



What Extragenital Pathologies Predominate Among Parturients in Kyrgyzstan and Why?

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What Extragenital Pathologies Predominate Among Parturients in Kyrgyzstan and Why?

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Abstract

This study aims to identify the most common extragenital pathologies among parturients in Kyrgyzstan and explore the underlying factors contributing to their prevalence. Using medical data from maternity ward reports (January–October 2024) and statistical information on lifestyle factors such as diet and regional climate, the research identifies anemia and lipid metabolism disorders as the most prevalent conditions. Descriptive statistics, hypothesis testing, and regression analysis were applied to examine the relationship between these pathologies and lifestyle factors.

In future phases, the data will be processed using artificial intelligence (AI) techniques. AI has shown promising results not only in pattern recognition but also in various other applications, and it is expected to provide further insights in this context [1, 2, 3, 4, 5, 6].

Introduction

Extragenital pathologies, such as anemia and lipid metabolism disorders, significantly affect maternal health during pregnancy and childbirth. In Kyrgyzstan, these pathologies are highly prevalent, and various socio-economic, environmental, and lifestyle factors likely contribute to their occurrence.

The aim of this research is to identify the most prevalent extragenital pathologies and analyze their causes by examining dietary habits, regional differences, and socio-economic factors that may influence maternal health.

Data for this research were collected from maternity ward reports for the period from January to October 2024, and from the Kyrgyzstan Statistical Committee. The study employs methods such as descriptive statistics, correlation analysis, and regression analysis.

Methods

1. Medical Data Collection:

The data on extragenital pathologies were collected from maternity ward reports, specifically focusing on the top 3 most common pathologies: anemia, lipid metabolism disorders, and venous diseases.

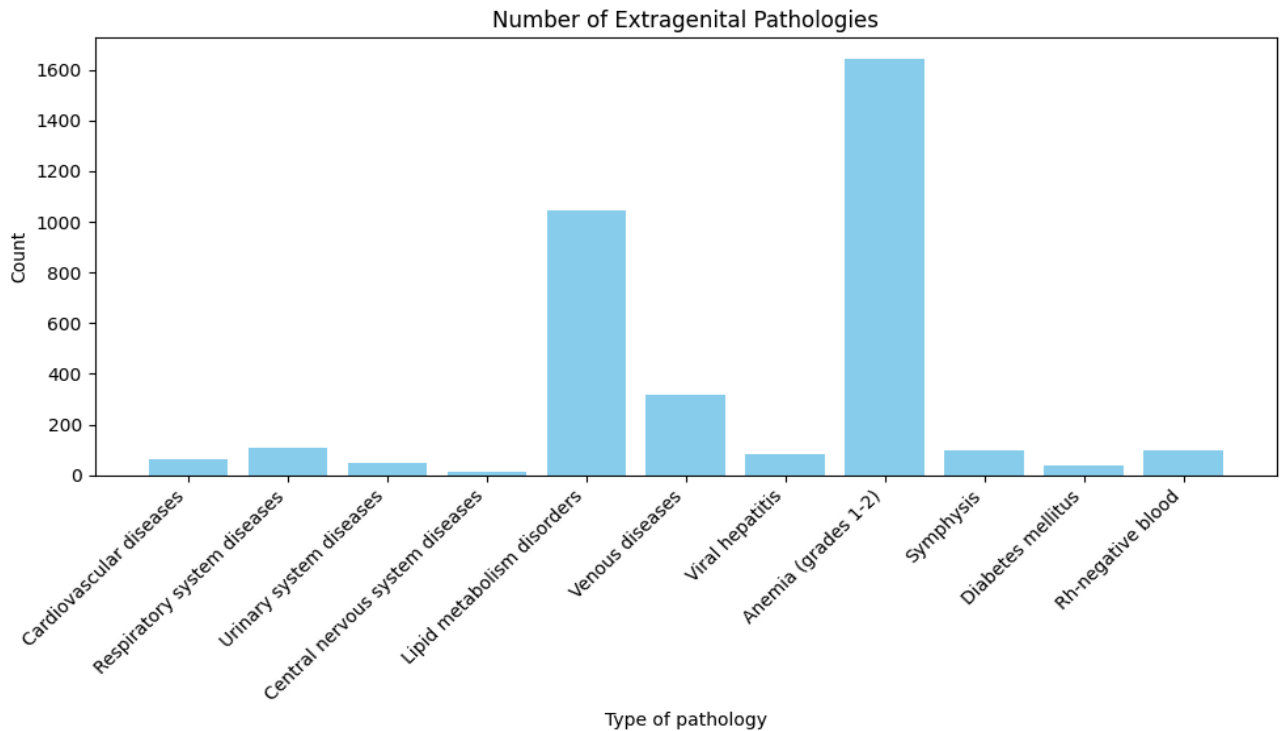


Figure 1: Number of Extragenital Pathologies

2. Socio-Economic and Lifestyle Data:

Data from the Kyrgyzstan Statistical Committee were used, including information on food consumption, the caloric value of the diet, and regional differences.

