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Evaluation of Diabetic Nephropathy in Syrian Refugee Patients Admitted to the Internal Medicine Department

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ABSTRACT

Introduction: There are a total of 5,577,858 Syrian refugees worldwide as of 2020. Türkiye has the highest number of Syrian refugees. Since the beginning of migration from Syria, measures have been taken to ensure that individuals with chronic diseases receive specific treatment. Diabetic nephropathy, also known as diabetic kidney disease, is the most common cause of chronic kidney disease. This study aimed to evaluate diabetic nephropathy in Syrian immigrant patients hospitalized in our center and to compare their data with Turkish patients.

Methods: We included the Syrian patients who were hospitalized for any indication in University of Health Sciences Türkiye, İstanbul Haseki Training and Research Hospital Internal Medicine Ward. We recorded the patient's initial laboratory findings as urea, creatinine, spot urine protein creatinine ratio, and hemoglobin A1c (HbA1c).

Results: The study found that the number of Syrian individuals in the age group under 65 were higher than that of Turkish individuals. Among patients over 65, Turkish patients had a statistically significant higher proportion with estimated glomerular filtration rate (eGFR)>60 mL/minimum/1.73 m² compared to Syrian patients. In the group aged 65 and over, the proportion of Syrian patients with eGFR<60, was found to be higher. HbA1c was found to be higher in the Syrian group.

Conclusion: This study identified significant health disparities between Syrian refugees and Turkish patients, which may be attributed to the profound effects of war, forced migration, and the challenges of being a refugee. These findings highlight the long-term health consequences of displacement, limited access to healthcare, and the socioeconomic hardships faced by refugees, which may contribute to their increased burden of chronic disease. They emphasize the importance of early screening and ongoing management to prevent chronic disease progression in this vulnerable population.

Keywords: Diabetes, diabetic nephropathy, syrian refugees

Introduction

Since 2011, Türkiye has hosted 3.74 million Syrian refugees and played a critical role in saving millions of Syrians who had to flee their country after the war (1). As of December 31, 2020, there were a total of 5,577,858 Syrian refugees worldwide. The total number of registered Syrians under temporary protection in Türkiye is 3,641,370. Among this population, 1,731,058 individuals (47.5%) were children aged 0-18 years. The combined number of children (aged 0-18) and women accounted for 2,581,632 individuals, representing 70.9% of the total Syrian refugees in Türkiye. According to the age distribution table published by the Migration Management, Syrian men constituted 53.9% of the total Syrian refugee population, while Syrian women comprised 46.1%. Additionally, 66,576 individuals (1.8%) were aged 65 and over, representing the elderly population within the Syrian refugee community (2).

As of December 31, 2020, the total population of Türkiye was 83,614,362, with males comprising 50.1% and females 49.9% of the population. The proportion of the population aged 15-64 years, which was 66.5% in 2007, increased to 67.7% in 2020. The proportion of the child population (0-14 years) declined from 26.4% to 22.8%, while the proportion of the population aged 65 and over rose from 7.1% to 9.5%. The total foreign population in Türkiye has reached 1,333,410. Of this population, 49.7% are male, while 50.3% are female (3).

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In Türkiye, refugees under temporary protection status have access to public healthcare services on an equal basis with Turkish citizens. To facilitate healthcare access, interpreter services are provided, and registration procedures are expedited for certain vulnerable groups. Countries hosting large numbers of Syrian refugees, in Lebanon, primary healthcare services are provided free of charge, while in Jordan, healthcare services were initially free but became partially paid in 2014 due to increasing financial burdens. In Iraq and Egypt, healthcare services for Syrian refugees are supported by national and international organizations. While these policies aim to improve healthcare access for refugees, challenges such as language barriers, financial constraints, and the strain on healthcare systems remain significant obstacles. Refugees often face living conditions that exacerbate chronic disease risk factors, such as poor housing conditions and nutrition. Chronic diseases are prevalent among urban refugees in the Middle East, with rates ranging from 9% to 50%. Hypertension and diabetes are some of the most common chronic diseases contributing to morbidity and mortality within this population (4). A meta-analysis conducted between 2011 and 2021, which included 466 centers and 237,723 Syrian refugees, found a prevalence of 12% for type 2 diabetes mellitus, 24% for hypertension, 5% for cardiovascular diseases, 4% for chronic respiratory diseases, and 11% for arthritis (5). In Türkiye, hypertension affects 31.2% of the adult population as of 2021 (6). According to the latest data from the International Diabetes Federation, 16 in every 100 individuals in Türkiye are affected by diabetes, and there are 9,020,900 adult diabetes cases (7). A 2019 survey conducted on 10,019 Syrian refugees in Türkiye found that 15.2% of participants reported having a chronic disease, with the most commonly reported conditions being hypertension, psychiatric disorders, and diabetes (8). Furthermore, a study indicated that more than 50% of Syrian refugees in Türkiye are at high risk of developing chronic diseases (9).

