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Emergency Department Utilization Among Syrian Patients Amid Political Transition: Pre- and Post–December 8, 2024, Visit Patterns and Factors Associated with Hospital Admission in Türkiye

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ABSTRACT

Objective: This study aimed to compare the characteristics of emergency department (ED) visits, diagnostic distributions, and hospital admission outcomes among Syrian patients before and after December 8, 2024, the date marking the end of Bashar al-Assad's rule in Syria, and to identify factors associated with hospital admission.

Materials and Methods: This retrospective, observational, comparative study evaluated 44,590 visits to the adult, pediatric, and gynecology emergency departments of a secondary-care public hospital between December 15, 2023, and December 1, 2025. Visits were categorized into two periods: before and after December 8, 2024. Demographic characteristics, diagnostic groups, and ED dispositions were compared between periods. Factors associated with hospital admission were examined using multivariable logistic regression analysis.

Results: Overall, 53.0% of visits involved patients aged 1–17 years, and 51.6% involved male patients. Respiratory diseases were the most common reason for presentation (39.3%), followed by gastrointestinal diseases (12.9%), musculoskeletal diseases (10.8%), and traumatic conditions (9.1%). Overall, 95.5% of visits resulted in discharge, 3.8% in admission to a hospital ward, and 0.7% in intensive care unit admission. The mean daily number of visits decreased from 61.08 in the pre-event period to 57.16 in the post-event period. The distribution of diagnostic groups differed significantly between periods ($p < 0.001$). The proportion of visits attributed to respiratory diseases decreased from 41.1% to 37.5%, whereas the proportions attributed to gastrointestinal diseases and musculoskeletal diseases increased from 12.6% to 13.3% and from 10.5% to 11.2%, respectively. In multivariable analysis, visits during the pre-event period were associated with higher odds of hospital admission than those during the post-event period (adjusted odds ratio [aOR] = 1.149, 95% confidence interval

[CI]: 1.031–1.280; p = 0.012). Female sex was associated with lower odds of admission than male sex (aOR = 0.763, 95% CI: 0.664–0.876; p < 0.001).

Conclusion: Differences in visit volume, diagnostic distribution, and hospital admission patterns were observed before and after December 8, 2024. These findings highlight the importance of monitoring healthcare demand during periods of political transition and population movement. However, the observed changes should not be interpreted as evidence of a direct causal relationship with the political transition.

Keywords: Syrian refugees, emergency department, healthcare utilization, migration, hospital admission

INTRODUCTION

The civil war that began in Syria in 2011 led to the displacement of millions of people and created substantial healthcare needs in neighboring countries, particularly Türkiye. During this period, the World Health Organization emphasized the importance of improving access to healthcare, supporting healthcare professionals, and providing culturally appropriate services for Syrian refugees in Türkiye (1).

Emergency departments (EDs) are important points of access for migrant populations requiring healthcare services. Studies investigating healthcare utilization among Syrians in Türkiye have demonstrated that EDs play a substantial role in meeting the healthcare needs of this population (2–4). Previous research has identified respiratory tract infections and other acute conditions as prominent reasons for ED visits and has indicated that patterns of healthcare utilization may change over time. Furthermore, the fact that some ED presentations involve conditions that could potentially be managed in primary care settings has implications for ED utilization and healthcare resource planning (2–4).

Patterns of healthcare utilization may be influenced not only by individual health needs but also by broader social and political developments. The fall of Bashar al-Assad's government on December 8, 2024, represented a major turning point for Syria and the surrounding region (5). Evaluating potential changes in ED visits among Syrians living in Türkiye around this date is important for understanding variations in visit volume, diagnostic distributions, and hospital admission patterns.

Although previous studies examining ED visits among Syrian patients in Türkiye have provided valuable information on presentation characteristics and healthcare utilization, further assessments comparing the periods before and after December 8, 2024, are warranted.

This study aimed to evaluate the demographic characteristics, diagnostic groups, and ED dispositions of Syrian patients presenting to the adult, pediatric, and gynecology emergency departments of a secondary-care public hospital and to compare these characteristics before and after December 8, 2024. In addition, we sought to identify factors associated with hospital admission using multivariable analysis.

MATERIALS AND METHODS

Study Design and Setting

This retrospective, observational, comparative registry-based study was conducted to evaluate the characteristics of emergency department (ED) visits, diagnostic groups, and ED dispositions among Syrian patients presenting to the adult, pediatric, and gynecology emergency departments of a secondary-care public hospital and to investigate differences between two periods defined according to December 8, 2024. Existing data from the hospital electronic information system and ED records were reviewed retrospectively.

Study Period and Definition of the Comparison Periods

The study periods were defined using 8 December 2024, the date of the fall of Bashar al-Assad's government in Syria, as the reference point, given its significance as a major political and social turning point that may have been associated with changes in healthcare-seeking patterns among the Syrian population residing in Türkiye. The study covered the period from 15 December 2023 to 1 December 2025. For the comparative analysis, 8 December 2024 was considered the cutoff date. Accordingly, the study period was divided into two periods: 15 December 2023–8 December 2024 (pre-change period) and 9 December 2024–1 December 2025 (post-change period). Each period comprised 360 days of observation.

Study Population and Data Collection

The study population comprised visits by patients identified as Syrian in the ED records during the specified study period. No sampling was performed; all visits available in the database that met the eligibility criteria during the study period were included. Eligible records were those corresponding to visits occurring within the specified date range and documenting Syrian nationality or status in the existing administrative or clinical records. When an individual had multiple visits, each visit was treated as a separate record.

