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Seasonal Influenza in Kosovo: An Epidemiological Analysis in the Municipality of Gjilan for the Period September–December at the Family Medicine Center "Nagip Rexhepi"

Abstract

Seasonal influenza is a common acute respiratory infection with a substantial impact on primary healthcare services worldwide. This study provides an epidemiological analysis of seasonal influenza in the Municipality of Gjilan, Kosovo, using routinely collected data from the Family Medicine Center "Nagip Rexhepi" for the period September–December 2023. A retrospective descriptive design was applied to the records of 240 patients diagnosed with seasonal influenza. Demographic variables, clinical manifestations, comorbidities, and temporal distribution were analyzed. The mean age of patients was distributed across all age groups, with 25.0% aged 0–14 years, 45.8% aged 15–49 years, 16.7% aged 50–64 years, and 12.5% aged 65 years or older. Females accounted for 54.2% of cases. The highest number of cases occurred in November (37.5%) and December (29.2%), confirming a clear seasonal peak in late autumn and early winter. The most frequent symptoms were fever (91.7%), cough (87.5%), sore throat (75.0%), fatigue (79.2%), myalgia (70.8%), and headache (66.7%). Comorbidities included hypertension (16.7%), diabetes (12.5%), chronic respiratory disease (10.4%), and cardiac disease (8.3%). Twelve patients (5.0%) were referred to secondary care, and eight cases (3.3%) were classified as severe. The findings highlight the important role of primary healthcare in the early detection, management, and surveillance of influenza and provide evidence to inform local prevention and vaccination strategies.

Keywords: seasonal influenza; influenza-like illness; epidemiology; primary healthcare; Kosovo; Gjilan; family medicine; outpatient care

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1. Introduction

Seasonal influenza is an acute viral respiratory infection that recurs annually and causes considerable morbidity and mortality. It places a continuous burden on health systems, particularly on primary healthcare, where most patients with influenza-like illness first seek medical advice. The disease is characterized by fever, cough, sore throat, headache, myalgia, and fatigue, and can lead to complications, especially in elderly individuals and in patients with chronic comorbidities.In Kosovo, data on seasonal influenza at the local and primary care levels are limited. National and regional surveillance systems exist but do not always provide detailed information on the distribution of cases within municipalities or primary care facilities. Local data are important for planning resources, tailoring vaccination campaigns, and understanding how influenza behaves in specific populations.The Municipality of Gjilan, in eastern Kosovo, is served by several primary care structures, including the Family Medicine Center "Nagip Rexhepi", which offers frontline services for acute respiratory infections. Describing the pattern of influenza cases in this setting can help clarify the seasonal dynamics of the disease and the profile of affected patients.International literature emphasizes the importance of municipal and facility-level analyses for influenza. These analyses help to identify age groups at risk, periods of peak activity, and the impact of comorbid conditions on disease severity. They also support the optimization of preventive strategies, including targeted vaccination, risk communication, and the organization of services during peak periods.The aim of this study is to provide a detailed epidemiological description of seasonal influenza cases recorded at the Family Medicine Center "Nagip Rexhepi" in the Municipality of Gjilan during the period September–December 2023. Specifically, the study describes demographic characteristics, clinical features, comorbidities, and temporal distribution of cases and discusses their implications for local public health practice and primary care planning.

2. Materials and Methods

2.1. Study Design and Setting

This research is a retrospective descriptive study based on routinely collected outpatient data. The study was conducted at the Family Medicine Center "Nagip Rexhepi" in the Municipality of Gjilan, Kosovo. The center provides primary healthcare services to both urban and rural populations and serves as a first point of contact for patients presenting with acute respiratory symptoms.The study period covered four consecutive months, from 1 September to 31 December 2023. This interval corresponds to the typical start and progression of the seasonal influenza period in the region.

2.2. Study Population

The study population consisted of all patients who presented to the center during the study period and received a clinical diagnosis of seasonal influenza. Diagnosis was based on clinical criteria consistent with influenza-like illness, including sudden onset of fever, cough, sore throat, and other systemic symptoms, as assessed by the attending family physician.

Inclusion criteria were:

- consultation at the Family Medicine Center "Nagip Rexhepi" between 1 September and 31 December 2023
- diagnosis of seasonal influenza recorded in the medical register.

Exclusion criteria were:

- incomplete records lacking core demographic or clinical data
- diagnoses indicating other respiratory conditions without suspicion of influenza.

2.3. Data Collection

Data were extracted from outpatient registers using a standardized data collection form. The following variables were collected:

- demographic data: age, sex, place of residence (urban or rural)
- temporal data: date of consultation
- clinical data: presence of fever, cough, sore throat, fatigue, myalgia, headache, and other documented symptoms
- comorbidities: hypertension, diabetes, chronic respiratory diseases, cardiac diseases, and other chronic conditions
- clinical course: referrals to secondary care and classification of severe cases.