3. Analysis Methods:

- **Descriptive Statistics:** Mean, median, standard deviation, and variance were calculated to analyze the data on pathologies and lifestyle factors.

- **Normality Testing:** Shapiro-Wilk test and histograms were used to check the normality of the data distributions.

Figure 2.1: Histogram and KDE for Anemia

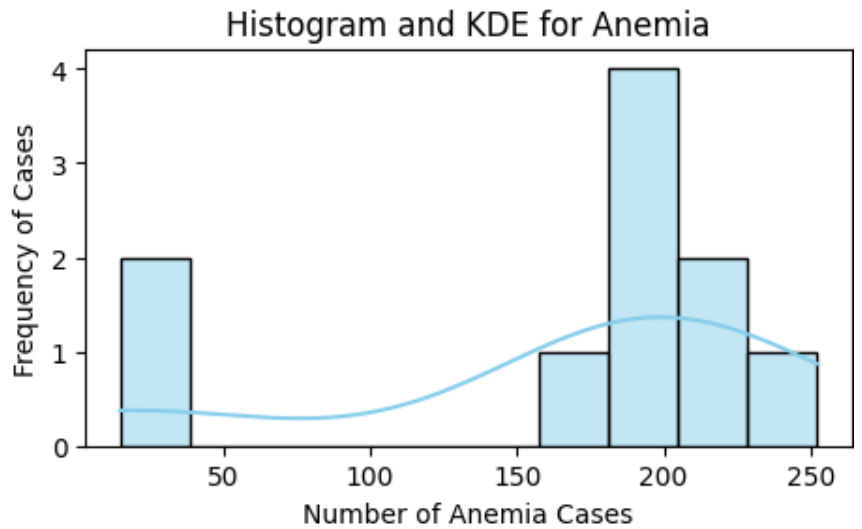


Figure 2.2: Histogram and KDE for Lipid Metabolism Disorder

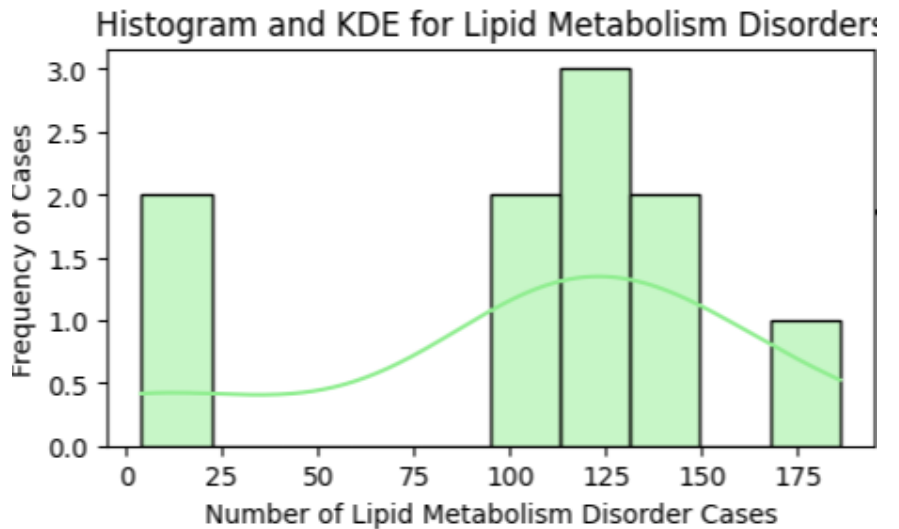
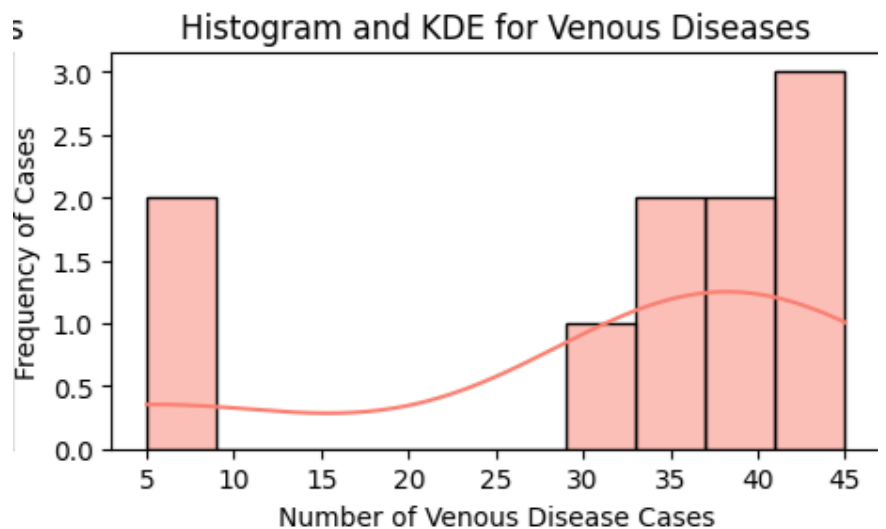