Deaths from chronic diseases are responsible for nearly half of global mortality, with cardiovascular diseases, obesity, and diabetes playing significant roles. Among preventable chronic diseases, diabetes has become an increasingly important health issue worldwide due to its rising prevalence and associated complications. Approximately 537 million people worldwide have diabetes. The number of people with diabetes is projected to rise to 643 million by 2030 (10). Diabetic nephropathy (DN) is one of the chronic microvascular complications of diabetes and is characterized by progressive decline in estimated glomerular filtration rate (eGFR) and albuminuria.

Since the migration from Syria, efforts have been made to provide emergency health services for individuals with chronic diseases, ensure access to regular health care services (such as outpatient clinics and hospital admissions), and provide essential medications, as well as treatments like hemodialysis and chemotherapy. These efforts have led to the accumulation of experience and knowledge at various levels in health centers. Our hospital, located in the Aksaray district of Fatih, İstanbul, an area with a high concentration of refugee populations, has been at the forefront of these efforts. This study aims to evaluate DN in Syrian migrant patients admitted to our hospital's Internal Medicine Department and to compare these patients with Turkish citizens. Through comprehensive statistical analysis of our data, we aim to provide a pioneering evaluation of diabetes and DN in a population with the highest refugee concentration, studied at a third-level hospital. Based on the available literature, this is the first study to focus on this critical issue.

Methods

Our study is a retrospective, analytical, cross-sectional, single-center observational study approved by the Health Sciences University. This study received approval from the Ethics Committee of University of Health Sciences Türkiye, İstanbul Haseki Training and Research Hospital (approval number: 2020-227, date: 23.12.2020) and was conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki. The study included Syrian-origin patients aged 15 years and older, who were admitted to the Internal Medicine Department of Health Sciences University, Haseki Training and Research Hospital between September 16, 2011, and January 1, 2018. In total, 950 patients were included in the study. The study population consisted of 483 patients, excluding-repeat admissions. For the control group, 467 Turkish patients were selected from those who were admitted to the same healthcare institution within the same time period and whose hospitalization occurred immediately after the Syrian-origin patient's protocol number was assigned. Data were collected from patient records, including protocol number, gender, age, and laboratory results obtained from initial admissions, such as urea, creatinine, aspartate aminotransferase (AST), alanine aminotransferase (ALT), gamma-glutamyl transferase (GGT), and alkaline phosphatase (ALP), spot urine protein/creatinine ratio, and hemoglobin A1c (HbA1c) levels.

eGFR was calculated using the MDRD equation (Isotope Dilution Mass Spectrometry) with the Statistical Package for the Social Sciences (SPSS) 22.0. Biochemical tests (urea, creatinine) were performed using the UniCel AU2700® Chemistry Analyzer, while HbA1c tests were measured using the UniCel DxI 800 Access Immunoassay System. Descriptive analyses were conducted based on current guidelines, with diseases being categorized. Kidney damage staging was done according to the Kidney Disease: Improving Global Outcomes (KDIGO) guidelines (11). Proteinuria levels were determined using the spot urine protein/creatinine ratio (12).

The primary endpoint of our study was to investigate the differences in demographic characteristics between Syrian and Turkish patients. The secondary endpoint focused on the analysis of patients with HbA1c>6.5, eGFR <60 mL/minimum (min.)/1.73 m, and comparing the differences between these groups.

