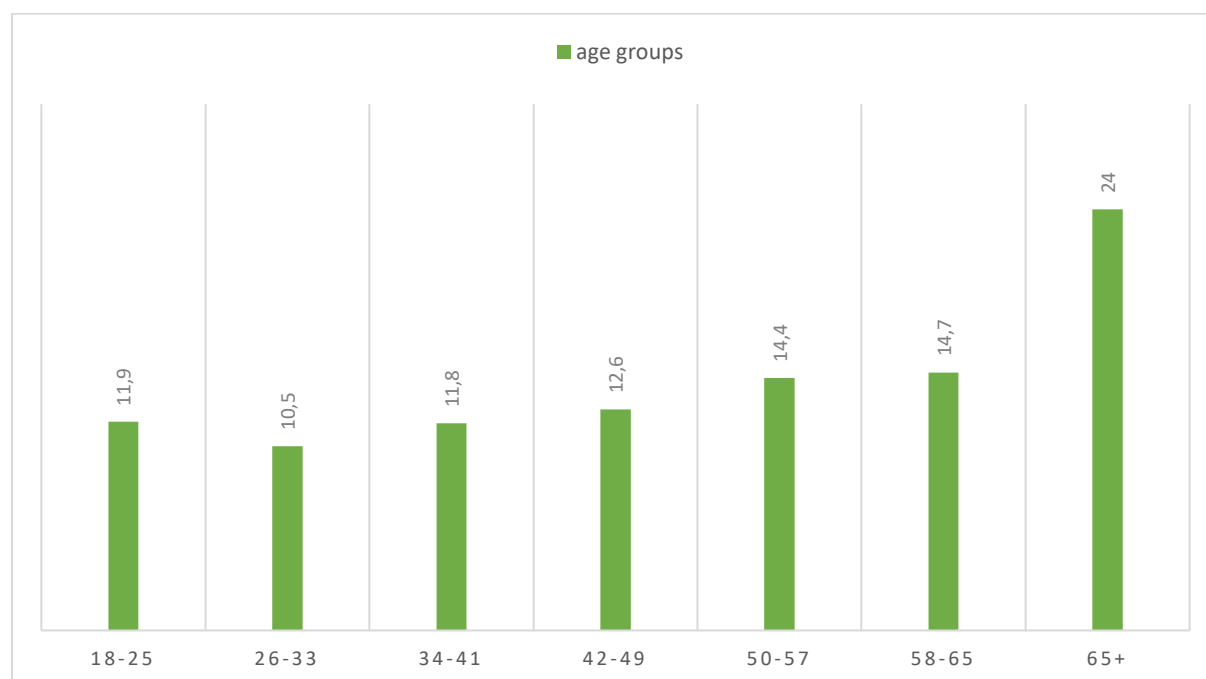It is found that the application number for health services increased with increased age (Table 1).

Figure 1. Distribution of applier patients to internal diseases polyclinic according to their age groups

Table 1. Distribution of applier patients to internal diseases polyclinic according to years and their age groups

Years	18-25 aged		26-33 aged		34-41 aged		42-49 aged		50-57 aged		58-65 aged		66 aged and over		Chi Square	p
	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
2013	573	6.0	830	8.7	990	10.4	1.139	12.0	1.396	14.7	1.563	16.5	2.998	31.6		
2014	1.971	8.0	2.556	10.3	2.852	11.5	3.172	12.8	3.690	14.9	3.850	15.6	6.647	26.9	1668.053	0.000*
2015	3.731	11.5	3.474	10.7	3.839	11.8	4.119	12.7	4.752	14.6	4.805	14.8	7.840	24.1		
2016	4.131	12.5	3.443	10.4	4.000	12.1	4.274	13.0	4.764	14.5	4.819	14.6	7.527	22.8		
2017	6.239	15.7	4.312	10.8	4.806	12.1	4.923	12.4	5.479	13.8	5.469	13.8	8.522	21.4		

*:p<0.05 (statistical significant)

As a result of the chi-square analysis, there was a statistically significant relationship between age groups and the number of applications by years. (p<0.05).

There was a significant relationship between gender and the number of applications by years as statistically (p<0.05). The rate of application for men in 2016-2017 was significantly higher than men in the years 2012-2013, 2013-2014, 2014-2015, 2015-2016. On the other hand, the application rate for women in 2016-2017 was significantly higher than women in 2012-2013, 2013-2014, 2014-2015, 2015-2016. (Table 2).