The variables assessed included age, sex, date and period of presentation, time of presentation, diagnostic group, and ED disposition. Age was analyzed both as a continuous variable and in predefined age categories. Based on the diagnostic information available in the dataset, diagnoses were classified into 15 major groups. For patients younger than 1 year, age recorded in months was coded as 1 year for the purposes of data analysis. This coding approach was applied consistently in the calculation of age-related descriptive statistics and the classification of age groups.

For the logistic regression analysis, admission to a hospital ward or intensive care unit (ICU) was defined as hospital admission, whereas discharge from the ED was considered the reference outcome. In the descriptive analyses of outcomes by diagnostic group, discharge, hospital ward admission, and ICU admission were evaluated as separate categories.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, version 21.0 (IBM Corp., Armonk, NY, USA). Continuous variables were presented as mean ± standard deviation or median (interquartile range), as appropriate, and categorical variables as numbers and percentages. Between-period comparisons were performed using the Mann–Whitney U test for continuous variables and the chi-square test for categorical variables. Associations between diagnostic groups and ED dispositions were also examined.

Multivariable logistic regression analysis was performed to identify independent factors associated with hospital admission. The model included age, sex, presentation period, diagnostic group, and time interval of presentation. The dependent variable was hospital admission, defined as admission to a hospital ward or ICU, with ED discharge serving as the reference outcome. The post-event period, male sex, respiratory diseases, and the 12:00–15:59 time interval were specified as reference categories.

Results were reported as adjusted odds ratios (aORs), 95% confidence intervals (CIs), and p-values. A two-sided p-value of less than 0.05 was considered statistically significant.

Ethical Approval

The study was approved by the Non-Interventional Clinical Research Publication Ethics Committee of Nevsehir Hacı Bektas Veli University on September 26, 2025 (decision no.

2025.09.04). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

RESULTS

A total of 44,590 emergency department (ED) visits by Syrian patients were evaluated during the study period. The mean age of the patients was 18.7 ± 16.4 years, and the median age was 15 years (interquartile range [IQR]: 4–29). Patients aged 1–17 years accounted for 53.0% of all visits (n = 23,634), whereas patients aged 60 years or older represented approximately 2.4% of visits.

Regarding sex distribution, 51.6% of visits were made by male patients (n = 23,011) and 48.4% by female patients (n = 21,579). The highest proportion of visits occurred between 12:00 and 15:59, accounting for 26.2% of all visits (n = 11,686). The proportions of visits during nighttime and early morning hours were lower (Table 1).

Respiratory diseases were the most common diagnostic group, accounting for 39.3% of all visits (n = 17,545). They were followed by gastrointestinal diseases (12.9%, n = 5,759), musculoskeletal diseases (10.8%, n = 4,829), and traumatic conditions (9.1%, n = 4,067) (Table 1).

Regarding ED disposition, 95.5% of patients were discharged (n = 42,569), 3.8% were admitted to a hospital ward (n = 1,698), and 0.7% were admitted to an intensive care unit (ICU) (n = 323). Among patients admitted to hospital wards, 67.1% were admitted to gynecology wards (n = 1,139), 17.5% to adult wards (n = 297), and 15.4% to pediatric wards (n = 262). Pediatric ICU admissions accounted for 87.0% of all ICU admissions (n = 281) (Table 1).

A total of 22,355 visits were recorded during the pre-event period and 22,235 during the post-event period (Table 2). The mean daily number of visits was 61.08 in the pre-event period and 57.16 in the post-event period. Changes in daily visit volume over time are presented in Figure 1.

The median age was 15 years (IQR: 4–29) in the pre-event period and 16 years (IQR: 4–29) in the post-event period. Comparison of age as a continuous variable revealed no statistically significant difference between the periods ($p = 0.638$). However, the distribution of age categories differed significantly ($p = 0.010$). The proportion of patients aged 1–17 years decreased from 53.5% in the pre-event period to 52.5% in the post-event period. In contrast, the proportions of patients aged 18–29, 45–59, and 60–74 years increased from 22.5% to 23.2%, from 4.9% to 5.2%, and from 2.0% to 2.3%, respectively (Table 2).

No statistically significant difference in sex distribution was observed between the periods ($p = 0.820$). Male patients accounted for 51.7% of visits in the pre-event period and 51.5% in the post-event period, whereas female patients accounted for 48.3% and 48.5%, respectively. Similarly, the distribution of visits across time intervals did not differ significantly between the periods ($p = 0.183$). In both periods, the highest visit volume occurred between 12:00 and 15:59, accounting for 26.1% of visits in the pre-event period and 26.3% in the post-event period (Table 2).

The overall distribution of the 15 diagnostic categories differed significantly between the two periods ($p < 0.001$). Respiratory diseases, the most common diagnostic group in the pre-event period, accounted for 41.1% of visits ($n = 9,199$), decreasing to 37.5% ($n = 8,346$) in the post-event period. Conversely, the proportions of gastrointestinal and musculoskeletal diseases increased from 12.6% to 13.3% and from 10.5% to 11.2%, respectively (Table 2, Figure 2).

The proportion of genitourinary presentations increased from 0.9% (n = 201) in the pre-event period to 1.5% (n = 331) in the post-event period. Toxicological and medication-related presentations increased from 0.1% to 0.2%, whereas psychiatric presentations decreased from 0.5% to 0.4%. Endocrine and metabolic presentations remained at approximately 0.3% in both periods. Hematological and oncological presentations accounted for 0.1% of visits in each period (Table 2).

ED dispositions also differed significantly across diagnostic groups, with statistically significant differences in discharge, hospital ward admission, and ICU admission distributions ($p < 0.001$ for the overall comparisons across diagnostic groups) (Table 3).