Statistical Analysis

Statistical analysis was performed using SPSS 22.0 for Windows. Descriptive statistics for categorical variables were presented as frequencies and percentages, while numerical variables were expressed as means, standard deviations, and medians (interquartile range 25-75). For the comparison of categorical variables, the chi-square test was used, and for the comparison of continuous variables, the Mann-Whitney U test was used. Statistical significance was taken as $p<0.05$.

Results

The mean age of Syrian patients was statistically significantly lower than that of Turkish patients (p<0.001). There was no significant difference in gender distribution (p=0.064; Table 1).

The study found that the proportion of Syrian individuals in the age group under 65 was higher than that of Turkish individuals, while the proportion of Turkish individuals was higher among those aged 65 and older (Table 2). Examining the distribution by age groups, revealed that Syrian individuals were represented at a higher rate in the 20-29 age group compared to Turkish individuals (20.1% vs. 5.4%). For the 30-49 and 50-59 age ranges, the distribution was relatively similar between the two groups. However, in age groups of 60 and above, Turkish individuals were represented at progressively higher rates, with a particularly notable increase in the 70 and older group (38.3% for Turkish patients compared to 15.7% for Syrian patients); a significant statistical difference was found. (p<0.001) (Table 3) (Figure 1).

Among the population under 65, no significant difference was observed in renal function (eGFR-based) between Turkish and Syrian patients (p=0.667, p=0.065). However, among patients over 65, Turkish patients had a statistically significant higher proportion with eGFR>60 mL/min/1.73 m² compared to Syrian patients. In the group aged 65 and over, the proportion of Syrian patients with eGFR<60 was found to be higher, but this difference was not statistically significant (p=0.065) (Table 4).

Table 1. Analysis of age and gender data of patients

Total (n=950)		Turkish patients (n=467)	Syrian patients (n=483)	p
Age*		64 (52.75-77)	48 (29-62)	<0.001
Gender (n)	Female	217 (46%)	210 (43.5%)	0.064
	Male	250 (54%)	273 (56.5%)	

*Median (interquartile range 25-75)

Table 2. Analysis of age data of patients

Age group	Turkish patients (n=467)	Syrian patients (n=483)	Total (n=950)	p
<65 years	237 (50.7%)	383 (79.3%)	620 (65.3%)	
≥65 years	230 (49.3%)	100 (20.7%)	330 (34.7%)	
Total	467 (49.2%)	483 (50.8%)	950 (100%)	0.000

Table 3. Analysis of age data of patients

Age group	Turkish patients (n=467)	Syrian patients (n=483)	Total (n=950)	p
<20 years	5 (1.1%)	26 (5.4%)	31 (3.3%)	
20-29 years	25 (5.4%)	97 (20.1%)	122 (12.8%)	
30-39 years	21 (4.5%)	57 (11.8%)	78 (8.2%)	
40-49 years	45 (9.6%)	72 (14.9%)	117 (12.3%)	
50-59 years	78 (16.7%)	90 (18.6%)	168 (17.7%)	
60-69 years	114 (24.4%)	65 (13.5%)	179 (18.8%)	
≥70	179 (38.3%)	76 (15.7%)	255 (26.8%)	
Total	467 (49.2%)	483 (50.8%)	950 (100%)	0.000

In the under-65 age group, there was no difference in the proportions of HbA1c<6.5 and HbA1c≥6.5 (p=0.823). Among those aged 65 and older, the proportion of HbA1c<6.5 was higher in Turkish individuals, than in Syrian individuals, though this difference was not statistically significant (p=0.167). In general, the HbA1c values were similar (p=0.459) (Table 5).

The distribution of HbA1c and eGFR levels between Turkish and Syrian patients was also examined and both groups had similar distributions across HbA1c and eGFR categories There was no significant difference (p=0.710) in Table 6.

For patients with HbA1c>6.5%, the mean levels of creatinine (mg/dL), urea (mg/dL), spot urine protein/creatinine (mL/min/1.73 m²), eGFR (mL/min), AST (U/L), ALT (U/L), GGT (U/L), and ALP (U/L) showed no statistically significant differences between the groups. However, HbA1c was found to be significantly higher in the Syrian group (p<0.021) (Table 7).