Tablo 2. Analysis of the relationships between number of applications by gender and years

	Application Number		Application Rate		Chi-Square	p
	Male	**Famele**	**Male**	**Famele**		
2012-2013	2.952	6.537	31.1%	68.9%		
2013-2014	7.786	16.952	31.5%	68.5%		
2014-2015	10.532	22.028	32.3%	67.7%	149.949	0.000*
2015-2016	10.799	22.159	32.8%	67.2%		
2016-2017	14.064	25.686	35.4%	64.6%		
Total	46.133	93.362	32.6%	67.4%		

*:p<0.05 (statistical significant)

The most used diagnosis group in patients who applied to internal diseases polyclinic was the Endocrine, Nutritional and Metabolic Diseases (E00-E8) group in 21.06% of cases. Other diagnoses were determined as Digestive System Diseases (K00-K95) (16.9%); Symptoms, Signals and Abnormal Clinic and Laboratory Signs (R00-R99) (13.92%); Not-classified anywhere and Circulatory System Diseases (I00-I99) (11.85%) (Table 3).

Table 3. Distribution of applier patients to internal diseases polyclinic according to years and ICD-10 codes

ICD-10 Code	2013		2014		2015		2016		2017		Total	
	n	%	n	%	n	%	n	%	n	%	**n**	**%**
E00-E89	2.254	23.75	5.737	23.19	6.782	20.83	6.799	20.63	7.806	19.64	29.378	21.06
K00-K95	1.501	15.82	4.458	18.02	5.869	18.03	5.549	16.84	6.193	15.58	23.570	16.90
R00-R99	1.395	14.70	3.662	14.80	5.407	16.61	4.616	14.01	4.333	10.90	19.413	13.92
I00-I99	1.439	15.16	2.985	12.07	3.630	11.15	3.466	1052	5.004	12.59	16.524	11.85
Z00-Z99	219	2.31	1.106	4.47	2.411	7.40	3.493	10.60	6.345	15.96	13.574	9.73
M00-M99	1.252	13.19	2.551	10.31	2.820	8.66	3.377	10.25	2.924	7.36	12.924	9.26
D50-D89	575	6.06	1.903	7,69	2.648	8.13	2.682	8.14	2.506	6.30	10.314	7.39
J00-J99	460	4.85	1.541	6.23	1.963	6.03	1.933	5.87	2.884	7.26	8.781	6.29
N00-N99	144	1.52	269	1.09	443	1.36	361	1.10	746	1.88	1.963	1.41
A00-B99	67	0.71	127	0.51	161	0.49	145	0.44	218	0.55	718	0.51
L00-L99	30	0.32	71	0.29	159	0.49	143	0.43	211	0.53	614	0.44

F01-F99	46	0.48	79	0.32	64	0.20	97	0.29	186	0.47	472	0.34
S00-T88	19	0.20	63	0.25	57	0.18	128	0.39	135	0.34	402	0.29
C00-D49	46	0.48	98	0.40	66	0.20	64	0.19	81	0.20	355	0.25
G00-G99	22	0.23	36	0.15	34	0.10	37	0.11	120	0.30	249	0.18
V00-Y99	6	0.06	27	0.11	27	0.08	56	0.17	17	0.04	133	0.10
O00-O9A	11	0.12	16	0.06	5	0.02	4	0.01	8	0,02	44	0.03
H60-H95	2	0.02	3	0.01	5	0.02	2	0.01	15	0.04	27	0.02
H00-H59	1	0.01	3	0.01	4	0.01	5	0.02	10	0.03	23	0.02
Q00-Q99	0	0.00	3	0.01	3	0.01	1	0.00	6	0.02	13	0.01
P00-P96	0	0.00	0	0.00	2	0,01	0	0.00	2	0.01	4	000

According to years, the most coded diagnosis groups were: Endocrine, Nutritional and Metabolic Diseases; Circulatory System Diseases; Digestive System Diseases; Symptoms, Signals and Abnormal Clinic; and Laboratory Signs and Not-classified Anywhere. However, the most coded diagnoses in applied patients were: Hypertension (21.9%), Diabetes Mellitus (14.7%), and Non-Insulin Dependent Diabetes Mellitus (9.6%) (Table 4).