A total of 240 records that met the inclusion criteria were included in the analysis.

2.4. Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of the Family Medicine Center "Nagip Rexhepi", Municipality of Gjilan, Kosovo (approval date: 15 January 2024). Patient confidentiality was safeguarded by anonymizing all identifiable information prior to data analysis.

2.5. Data Analysis

Data were entered into a statistical software package for descriptive analysis. Categorical variables were summarized using absolute frequencies and percentages. Continuous variables, where applicable, were summarized using means and standard deviations. The temporal distribution of cases was analyzed by month to identify the seasonal peak.Results are presented in text, tables, and a figure that summarizes the monthly distribution of influenza cases during the study period.

3. Results

3.1. Demographic Characteristics

During the period from September to December 2023, a total of 240 patients were diagnosed with seasonal influenza at the Family Medicine Center "Nagip Rexhepi".

Of these, 110 patients (45.8%) were male and 130 patients (54.2%) were female.

With respect to age distribution:

- 60 patients (25.0%) were aged 0–14 years
- 110 patients (45.8%) were aged 15–49 years
- 40 patients (16.7%) were aged 50–64 years
- 30 patients (12.5%) were aged 65 years and older.

This distribution shows that nearly half of the cases occurred among adults in the 15–49 year age group, followed by children and adolescents.

3.2. Temporal Distribution of Cases

Table 1 and Figure 1 present the temporal distribution of cases by month.

Out of the 240 cases:

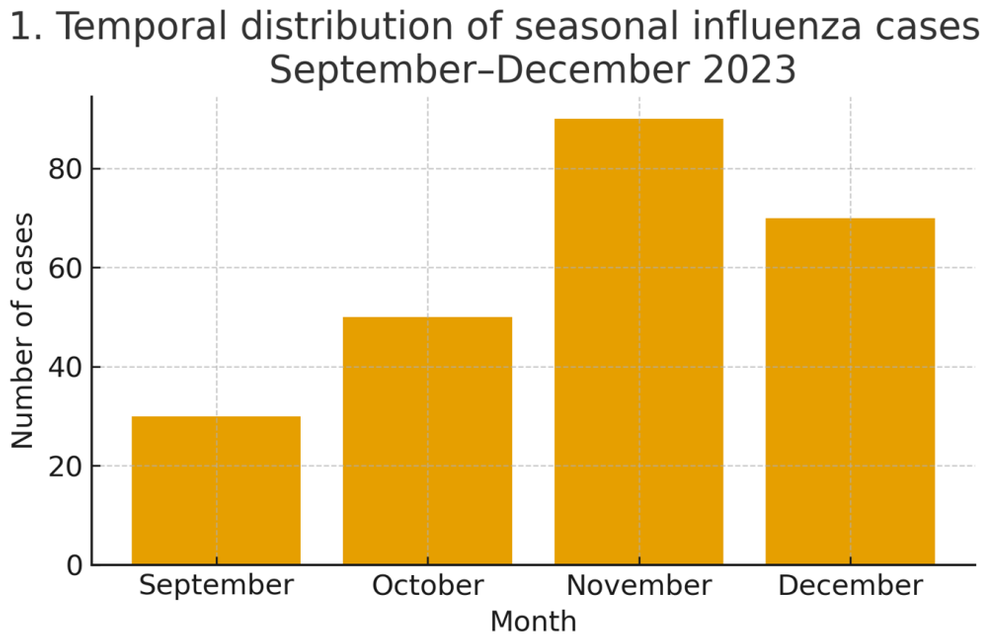
- 30 cases (12.5%) occurred in September
- 50 cases (20.8%) in October
- 90 cases (37.5%) in November
- 70 cases (29.2%) in December.

A moderate increase in the number of cases was observed in October, followed by a marked peak in November and a slight decline in December. This pattern confirms a seasonal rise in influenza activity in late autumn and early winter.

Table 1. Monthly distribution of seasonal influenza cases at the Family Medicine Center "Nagip Rexhepi", September–December 2023.

Month	Number of cases	Percentage of total (%)
September	30	12.5
October	50	20.8
November	90	37.5
December	70	29.2
Total	**240**	**100.0**

Figure 1. Temporal distribution of seasonal influenza cases by month, September–December 2023.



(A bar chart can be constructed showing the number of cases per month: 30, 50, 90, and 70.)

3.3. Clinical Presentation and Comorbidities

The most frequently recorded symptoms among the 240 patients were:

- fever in 220 patients (91.7%)
- cough in 210 patients (87.5%)
- sore throat in 180 patients (75.0%)
- fatigue in 190 patients (79.2%)
- myalgia in 170 patients (70.8%)
- headache in 160 patients (66.7%).