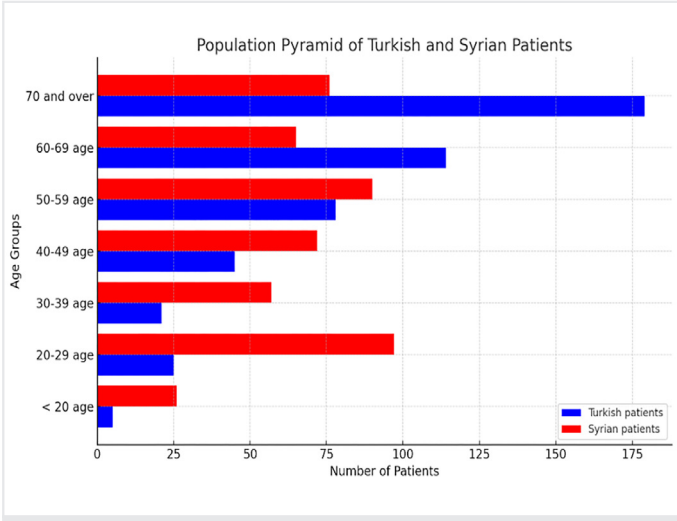

Figure 1. Here is the population pyramid based on the age data for Turkish and Syrian patients. The blue bars represent Turkish patients, while the red ones represent Syrian patients, broken down by different age groups

Table 4. Analysis of age and eGFR values of patients

Age (years)		eGFR ≥60	eGFR <60	Total	p
<65	Turkish patients	155 (71.4%)	62 (28.6%)	217 (100%)	
	Syrian patients	266 (73.1%)	98 (26.9%)	364 (100%)	
	Total	421 (72.5%)	160 (27.5%)	581 (100%)	0.667
≥65 (n)	Turkish patients	107 (50.5%)	105 (49.5%)	212 (100%)	
	Syrian patients	38 (39.2%)	59 (60.8%)	97 (100%)	
	Total	145 (46.9%)	164 (53.1%)	309 (100%)	0.065

eGFR: Estimated glomerulary filtration rate

Table 5. Analysis of patients' age and HbA1c values

Age group	HbA1c <6.5 (%)	HbA1c ≥6.5 (%)	Total (n)	p
<65 years				
Turkish patients	58 (56.3%)	45 (43.7%)	103	
Syrian patients	82 (57.7%)	60 (42.3%)	142	
Total	140 (57.1%)	105 (42.9%)	245	0.823
≥65 years				
Turkish patients	65 (63.7%)	37 (36.3%)	102	
Syrian patients	21 (51.2%)	20 (48.8%)	41	
Total	86 (60.1%)	57 (39.9%)	143	0.167

HbA1c: Hemoglobin A1c

Table 6. Analysis of age, HbA1c, and eGFR values of patients

HbA1c Level	eGFR ≥60 (n=223)	eGFR <60 (n=157)	Total (n=380)	p
<6.5				
Turkish patients	71 (31.80%)	49 (22.00%)	120 (53.80%)	
Syrian patients	61 (27.40%)	42 (18.80%)	103 (46.20%)	
Total	132 (59.20%)	91 (40.80%)	223 (100%)	0.993
≥6.5				
Turkish patients	44 (28.00%)	35 (22.30%)	79 (50.30%)	
Syrian patients	47 (29.90%)	31 (19.70%)	78 (49.70%)	
Total	91 (58.00%)	66 (42.00%)	157 (100%)	0.563
Turkish patients	115 (30.30%)	84 (22.10%)	199 (52.40%)	
Syrian patients	108 (28.40%)	73 (19.20%)	181 (47.60%)	
Total	223 (58.70%)	157 (41.30%)	380 (100%)	0.710