Table 4. Distribution of Applier Patients According to ICD-10 Codes

ICD-10 Code	Diagnosis	Case number
I10	Essential (Primary) Hypertension	15.877
E13.9	Diabetes Mellitus, Other Defined, without any complication	10.679
Z00.0	General Medical Examination	10.433
E11.9	Non-insulin Diabetes Mellitus without any complication	6.973
K30	Dyspepsia	5.713
R10.4	Abdominal pain and other non-defined	5.707
D64.9	Anemia, non-defined	5.655
K21.9	Gastro-Esophageal Reflux, without esophagitis	4.098
K27.3	Acute Peptic Ulcer, place no defined, No hemorrhage or perforation	3.894
J39.9	Upper Respiratory Infections, Non-Defined	3.588

Six times more patients came from urban regions than rural regions between 2013 and 2017 (Figure 2).

There was an increase in the number of patients applying to the internal diseases polyclinic each year.

Regarding rural patients, it is seen that number of patients was 1,002 (7%) in 2013, and after this, the numbers increased to 3,179 (22.2%) in 2015, 3,465 (24.2%) in 2016, and 4,247 (29.6%) in 2017.

A similar increase is seen in urban applicants, with 6,415 patients (7.1%) in 2013, 21,743 (23.9%) in 2015 and 24,294 patients (26.7%) in 2017 (Table 5).
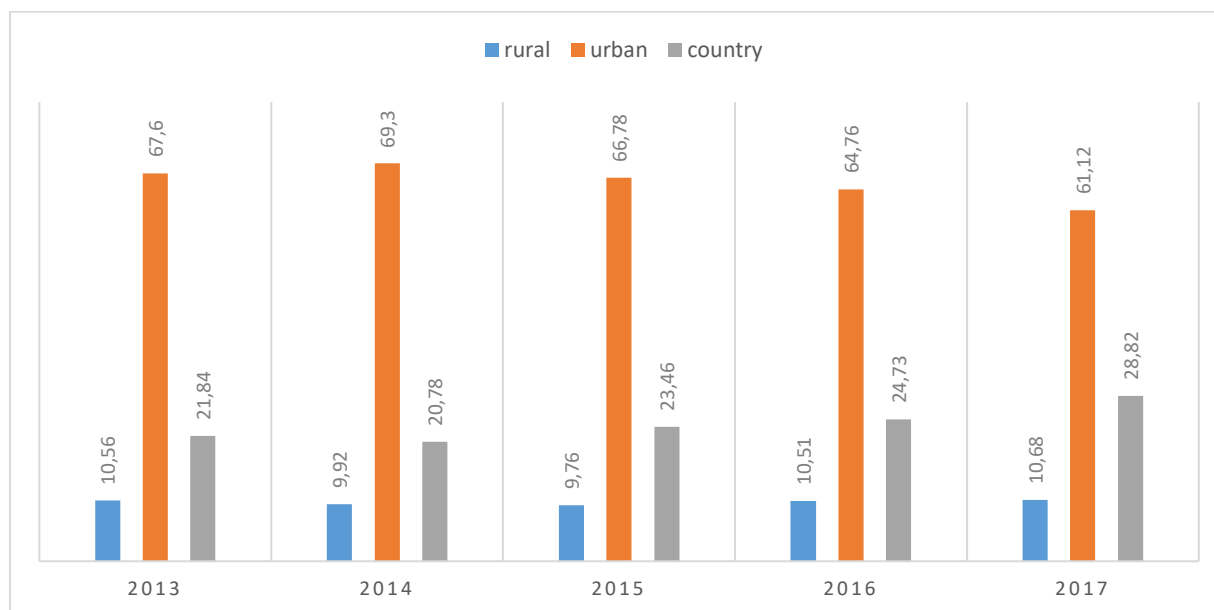
Figure 2. Rates of applier patients came from rural, urban and the country

Table 5. Distribution of patients applied to internal diseases polyclinic from rural, urban and the country according to years