Discharge rates were particularly high among patients presenting with musculoskeletal, dermatological and allergic, and traumatic conditions, ranging from 98.3% to 99.9%. The hospital ward admission rate among obstetric and gynecological presentations was 47.3%, distinguishing this group from the other diagnostic categories. ICU admission accounted for 7.2% of presentations involving endocrine and metabolic diseases. Among toxicological and medication-related presentations, the rates of hospital ward admission and ICU admission were each 9.6%. The hospital ward admission rate among patients with hematological and oncological diseases was 12.9%. An ICU admission rate of 4.2% was also observed in the general/control examination group (Table 3).

Multivariable logistic regression analysis was performed to identify factors associated with hospital admission, with age, sex, presentation period, diagnostic group, and time interval of presentation included in the model. The dependent variable was admission to a hospital ward or ICU, with ED discharge serving as the reference outcome. The post-event period, male sex, respiratory diseases, and the 12:00–15:59 time interval were used as the reference categories (Table 4).

Presentation period remained significantly associated with hospital admission after adjustment for the other variables. Visits during the pre-event period were associated with higher odds of hospital admission than visits during the post-event period (adjusted odds ratio [aOR] = 1.149, 95% confidence interval [CI]: 1.031–1.280; p = 0.012). This association remained statistically significant after adjustment for age, sex, diagnostic group, and time of presentation (Table 4).

Female patients had lower odds of hospital admission than male patients (aOR = 0.763, 95% CI: 0.664–0.876; p < 0.001). When age was included in the model as a continuous variable, no statistically significant association was found between age and hospital admission (aOR = 0.995, 95% CI: 0.991–1.000; p = 0.068) (Table 4).

With respiratory diseases as the reference diagnostic group, dermatological and allergic diseases were associated with lower odds of hospital admission (aOR = 0.086, 95% CI: 0.012–0.615; p = 0.015). Similarly, musculoskeletal presentations were associated with lower admission odds than respiratory presentations (aOR = 0.626, 95% CI: 0.426–0.919; p = 0.017).

In contrast, several diagnostic groups were associated with significantly higher odds of hospital admission than respiratory diseases. The aOR was 12.698 for endocrine and metabolic diseases (95% CI: 7.251–22.235; p < 0.001), 3.262 for infectious diseases (95% CI: 2.522–4.220; p < 0.001), 3.069 for gastrointestinal diseases (95% CI: 2.499–3.770; p < 0.001), and 5.752 for general/control examinations (95% CI: 4.613–7.173; p < 0.001). Higher admission odds were also observed for genitourinary diseases (aOR = 4.064, 95% CI: 2.538–6.509; p < 0.001), cardiac/cardiovascular diseases (aOR = 5.113, 95% CI: 3.488–7.496; p < 0.001), and neurological diseases (aOR = 3.001, 95% CI: 2.073–4.343; p < 0.001) (Table 4).

The aOR was 18.625 for hematological and oncological diseases (95% CI: 6.897–50.296; $p < 0.001$) and 20.889 for toxicological and medication-related presentations (95% CI: 10.325–42.260; $p < 0.001$). Psychiatric presentations were also associated with higher odds of hospital admission (aOR = 2.515, 95% CI: 1.031–6.134; $p = 0.043$). Traumatic presentations were associated with higher admission odds than respiratory presentations (aOR = 1.605, 95% CI: 1.189–2.165; $p = 0.002$). The highest adjusted odds ratio was observed for obstetric and gynecological presentations (aOR = 94.361, 95% CI: 78.174–113.900; $p < 0.001$), consistent with the high hospital ward admission rate observed in this group (Tables 3 and 4).

Regarding time of presentation, compared with visits between 12:00 and 15:59, visits between 00:00 and 03:59 were associated with 1.718-fold higher odds of hospital admission (95% CI: 1.397–2.113; $p < 0.001$). The corresponding odds were 2.854-fold higher for visits between 04:00 and 07:59 (95% CI: 2.340–3.481; $p < 0.001$) and 1.253-fold higher for visits between 08:00 and 11:59 (95% CI: 1.082–1.451; $p = 0.003$). No statistically significant differences in admission odds were observed for visits between 16:00 and 19:59 or between 20:00 and 23:59 compared with the reference interval ($p = 0.272$ and $p = 0.232$, respectively) (Table 4).

DISCUSSION

War, forced migration, and political transitions can affect not only population movements but also healthcare needs, patterns of access to healthcare services, and the service burden on healthcare institutions (6,7). These effects are particularly evident in emergency departments (EDs), which must simultaneously accommodate patients from different age groups with diverse clinical needs (8,9). Studies investigating healthcare utilization among Syrian patients in Türkiye have demonstrated that EDs play an important role in meeting the healthcare needs of this population (2,4,10,11). Research conducted in European countries has also shown that patterns of ED utilization among migrants may differ from those of the host population and

may be influenced by access to primary care, language barriers, socioeconomic conditions, and the organization of the healthcare system (8,9,12). The end of Bashar al-Assad's rule in Syria on December 8, 2024, represents an important historical turning point for reassessing healthcare utilization patterns among Syrians living in Türkiye (5). Investigating the potential implications of this date for healthcare utilization is important not only from a migrant health perspective but also for planning healthcare services in response to changing population needs. The main contribution of the present study is its comprehensive assessment of ED visits among Syrian patients before and after December 8, 2024, examining visit volume, diagnostic distribution, hospital disposition, and factors associated with hospital admission within a single study framework.