HbA1c: Hemoglobin A1c, eGFR: Estimated glomerulary filtration rate

Table 7. Biochemical analysis of patients

Parameter	Turkish patients (n=)	Syrian patients (n=)	
	Median (IQR) 25%-75%	Median (IQR) 25%-75%	p
Urea (mg/dL)*	44.7 (29.3-85.5)	51.0 (30.0-93.5)	0.575
Creatinine (mg/dL)*	1.04 (0.68-1.65)	0.81 (0.68-2.00)	0.816
eGFR (mL/dak)*	71.0 (33.0-110.0)	83.5 (34.0-126.0)	0.149
AST (U/L)*	23.5 (17.5-31.5)	21.0 (15.0-34.0)	0.273
ALT (U/L)*	19.0 (12.0-26.0)	15.0 (11.0-27.0)	0.301
GGT (U/L)*	42.5 (23.5-81.0)	32.0 (16.0-80.0)	0.524
ALP (U/L)*	93.0 (82.9-127.5)	100.5 (68.0-133.0)	0.755
HbA1c (%)*	8.1 (7.2-10.3)	9.5 (7.7-11.4)	0.021
Spot urine protein/ creatinine ratio (mg/g)*	0.77 (0.25-1.70)	1.10 (0.20-2.20)	0.270

HbA1c: Hemoglobin A1c, eGFR: Estimated glomerulary filtration rate, AST: Aspartate aminotransferase, ALP: Alkaline phosphatase, GGT: Gamma-glutamyl transferase, ALT: Alanine aminotransferase, IQR: Interquartile range
*Median (interquartile range 25-75)

Discussion

In this study, the impact of displacement due to the war in Syria on the health status of displaced individuals was investigated, with a particular focus on the development of DN, which ultimately leads to end-stage renal failure within this patient population. In this study, Syrian patients under 65 years of age were more numerous than Turkish patients. Turkish patients in the 65 and older age group were higher. A literature review revealed a study with patient ages ranging from 0 to 91, similar to our findings, and a mean age of 18.3±2.8. When patients were grouped by age (0-20, 20-40, 40-60, and over 60 years), the distribution showed 309 patients (64.5%) in the 0-20 age group, 117 patients (24.47%) in the 20-40 age group, 31 patients (6.47%) in the 40-60 age group, and 22 patients (4.59%) in the over-60 group. A study involving 251 (13). In another study conducted with 251 Syrian refugee patients, the hospitalization rate was significantly lower in patients aged 65 and above compared to those in the 19-64 age group (14). Based on this distribution, it can be concluded that children and young adults are more affected by the adverse effects of war.

Before the war, the elderly population (aged 65 and older) in Syria constituted 3.9% of the population. In Türkiye, the elderly population (65 years and older) constitutes 7.3% of the total population (15). The younger age of the patient group can be explained by the lower geriatric population density in Syria, even before the war, compared to Türkiye. The proportion of the population aged over 60 in Syria was 3.5% (16). This decrease in the proportion of the elderly population is thought to be due to the inability of the elderly to withstand the physical hardship of migration and the greater impact of external factors on them compared to younger individuals during migration.

In patients over the age of 65, the proportion of Turkish patients with eGFR >60 mL/min/1.73 m² were statistically significantly higher than that of Syrian patients. Syrian patients have undergone a difficult socio-economic life due to the war and migration, which has affected their health status and increased the risk of non-communicable diseases due to increased risk factors. With migration, there has been a deterioration in access to healthcare and living conditions. These factors may have contributed to the lower eGFR in Syrian patients. The higher prevalence of infectious diseases may also have contributed to the decrease in eGFR. In a study conducted between 2012 and 2016, 158,058 cases of diarrhea with 59 instances of bloody diarrhea, 1,299,209 cases of respiratory infections, 1354 cases of hepatitis A, and 108 active tuberculosis were reported among Syrian refugees. A total of 7,794 cases of cutaneous leishmaniasis were reported in Türkiye (17). Due to their living conditions, Syrian refugees in Türkiye can be considered a vulnerable group.

The younger age of the Syrian patient group and the higher average age of Turkish patients, who had multiple comorbidities, may have contributed to the lack of differences in creatinine, urea, spot urine protein/creatinine levels of patients with HbA1c>6.5%.