Place	Years											
	2013		**2014**		**2015**		**2016**		**2017**		**Total**	
	n	%	n	%	n	%	n	%	n	%	n	%
Rural	1002	7,0	2453	17,1	3179	22,1	3465	24,2	4247	29,6	14346	100.0
Urban	6415	7,1	17144	18,9	21743	23,8	21343	23,5	24294	26,7	90939	100.0
Country	2072	6,1	5141	15,0	7638	22,3	8150	23,8	11209	32,8	34210	100.0

DISCUSSION

All member states to the World Health Organization aimed to initiate a comprehensive effort against chronic diseases utilizing national and international institutions with an action plan for global non-infectious disease in 2013-2020. Turkey's Health Transformation Program is at the forefront in war on chronic diseases, striving to improve the consciousness and awareness level of society about these diseases and risk factors, effectively challenging the risk factors and decreasing direct threats to public health [14,15,16]. Thus, this study aims to retrospectively evaluate patients coming from rural and urban regions in Cappadocia and who applied to an internal disease polyclinic.

In the study, 33.1% of the patients were men, and 66.9% were women. In Turkey, more women than men are suffering from diseases that are chronic and age-dependent. It is said that this could be due to the longer life span of women than men [17]. Also, because of the traditional paternalistic lifestyle, women have comparatively lower social statuses, which could be an obstacle for them in accessing health services in Turkey. In 2011, 83% of those classified as both illiterate and 15 years of age or older were women, and only 30% of women were participating in the workforce in Turkey. In Cappadocia specifically, those classified as illiterate and over 15 included 366 men and 2,988 women. The participation of women in the workforce in Cappadocia was 12.9% [18]. These data show that

when the general statutes of women is evaluated in Turkey, they are significantly disadvantaged compared to men in terms of education and employment. Again, when the relationship between health and education with employment is considered, it is not surprising that women could be exposed to negative risk factors for their health more so than men in Cappadocia. According to formal data in Turkey, more than three out of four men evaluated their health as good or best (77%) in 2012, whereas this rate was 65% in women [18]. This causes worse perceived health statutes in women than men and leads to more women than men applying to health services.

In the study, there was a fairly linear progression for the most part regarding the number of applicants to the internal diseases polyclinic according to age group, with the highest applicant rate seen in patients over the age of 65. That said, it is remarkable that the application rate in the 18-25 age group was not actually the lowest among all the groups. In Europe, 40% of the population of age 15 or older has at least one chronic disease. This rate increases according to age categories, and as a result, the risk of Europeans having at least one chronic disease by the time they retire is very high. Turkey, the second-most populous country in Europe after Germany, has an older population rate of 7.7% [19]. This rate is 3.91% in Cappadocia [20]. In a study of the Health Ministry (2012), it is suggested that of those over the age of 65, generally, 90% had one chronic disease, 35% had two chronic diseases, 23% had three diseases, and 14% had four or more chronic diseases. In our study, older people who had chronic diseases needed health services more. This could cause an increase in applications to the internal disease polyclinic.

Also, the application rate in the 18-25 age group wasn't the lowest among all of the groups. This could be because this age group makes up 7.88% of the total population in this region [18] and this rate is two times that of the oldest population group. In Turkey, 87% of deaths between the ages of 30 and 70 result from chronic diseases. The most disconcerting factor is that the possibility of premature death (under 70 years) based on chronic disease is 18%. A person who suffers from chronic disease retires early, works less, becomes unemployed, spends more money for health, and earns less money [18]. With their very high death rates and required health expenditures, chronic diseases are a global threat in terms of the sustainability of Turkey's health systems. A growing part of national health budgets is allocated for chronic diseases. It is suggested that early treatment of chronic diseases and enacting preventative measures could positively contribute to up to 10% of Turkey's economy [9,19]. Preventable chronic diseases between 30-69 years old are higher in non-developed countries than in developed

countries [21]. It is expected that preventable death because of chronic diseases could supply 36 billion dollars in China, 15 billion dollars in India, and 20 billion dollars in Russia over a decade [22].

In the study, it is determined that Hypertension, Diabetes Mellitus and Non-Insulin Dependent Diabetes Mellitus were the most coded diagnoses (Table 3). The Turkish Statistic Institute (TSI, 2014) suggested the most common diseases in those 15 years and older were as Hypertension (13.2%), lumbar region and skeletal system problems (12.8%), Rheumatic joint disease (9.1%), ulcer (7.7%) and diabetes (%6.8) [17,22,23]. Chronic diseases are the leading cause of death in Turkey (ischemic heart disease 22%, Cerebrovascular diseases 15%, and Cold 6%), accounting for more than 70% of all deaths. It is suggested that 36 million of 57 million (63%) of global deaths are due to chronic diseases, especially cardiovascular diseases, diabetes, cancers, and chronic respiratory system diseases [9,24]. As a whole, chronic diseases are very important in terms of both our country and region.