The mean age of 18.7 ± 16.4 years and median age of 15 years indicate that the study population consisted predominantly of children, adolescents, and young adults. Previous studies conducted in Türkiye have likewise demonstrated the substantial representation of younger age groups in healthcare utilization among Syrians. A study conducted in Nevşehir between 2013 and 2017 reported a median age of 23 years among Syrian patients, while a study in Adıyaman examined ED visits and associated healthcare costs among Syrian adults (2,4). Another study conducted in western Türkiye found that Syrian patients had a lower median age than the local population (10). Taken together, these findings suggest that the relatively young age structure is an important characteristic shaping healthcare utilization among Syrian patients.

An examination of age distributions between the study periods revealed that the median age increased from 15 years before December 8, 2024, to 16 years afterward. Although no statistically significant difference was observed when age was analyzed as a continuous variable, the proportions of patients in individual age categories changed. In particular, the proportion of patients aged 1–17 years decreased from 53.5% to 52.5%, whereas the

proportions of those aged 18–29 years and 60–74 years increased from 22.5% to 23.2% and from 2.0% to 2.3%, respectively. These findings suggest that, although the overall age distribution remained broadly similar across the two periods, the representation of certain age groups among ED visits changed. Studies conducted in Europe have indicated that migrants' healthcare needs may vary according to the stage of migration, living conditions, and opportunities for accessing healthcare services (12,13). Within this context, the age-related differences observed in our study should not be interpreted as direct evidence of population movement but rather as demographic changes warranting further investigation.

Regarding sex distribution, male patients accounted for 51.6% of visits and female patients for 48.4%, indicating a relatively balanced distribution within the study population. The proportion of male patients was 51.7% before December 8, 2024, and 51.5% afterward, with no significant change between the periods. Previous studies in Türkiye have reported different sex distributions depending on the study population. In a study conducted in western Türkiye, 58.3% of Syrian patients were male, whereas the study conducted in Nevşehir reported a higher proportion of female patients (4,10). These differences may be related to the study periods, the populations served by the respective hospitals, and whether pediatric patients were included in the analyses. International studies have also reported variations in healthcare utilization among migrants according to sex and migrant group (8,14).

One of the important findings of our study was that, despite similar total numbers of visits, the mean daily number of visits decreased from 61.08 before December 8, 2024, to 57.16 afterward. The relatively small difference in the total numbers might suggest that healthcare utilization did not change substantially when assessed solely by aggregate counts. However, the daily averages indicate a lower intensity of ED utilization during the post-event period. A study conducted in Adıyaman reported that ED visits by Syrian patients constituted a substantial healthcare burden during the period investigated (2). Systematic reviews

conducted in Europe have also shown that migrants may use emergency services more frequently than the host population, although this pattern varies by country and migrant group (8,14). In contrast, a more recent systematic review published in 2024 emphasized that migrant ED utilization cannot universally be characterized as either higher or lower than that of the host population (9). These findings indicate that healthcare utilization cannot be explained by a single, uniform pattern. The distinctive contribution of our study is its examination of ED utilization among Syrians who have been living in Türkiye for an extended period, within the context of a more recent political transition.

An analysis of diagnostic distributions showed that respiratory diseases were the leading reason for presentation, accounting for 39.3% of all visits. Gastrointestinal diseases (12.9%), musculoskeletal diseases (10.8%), and traumatic conditions (9.1%) followed. The predominance of respiratory diseases is broadly consistent with previous studies involving Syrian patients in Türkiye. In a study conducted in Adıyaman, upper respiratory tract infections accounted for 47.3% of visits (2). Sengören Dikiş et al. also reported that certain respiratory conditions, including acute bronchitis and asthma, were more common among Syrian patients than among the local population (11). However, the broad classification of respiratory diseases used in our study and the inclusion of pediatric patients limit direct comparisons with these earlier findings. Studies conducted in countries neighboring Syria have also demonstrated that, in addition to infectious diseases, chronic conditions and other healthcare needs contribute substantially to healthcare utilization among refugee populations (15,16). Research involving Syrian refugees and host communities in Lebanon has highlighted the contribution of noncommunicable diseases, including hypertension, diabetes, and chronic respiratory diseases, to healthcare needs (16). These findings indicate that the health needs of migrant populations are not limited to acute infections and that a broader range of clinical requirements should be considered.

A particularly noteworthy finding was the decrease in the proportion of visits attributed to respiratory diseases, from 41.1% before December 8, 2024, to 37.5% afterward. In contrast, the proportions of gastrointestinal and musculoskeletal diseases increased from 12.6% to 13.3% and from 10.5% to 11.2%, respectively. International literature indicates that healthcare utilization among migrants may change over time and across healthcare systems, while diagnostic patterns may be influenced by factors such as age, sex, migration experiences, and access to healthcare (8,9).

The separate classification of obstetric and gynecological presentations in our study highlighted the distinct healthcare needs of this patient group. In a systematic review of studies conducted in European countries, Credé et al. reported that some studies had found higher rates of obstetric and gynecological service utilization among migrant women than among the host population (8). In a qualitative study conducted across seven European countries, van Loenen et al. identified language and cultural differences, limited knowledge of healthcare processes, and difficulties maintaining continuity of care as important barriers to healthcare access among newly arrived refugees (12). Studies involving Syrian refugees living in Lebanon and Jordan have likewise shown that access to and utilization of maternal health services are associated with the organization of national healthcare systems and the conditions under which services are delivered (17). These findings support the importance of separately assessing the healthcare needs of migrant women and their use of obstetric services.