Study Limitations

HbA1c levels can be affected by factors such as hemodialysis, pregnancy, human ımmunodeficiency virus/ acquired immunodeficiency syndrome treatment, age, ethnicity, genetic background, anemia, and

hemoglobinopathies, which should be considered when interpreting HbA1c measurements. Since our study was retrospective, the analysis was based on available data. There were some deficiencies in the history-taking process for Syrian patients due to language barriers. A study on Syrian refugee patients undergoing transplantation demonstrated that challenges in the informed consent process persist, primarily due to language barriers that restrict effective communication between healthcare providers and patients (18). A study found that effective communication was associated with healthcare providers' listening skills and willingness to understand, whereas poor communication led to misunderstandings, weakened doctor-patient relationships, and increased distrust. The study emphasized that communication challenges persisted despite the use of interpreters (19). While patients might be aware of their diagnoses, they often were unable to communicate this to the physician, and medical records were often unavailable or in Arabic. These factors contributed to a lack of knowledge about existing diagnoses. The diagnosis of DN is often made using spot urine albuminuria. However, albuminuria was not measured in our patients' lab results; instead, the protein/creatinine ratio was analyzed. The homeostatic model assessment for ınsulin resistance values of the patients could not be measured in the study due to the lack of insulin level measurements in most patients. This study is retrospective and based on the available data. Since mortality data for Syrian patients could not be determined from our hospital system, scales such as quality-adjusted life year (QALY) could not be calculated (20). One of the limitations of the study is the absence of long-term data, which complicates tracking the progression of complex health issues over time. The collection of such data would enable a more comprehensive understanding of refugee health and serve as a foundation for the development of long-term health strategies. Future research should focus on the elderly refugee population, emphasizing the importance of collecting long-term health data and ensuring continuous health monitoring for this group.

One of the limitations of this study is the potential influence of ethnic differences between the Syrian refugee and Turkish populations. Genetic predispositions, dietary habits, and cultural factors may contribute to variations in health outcomes. While this study focused on migration-related health disparities, it does not fully account for the possible effects of ethnic background on disease susceptibility and progression. Future research with a more detailed assessment of genetic and sociocultural factors is needed to better understand their role in health disparities between these populations.

Conclusion

This study identified significant health disparities between Syrian refugees and Turkish patients, highlighting the long-term health consequences of war, forced migration, and the challenges associated with refugee status. The findings indicate that the Syrian refugee population is predominantly younger, yet elderly Syrian refugees are at a disproportionately higher risk of renal dysfunction, as evidenced by a greater prevalence in the eGFR <60 group. Additionally, significantly higher HbA1c levels among Syrian refugees suggest a heightened risk of poor glycemic control and associated complications such as DN.

The adverse health outcomes observed in the Syrian refugee population may be attributed to the combined effects of war-related trauma, disruptions in healthcare access during and after migration, and the socioeconomic hardships inherent in refugee life. Limited access to preventive care, delays in diagnosis, and inadequate management of chronic diseases further exacerbate these disparities. Therefore, targeted healthcare interventions, including early screening programs, continuous monitoring, and culturally sensitive management strategies, are essential to mitigate the long-term impact of forced migration on refugee health. Additionally, strengthening healthcare infrastructure and increasing international support for refugee health initiatives remain crucial in addressing the growing burden of chronic diseases within this vulnerable population.

Ethics

Ethics Committee Approval: This study received approval from the Ethics Committee of University of Health Sciences Türkiye, İstanbul Haseki Training and Research Hospital (approval number: 2020-227, date: 23.12.2020).

Informed Consent: Retrospective study.

Footnotes

Authorship Contributions: Surgical and Medical Practices - E.Ç.Ö., H.Ö.; Concept - H.Ö., Ö.Y., N.H.Z., E.K.A.; Design - E.Ç.Ö., Ö.Y., N.H.Z., O.A., F.P.Z., Z.K.; Data Collection or Processing - E.Ç.Ö., Ö.Y., F.P.Z.; Analysis or Interpretation - E.Ç.Ö., H.Ö., O.A., Z.K.; Literature Search - E.Ç.Ö., E.K.A., F.P.Z., Z.K.; Writing - E.Ç.Ö., H.Ö.