Most patients presented with combinations of these symptoms, typically fever accompanied by cough and sore throat.

Comorbidities were documented in a substantial proportion of patients:

- hypertension in 40 patients (16.7%)
- diabetes in 30 patients (12.5%)
- chronic respiratory diseases in 25 patients (10.4%)
- cardiac diseases in 20 patients (8.3%)
- other chronic conditions in 15 patients (6.2%).

Patients with comorbidities were more likely to be older adults, particularly those aged 50 years and above.

Table 2. Symptoms and comorbidities among patients with seasonal influenza (N = 240).

Variable	Number of patients	Percentage (%)
Fever	220	91.7
Cough	210	87.5
Sore throat	180	75.0
Fatigue	190	79.2
Myalgia	170	70.8
Headache	160	66.7
Hypertension	40	16.7
Diabetes	30	12.5
Chronic respiratory disease	25	10.4
Cardiac disease	20	8.3
Other comorbidities	15	6.2

3.4. Healthcare Utilization and Severity

Most patients were managed entirely at the primary care level with symptomatic treatment, clinical monitoring, and health education.

A total of 12 patients (5.0%) were referred to secondary care for further evaluation or management due to more severe clinical presentations or significant comorbidities. Eight cases (3.3% of the total) were classified as severe based on clinical assessment, including severe respiratory symptoms or the need for more intensive monitoring.

No deaths were recorded in the dataset during the study period.

4. Discussion

This study provides a detailed description of seasonal influenza cases managed at a primary care facility in the Municipality of Gjilan, Kosovo, during a four-month period. The findings confirm the presence of a clear seasonal pattern, with the highest number of cases observed in November and December. This pattern is consistent with influenza activity in temperate regions, where incidence typically rises in late autumn and peaks in winter.The age distribution observed in this study shows that almost half of the patients were adults aged 15–49 years, followed by children and adolescents aged 0–14 years. Although older adults represented a smaller proportion of total cases, they were more likely to present with comorbid conditions such as hypertension, diabetes, and cardiac disease, which are known risk factors for complications from influenza.The high frequency of classic influenza symptoms, particularly fever and cough, is in line with international descriptions of influenza-like illness. The combination of fever, cough, sore throat, and systemic symptoms such as fatigue and myalgia was common, reinforcing the value of clinical criteria in primary care settings where laboratory confirmation may not always be available.Comorbidities were documented in a notable proportion of patients, especially hypertension and diabetes. These conditions are recognized as important contributors to more severe disease and poorer outcomes. The fact that 5.0% of patients required referral to secondary care, and 3.3% were classified as severe, underlines the need for careful assessment of high-risk individuals in primary care.The results highlight the central role of primary healthcare in the detection and management of seasonal influenza. The Family Medicine Center “Nagip Rexhepi” functions as a frontline facility where early identification of cases is possible, and where surveillance data can be generated from routine practice. Strengthening the systematic recording and analysis of such data could significantly enhance local and national surveillance systems.From a public health perspective, the findings support the need for targeted vaccination campaigns, particularly for older adults and patients with chronic diseases. Educational activities focused on early consultation for influenza symptoms and adherence to vaccination recommendations could help reduce complications and healthcare utilization in peak months.

The study has several limitations. It is based on a single primary care center and may not capture all influenza cases in the municipality. The retrospective design relies on the completeness and accuracy of existing records. In addition, diagnoses were made on clinical grounds without systematic laboratory confirmation, which may lead to some misclassification with other respiratory infections. Despite these limitations, the study provides useful insights into the epidemiology of seasonal influenza at the local level and can inform future research and policy.

5. Conclusions

Seasonal influenza represents a significant workload for primary healthcare services in the Municipality of Gjilan, with a clear peak in late autumn and early winter. This study, based on 240 patients diagnosed at the Family Medicine Center "Nagip Rexhepi" during September–December 2023, shows that influenza affects all age groups and is characterized by typical clinical features and relevant comorbidities.The findings underscore the importance of primary care in influenza surveillance, clinical management, and prevention. They provide a factual basis for strengthening vaccination programs, improving risk communication, and planning resources in anticipation of future influenza seasons in Kosovo.

6. Patents

Not applicable.

Supplementary Materials

No supplementary materials were prepared for this study.

Author Contributions

Conceptualization, F.R.; methodology, F.R.; data curation, F.R.; formal analysis, F.R.; writing—original draft preparation, F.R.; writing—review and editing, F.R.; supervision, F.R. The author has read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the Family Medicine Center "Nagip Rexhepi", Municipality of Gjilan, Kosovo (approval date: 15 January 2024).

Informed Consent Statement

Not applicable. The study used anonymized data extracted from routine medical records.

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Conflicts of Interest

The author declares no conflicts of interest.

Appendix A

(If needed, detailed data tables or additional methodological descriptions can be added here.)

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