Regarding ED dispositions, 95.5% of visits resulted in discharge, 3.8% in hospital ward admission, and 0.7% in intensive care unit admission. This distribution indicates that the vast majority of visits did not result in hospitalization. A study conducted in western Türkiye reported similar hospital admission rates among Syrian patients and the local population (10). A more recent study examining different refugee groups at a hospital in Türkiye reported that

approximately 8.5% of refugee visits resulted in hospital admission (18). However, these rates should not be directly compared with the overall hospital admission rate of 4.5% observed in our study, which combined hospital ward and intensive care unit admissions. Differences in patient selection, age groups, hospital level, and definitions of admission may account for variations between studies. International systematic reviews have similarly concluded that there is no single pattern applicable across all countries regarding whether migrants are hospitalized more or less frequently than the host population (9,14).

When outcomes were examined by diagnostic group, the hospital ward admission rate among obstetric and gynecological presentations was 47.3%, clearly distinguishing this group from the other diagnostic categories. This finding indicates that diagnostic category is an important factor associated with ED disposition. A systematic review examining ED utilization among migrants in Europe also reported that some studies had found higher rates of obstetric and gynecological presentations among migrant women (8).

Another important finding was that 87.0% of ICU admissions occurred in pediatric ICUs. Given that patients aged 1–17 years accounted for 53.0% of all visits, children and adolescents represented a substantial proportion of the study population. The World Health Organization emphasizes that age-specific care requirements and barriers to healthcare access should be considered when assessing the health needs of migrant and refugee children (19). In this context, our findings highlight the importance of planning pediatric emergency and intensive care capacity in hospitals serving migrant populations according to observed patterns of healthcare utilization.

One of the principal findings of our study was that the difference in hospital admission odds between the periods before and after December 8, 2024, remained statistically significant in the multivariable analysis. After adjustment for age, sex, diagnostic group, and time interval

of presentation, patients presenting during the pre-event period had 1.149 times the odds of hospital admission compared with those presenting during the post-event period. International literature provides an important context for interpreting this finding. In their systematic review published in 2024, Acquadro-Pacera et al. reported that ED utilization among migrants was higher than that of the host population in some studies and lower in others, with no consistent pattern in hospital admission rates (9). An earlier systematic review by Credé et al., which included studies from European countries, demonstrated that migrants may differ from the host population in terms of ED presentation times and reasons for attendance (8). These findings indicate that healthcare utilization cannot be explained by migrant status alone; country-specific healthcare systems and access conditions may also play important roles. Studies conducted in Lebanon and Jordan, countries neighboring Syria, have similarly reported that the scope and continuity of healthcare services for refugees may be affected by financing arrangements, eligibility criteria, and changes in health policies (15,17,20).

In the multivariable analysis, female sex was associated with lower odds of hospital admission than male sex. The distribution of diagnostic groups by sex, the characteristics of obstetric and gynecological presentations, clinical severity, and comorbidities are important considerations when interpreting this association. International studies have reported that healthcare utilization among migrants may vary according to sex and reason for presentation (8,14). Future studies examining sex-specific diagnostic distributions and reasons for admission in greater detail may help clarify this finding.

The multivariable analysis of diagnostic groups showed that the odds of hospital admission were higher for several diagnostic categories than for respiratory diseases, which served as the reference group. Studies conducted in Lebanon and Jordan have demonstrated that the healthcare needs of refugee populations extend beyond acute illnesses to include the management of chronic diseases and continuity of care (15–17,20). Accordingly, healthcare

planning should consider not only the volume of ED visits but also the care requirements and admission needs associated with different diagnostic groups.

The principal contribution of our study is its comparison of ED visits among Syrian patients before and after December 8, 2024, and its assessment of the association between presentation period and hospital admission using multivariable analysis. Although previous studies in Türkiye have described ED utilization patterns, diagnostic distributions, and hospital resource use among Syrian patients, the temporal comparison around this date allows healthcare utilization to be examined within a changing social context. Studies from European countries have described patterns of healthcare utilization and barriers to access among migrants, whereas research from Lebanon and Jordan has highlighted the importance of continuity of care and healthcare system policies in protracted refugee situations (8,17,20). Nevertheless, these studies should not be considered direct equivalents of the historical comparison conducted in our study. The limited availability of research directly comparing the periods before and after December 8, 2024, makes it difficult to compare our findings directly with those of similar studies. Therefore, the value of our study lies not in establishing a proven causal relationship between political transition and healthcare utilization, but in demonstrating differences in visit volume, diagnostic distribution, and hospital admission patterns around this date.

CONCLUSION

This study identified differences in ED visit volume, diagnostic distributions, and hospital admission patterns among Syrian patients before and after December 8, 2024. The decrease in the mean daily number of visits, the reduced proportion of respiratory diseases, and the higher odds of hospital admission during the pre-event period suggest that healthcare utilization patterns may change over time. These findings highlight the importance of regularly

monitoring current epidemiological data when planning healthcare services for migrant populations, addressing diverse clinical needs—particularly those related to child and women's health—and strengthening coordination between primary care and emergency services. However, further studies involving longer follow-up periods, multiple centers, population movement data, and indicators of clinical severity are needed to determine the factors underlying the observed differences after December 8, 2024.

Study Limitations

This study has several limitations. First, its retrospective design means that the findings are limited by the accuracy and completeness of the available records. Second, because the data were analyzed at the visit level, repeat visits and potential lack of independence between observations may have influenced the results. In addition, differences in the lengths of the study periods and unmeasured variables, including clinical severity, comorbidities, and access to healthcare services, may have introduced residual confounding. The single-center design also limits the generalizability of the findings. Therefore, the results should be interpreted as associations between the variables examined rather than as evidence of causal relationships.