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

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References

1. United Nations High Commissioner for Refugees (UNHCR). Global Trends: Forced Displacement in 2020. UNHCR; 2021. Available from: https://data.unhcr.org/en/situations/syria/location/113
2. Republic of Türkiye, Ministry of Interior, Directorate General of Migration Management (DGMM). Temporary Protection Statistics - 2020. Available from: https://www.goc.gov.tr/gecici-koruma5638
3. Turkish Statistical Institute (TÜİK), 2020. Results of the Address-Based Population Registration System, Accessed February 04, 2020. Available at: https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayal%C4%B1-N%C3%BCfus-Kay%C4%B1t-Sistemi-Sonu%C3%A7lar%C4%B1-2020-37210&dil=1
4. Amara AH, Aljunid SM. Noncommunicable diseases among urban refugees and asylum-seekers in developing countries: a neglected health care need. Global Health. 2014; 10: 24
5. Al-Oraibi A, Hassan O, Chattopadhyay K, Nellums LB. The prevalence of non-communicable diseases among Syrian refugees in Syria's neighbouring host countries: a systematic review and meta-analysis. Public Health. 2022; 205: 139-49.
6. Turkish Society of Cardiology (TKD), 2021. World Hypertension Day Press Release, .Accessed May 17, 2021. Available at: https://tkd.org.tr/menu/196/dunya-hipertansiyon-gunu-basin-bulteni-17-mayis-

2021#:~:text=T%C3%BCrkiye'de%20eri%C5%9Fkin%20her%203,olan%20%C3%A7ok%20yayg%C4%B1n%20bir%20hastal%C4%B1k.

7. International Diabetes Federation (IDF), 2021. Diabetes in Türkiye 2021. Available at: https://idf.org/europe/our-network/our-members/turkiye/
8. World Health Organization Regional Office for Europe, 2019. Survey on the Health Status, Services Utilization and Determinants of Health of the Syrian Refugee Population in Turkey. Copenhagen, Denmark: World Health Organization Regional Office for Europe.
9. Balcılar M. Türkiye'deki Suriyeli Mültecilerin Sağlık Durumu Araştırması: Türkiye'de Yaşayan Suriyeli Mültecilerde Bulaşıcı Olmayan Hastalık Risk Faktörlerinin Sürveyansı. Sağlık Bakanlığı; Ankara, Türkiye. 2016.
10. International Diabetes Federation (IDF), 2021. Diabetes Atlas 10th edition. Accessed April 28, 2024. Available at: https://diabetesatlas.org/atlas/tenth-edition/
11. Kidney Disease: Improving Global Outcomes (KDIGO), 2024. Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney International, 105(4S), 1-88. Accessed April 28, 2024. Available from: https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline.pdf
12. Thomas B. Proteinuria. Medscape Reference [Internet]. 2018. Available from: https://emedicine.medscape.com/article/238158-overview.
13. Bilgen F, Ural A, Bekerecioglu M. Evaluation of Syrian Patients Treated in Our Clinic. KSÜ Tıp Fakültesi Dergisi. 2019; 14: 6-9.
14. Tahirbegolli B, Çavdar S, Çetinkaya Sümer E, Akdeniz SI, Vehid S. Outpatient admissions and hospital costs of Syrian refugees in a Turkish university hospital. Saudi Med J. 2016; 37: 809-12.
15. Turkish Statistical Institute (TÜİK), 2011. Results of the Address-Based Population Registration System , AccessedJ anuary,27,2012. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2011-10736
16. United Nation Human Rights Council (UNHCR), 2024. Syria Regional Refugee Response. Accessed May 28, 2024. Available from : https:// data.unhcr.org/en/situations/syria
17. Ergönül Ö, Tülek N, Kayı I, Irmak H, Erdem O, Dara M. Profiling infectious diseases in Turkey after the influx of 3.5 million Syrian refugees. Clin Microbiol Infect. 2020; 26: 307-312.
18. Birtan D, Akpınar A. Ethical challenges in organ transplantation for Syrian refugees in Türkiye. BMC Med Ethics. 2024; 25: 124.
19. Haj-Younes J, Abildsnes E, Kumar B, Diaz E. The road to equitable healthcare: A conceptual model developed from a qualitative study of Syrian refugees in Norway. Soc Sci Med. 2022; 292: 114540.
20. Park AL, Waldmann T, Kösters M, Tedeschi F, Nosè M, Ostuzzi G, Cost-effectiveness of the Self-Help Plus Intervention for Adult Syrian Refugees Hosted in Turkey. JAMA Netw Open. 2022; 5: 2211489.