Common and preventable risk factors underlie chronic diseases. These factors are tobacco, immobility, unhealthy nutrition, and alcohol abuse. Significant mortality differences are seen between the rural and urban populations and among different regions in the same countries. Secondly, there are certain differences in having a disease. Disadvantaged groups and exposed to chronic diseases and related disabilities at earlier ages. For example, in Finland, the frequency of chronic diseases was 42% in the population with low income compared to 18% in the high-income population. In a study that was conducted of those who died in their early ages in England, people in poor regions were exposed to chronic diseases and disability for a long time before dying and had more health problems [21,22]. The countries with a higher percentage of poor population are low-middle income countries as those in the sub-Saharan African region and China, India, Indonesia, and Nigeria [25].

Likewise, living place (urban/rural) and region (east/west) are important predictors for utilizing health services in Turkey. In the present study, 65.2% of the patients were from urban areas compared to 10.3% rural and 25.4% outside the province. Urban patients were six times that of rural regions between 2013 and 2017 (Figure 3).

91.3% of the total population in Turkey could be classified as living in an urban area. In Cappadocia, this rate is 59.1%. The rural population of Cappadocia makes up almost half of the total population. However, the rate of rural population applying to the internal disease polyclinic was six times less than the urban population. This finding could be explained partially because the rural region is less developed than the center in terms of education and economy, but also it could be a

transportation issue. Other factors such as age and gender also played a part in who applied to health services. The studies showed that unemployed people, lived in underdeveloped and rural regions had the lowest income level or were women paid mostly out-of-pocket for their health visits [26].

Furthermore, for health transportation services, there were more applicants from urban regions between 2013-2016, but in 2017 there were a more significant number of applicants from the rural areas. A higher number of rural patients could be explained by an increase in chronic diseases among the old population in the rural areas.

In another study in Turkey, it was found that 17% of men and 22% of women living in rural regions stated that they could not apply to any health services because of economic problems, including things such as transportation costs. So, for patients in rural areas, accessing the nearest health center could be difficult. Moreover, a person in rural areas might not suffer from a minor ailment and may only go when something serious arises.

These findings are supported by the data showing more applications for health transportation services made by women living in urban regions than were made by men living in rural regions. Public health services are generally not enough in rural regions, and the poor population could have greater exposure to bad health conditions. So, this means that health services are insufficient in the most needed regions, which is called 'inverse service law' [27,28].

It is important to plan health and nursing care services in rural and urban regions here.

There are some deficits in inpatient records in the HIMS (Hospital Information Management System) used for documentation and information records in Turkey.

It could be advised some different researches should be organized to find better ways of compiling data and providing relevant information from these systems, which are used mostly in the health sector.

Study limitations: our study was conducted by examining the retrospective files of the cases applied to Internal Medicine clinics between January 2013 and December 2017. Some socioeconomic data could not be evaluated because these were not questioned in the files.

CONCLUSION

As a result, we see that more women than men and more urban dwellers than rural dwellers applied to the health services. The applicants were in a risk group and had chronic disease. The most coded diagnoses were Hypertension, Diabetes Mellitus and Non-Insulin Diabetes Mellitus. Chronic diseases – many of which could have been prevented with early diagnosis and adequate care – tend to cause

disabilities or premature death. Thus, chronic diseases are important public health problems. This study is the first study in this region. So, it is important in term of its contribution to scientific data and planning for health and nursing care services. Nurses in the health team have got some important responsibilities in preventing chronic diseases, delaying the onset of disease in risk people, decreasing possible complications, raising awareness among the public, giving education to the population, instilling healthy life attitudes and encouraging people to follow through with their treatment. There are some deficits in the patient information in the HIMS that is used for documentation and information records in Turkey. It could be advised some different researches should be organized to find better ways of compiling data and providing relevant information from these systems, which are used mostly in health sector.

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Conflicts of interest

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