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ADDITIONAL STATEMENTS

Conference Presentation

This study has not been presented at any scientific conference or meeting.

Ethics Approval

Ethical approval was obtained from the Non-Interventional Clinical Research and Publication Ethics Committee of Nevşehir Hacı Bektaş Veli University on 26 September 2025 (decision no. 2025.09.04). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Informed Consent

Given the retrospective design of the study and the use of existing medical records only, the requirement for informed consent was waived by the ethics committee.

Conflict of Interest

The authors declare that they have no conflicts of interest related to this study.

Funding

No financial support was received from any institution or organization for this study.

Use of Artificial Intelligence

Artificial intelligence tools were not used for data analysis, interpretation of the results, or the development of the scientific content of this study. AI-assisted tools were used during manuscript preparation for grammar and language editing. The authors are responsible for the scientific content and accuracy of the final manuscript.

Data Availability

The data used in this study are not publicly available due to patient confidentiality and ethics committee restrictions. They may be obtained by contacting the corresponding author, subject to the necessary ethical and institutional approvals.

Clinical Trial Number

Not applicable.

Author Contributions

MA conceived and designed the study, coordinated the research, contributed to data acquisition and interpretation, and drafted the manuscript. MOC, AV, FHC, NB, and OS contributed to the critical revision of the manuscript for important intellectual content. All authors reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

TABLES

Table 1. Demographic Characteristics, Clinical Presentation Categories, and Emergency Department Dispositions of Syrian Patients

Variable	Total, n (%) / value*
Age, years (mean ± SD)	18.7 ± 16.4
Age, years (median [IQR])	15 [4–29]
Age groups (years)**	
1-17	23,634 (53.0%)
18-29	10,207 (22.9%)
30-44	7,407 (16.6%)
45-59	2,249 (5.0%)
60-74	957 (2.1%)
75 years and older	136 (0.3%)
Sex	
Male	23,011 (51.6%)
Female	21,579 (48.4%)
Time of emergency department presentation	
00:00–03:59	1,910 (4.3%)
04:00–07:59	1,227 (2.8%)
08:00–11:59	11,365 (25.5%)
12:00–15:59	11,686 (26.2%)
16:00–19:59	9,957 (22.3%)
20:00–23:59	8,445 (18.9%)
Diagnostic group	
Respiratory	17,545 (39.3%)
Gastrointestinal	5,759 (12.9%)
Musculoskeletal	4,829 (10.8%)
Traumatic	4,067 (9.1%)
General / Control Examination	3,185 (7.1%)
Infectious	2,838 (6.4%)
Obstetric and gynecological	2,334 (5.2%)
Neurological	1,236 (2.8%)
Dermatological and allergic	1,095 (2.5%)
Cardiac / cardiovascular	754 (1.7%)
Genitourinary	532 (1.2%)
Psychiatric	187 (0.4%)
Endocrine and metabolic	125 (0.3%)
Toxicological and medication-related	73 (0.2%)
Hematological and oncological	31 (0.1%)
Emergency department disposition***	
Discharged	42,569 (95.5%)
Hospital ward admission	1,698 (3.8%)
Gynecology ward	1,139 (67.1%)
Adult ward	297 (17.5%)
Pediatric ward	262 (15.4%)
ICU admission	323 (0.7%)
Pediatric ICU	281 (87.0%)
Adult ICU	42 (13.0%)

*Data are presented as number and percentage [n (%)]. Percentages in the total column were calculated using all visits (n = 44,590), whereas disposition percentages were calculated using the total number of visits in each diagnostic group. The overall association between diagnostic group and disposition was assessed using the Pearson chi-square test; appropriate exact tests were used when expected cell counts were low. Statistical significance was set at $p < 0.05$.

**For patients younger than 1 year, age recorded in months was treated as 1 year.

*** The percentages for the hospital ward and ICU subcategories were calculated using the total number of admissions in the respective category as the denominator. ICU:Intensive Care Unit

Table 2. Comparison of Emergency Department Visits by Syrian Patients Before and After December 8, 2024

Variable	Before (n = 22,355) *	After (n = 22,235)*	p-value**
Mean daily visits (descriptive)	61.08	57.16	—
Age, years (median [IQR])	15 [4–29]	16 [4–29]	0.638
Age group			
1-17	11,966 (53.5%)	11,668 (52.5%)	0.010
18-29	5,039 (22.5%)	5,168 (23.2%)	
30-44	3,724 (16.7%)	3,683 (16.6%)	
45-59	1,100 (4.9%)	1,149 (5.2%)	
60-74	446 (2.0%)	511 (2.3%)	
75 years and older	80 (0.4%)	56 (0.3%)	
Sex			
Male	11,549 (51.7%)	11,462 (51.5%)	0.820
Female	10,806 (48.3%)	10,773 (48.5%)	
Time of ED presentation			
00:00–03:59	931 (4.2%)	979 (4.4%)	0.183
04:00–07:59	596 (2.7%)	631 (2.8%)	
08:00–11:59	5,638 (25.2%)	5,727 (25.8%)	
12:00–15:59	5,838 (26.1%)	5,848 (26.3%)	
16:00–19:59	5,057 (22.6%)	4,900 (22.0%)	
20:00–23:59	4,295 (19.2%)	4,150 (18.7%)	
Diagnostic group			
Respiratory	9,199 (41.1%)	8,346 (37.5%)	<0.001
Gastrointestinal	2,809 (12.6%)	2,950 (13.3%)	
Musculoskeletal	2,339 (10.5%)	2,490 (11.2%)	
Traumatic	1,859 (8.3%)	2,208 (9.9%)	
General / Control Examination	1,529 (6.8%)	1,656 (7.4%)	
Infectious	1,398 (6.3%)	1,440 (6.5%)	
Obstetric and gynecological	1,217 (5.4%)	1,117 (5.0%)	
Neurological	646 (2.9%)	590 (2.7%)	
Dermatological and allergic	554 (2.5%)	541 (2.4%)	
Cardiac / cardiovascular	390 (1.7%)	364 (1.6%)	
Genitourinary	201 (0.9%)	331 (1.5%)	
Psychiatric	105 (0.5%)	82 (0.4%)	
Endocrine and metabolic	60 (0.3%)	65 (0.3%)	
Toxicological and medication-related	32 (0.1%)	41 (0.2%)	
Hematological and oncological	17 (0.1%)	14 (0.1%)	
Emergency department disposition* **			
Discharged	21,283 (95.2%)	21,286 (95.7%)	0.026
Hospital ward admission	898 (4.0%)	800 (3.6%)	
ICU admission	174 (0.8%)	149 (0.7%)	

*The pre-event period was defined as December 8, 2023–December 7, 2024, and the post-event period as December 8, 2024–December 31, 2025. Percentages were calculated using the total number of visits in the respective period. Mean daily visit counts are presented descriptively; no p-value was calculated for this row because of temporal dependence. IQR: interquartile range.

**Data are presented as number and percentage [n (%)]. Age is expressed as median [IQR] and was compared using the Mann–Whitney U test. Categorical variables were compared using the Pearson chi-square test. The p-value for diagnostic distribution represents the overall comparison across all 15 diagnostic categories. Statistical significance was set at $p < 0.05$.

***ICU: Intensive care unit

Table 3. Emergency Department Dispositions by Diagnostic Group

Diagnostic group	Total, n (%)	Discharged n (%)	Hospital ward admission, n (%)	ICU admission* n (%)	p-value*
Respiratory	17,545 (39.3)	17,355 (98.9%)	100 (0.6%)	90 (0.5%)	<0.001
Gastrointestinal	5,759 (12.9)	5,574 (96.8%)	161 (2.8%)	24 (0.4%)	
Musculoskeletal	4,829 (10.8)	4,798 (99.4%)	29 (0.6%)	2 (0.0%)	
Traumatic	4,067 (9.1)	3,996 (98.3%)	68 (1.7%)	3 (0.1%)	
General / Control Examination	3,185 (7.1)	2,980 (93.6%)	71 (2.2%)	134 (4.2%)	
Infectious	2,838 (6.4)	2,739 (96.5%)	77 (2.7%)	22 (0.8%)	
Obstetric and gynecological	2,334 (5.2)	1,226 (52.5%)	1,103 (47.3%)	5 (0.2%)	
Neurological	1,236 (2.8)	1,201 (97.2%)	24 (1.9%)	11 (0.9%)	
Dermatological and allergic	1,095 (2.5)	1,094 (99.9%)	0 (0.0%)	1 (0.1%)	
Cardiac / cardiovascular	754 (1.7)	719 (95.4%)	22 (2.9%)	13 (1.7%)	
Genitourinary	532 (1.2)	510 (95.9%)	22 (4.1%)	0 (0.0%)	
Psychiatric	187 (0.4)	182 (97.3%)	4 (2.1%)	1 (0.5%)	
Endocrine and metabolic	125 (0.3)	110 (88.0%)	6 (4.8%)	9 (7.2%)	
Toxicological and medication-related	73 (0.2)	59 (80.8%)	7 (9.6%)	7 (9.6%)	
Hematological and oncological	31 (0.1)	26 (83.9%)	4 (12.9%)	1 (3.2%)	

*Data are presented as number and percentage [n (%)]. Percentages in the total column were calculated using all visits (n = 44,590), whereas disposition percentages were calculated using the total number of visits in each diagnostic group. The overall association between diagnostic group and disposition was assessed using the Pearson chi-square test; appropriate exact tests were used when expected cell counts were low. Statistical significance was set at $p < 0.05$. ICU: Intensive care unit

Table 4. Multivariable Logistic Regression Analysis of Factors Associated with Hospital Admission

Variable*	aOR (95% CI)	p-value*
Presentation period		
Before	1.149 (1.031–1.280)	0.012
Sex		
Female	0.763 (0.664–0.876)	<0.001
Age	0.995 (0.991–1.000)	0.068
Diagnostic group		
Dermatological and allergic	0.086 (0.012–0.615)	0.015
Endocrine and metabolic	12.698 (7.251–22.235)	<0.001
Infectious	3.262 (2.522–4.220)	<0.001
Gastrointestinal	3.069 (2.499–3.770)	<0.001
General / Control Examination	5.752 (4.613–7.173)	<0.001
Genitourinary	4.064 (2.538–6.509)	<0.001
Hematological and oncological	18.625 (6.897–50.296)	<0.001
Cardiac / cardiovascular	5.113 (3.488–7.496)	<0.001
Musculoskeletal	0.626 (0.426–0.919)	0.017
Neurological	3.001 (2.073–4.343)	<0.001
Obstetric and gynecological	94.361 (78.174–113.900)	<0.001
Psychiatric	2.515 (1.031–6.134)	0.043
Toxicological and medication-related	20.889 (10.325–42.260)	<0.001
Traumatic	1.605 (1.189–2.165)	0.002
Time of emergency department presentation		
00:00–03:59	1.718 (1.397–2.113)	<0.001
04:00–07:59	2.854 (2.340–3.481)	<0.001
08:00–11:59	1.253 (1.082–1.451)	0.003
16:00–19:59	0.913 (0.775–1.074)	0.272
20:00–23:59	0.894 (0.743–1.075)	0.232

*The dependent variable was hospital admission (hospital ward or intensive care unit admission), with ED discharge as the reference outcome. Results are presented as adjusted odds ratios (aORs) and 95% confidence intervals (CIs). The multivariable logistic regression model included age, sex, presentation period, diagnostic group, and time interval of presentation. The reference categories were male sex, the post–December 8, 2024 period, respiratory diseases, and the 12:00–15:59 time interval, respectively. Statistical significance was set at $p < 0.05$. aOR: adjusted odds ratio; CI: confidence interval.

FIGURES

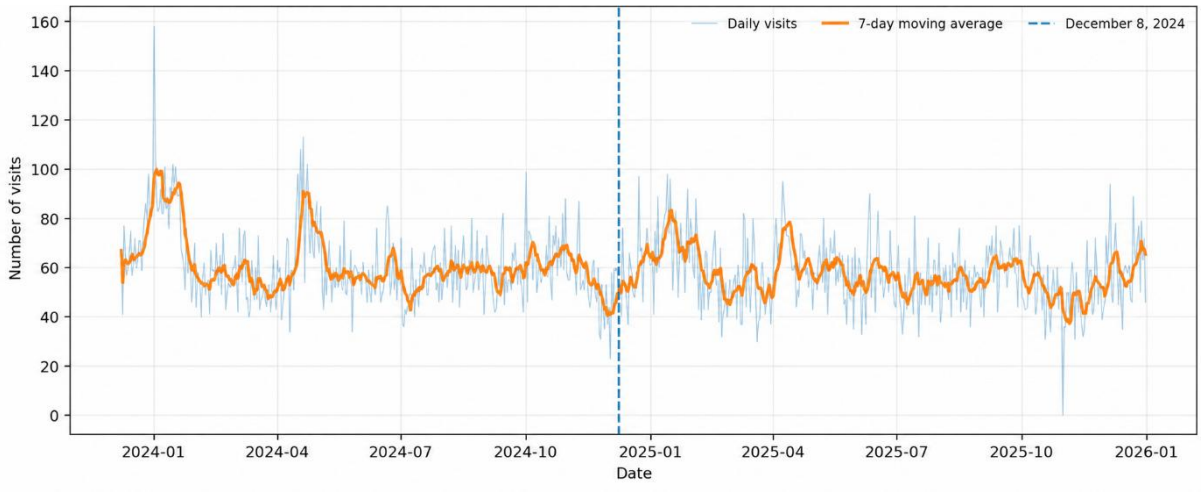


Figure 1. Daily Emergency Department Visits and 7-Day Moving Average Before and After December 8, 2024.

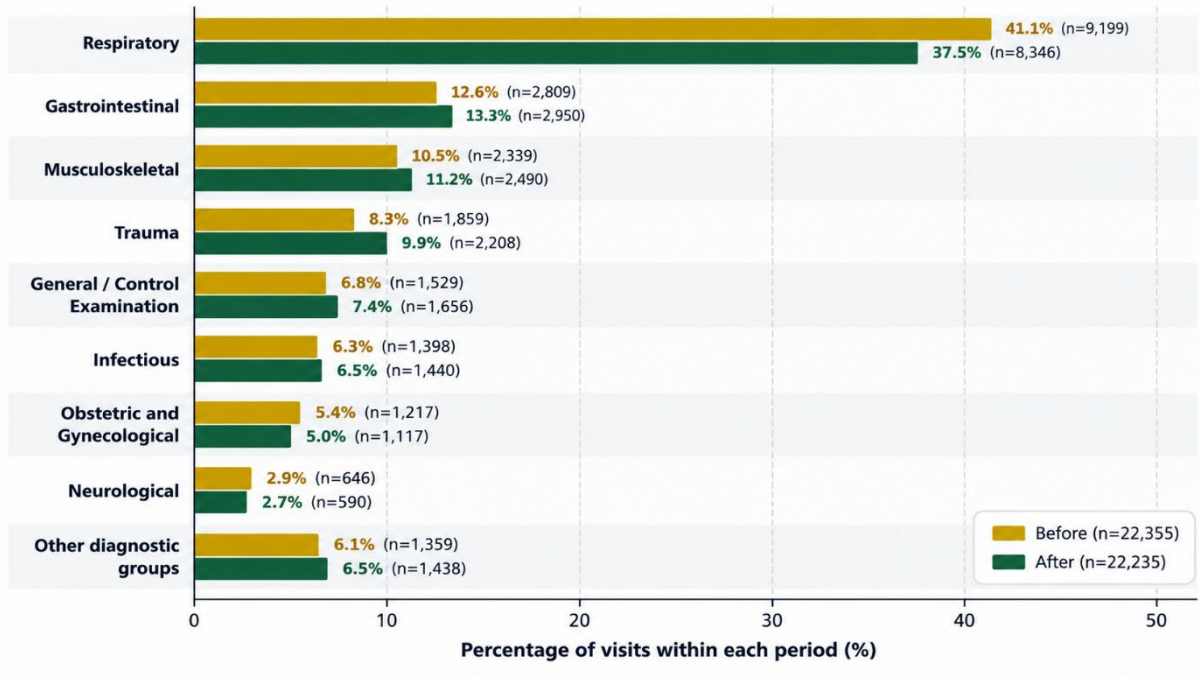


Figure 2. Distribution of Emergency Department Visits by Diagnostic Category Before and After December 8, 2024.