Figure 2.3: Histogram and KDE for Venous Diseases



- **Correlation Analysis:** Pearson's correlation was used to analyze the relationships between pathologies and lifestyle factors.

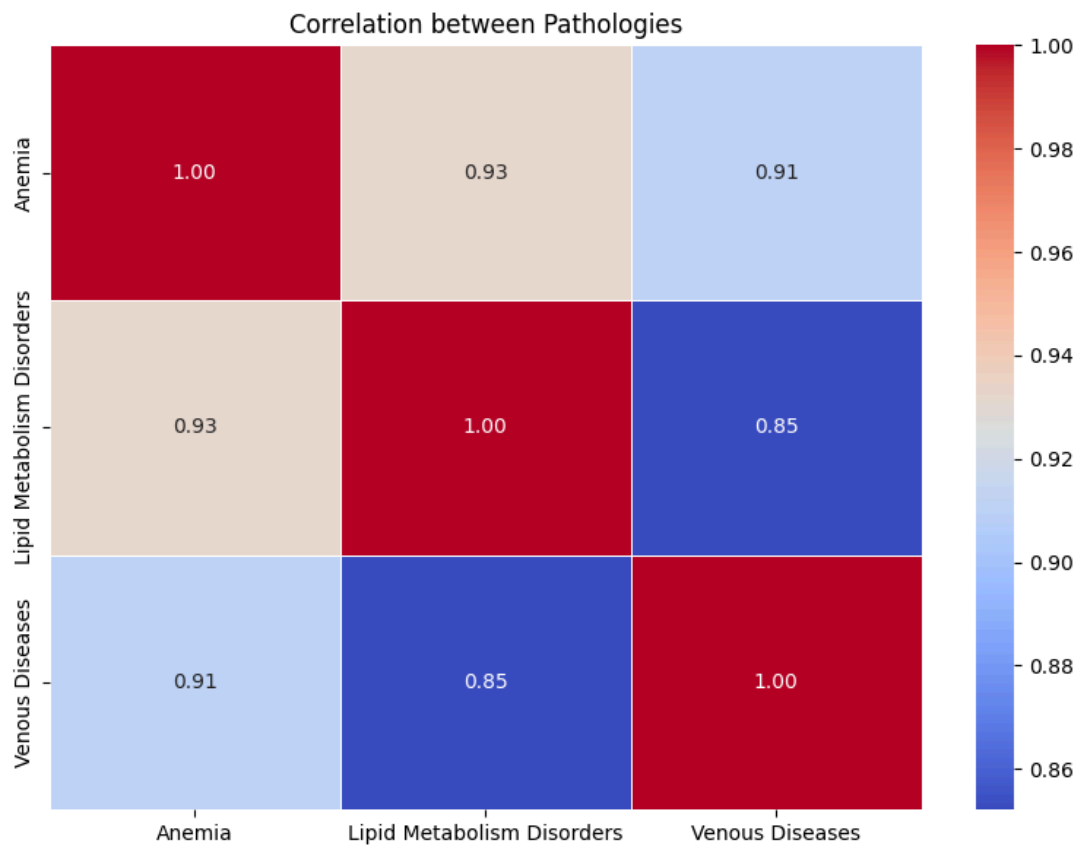


Figure 3: Correlation between Pathologies

- **Regression Analysis:** A linear regression model was used to determine the influence of dietary factors on the prevalence of anemia and lipid metabolism disorders.

4. Tools:

Python, using libraries such as pandas, seaborn, matplotlib, numpy, and statsmodels, was employed for statistical analysis and graph generation.

Results

1. Prevalence of Pathologies

The most common pathologies among parturients in Kyrgyzstan were:

- **Anemia** (225 cases per month on average).
- **Lipid Metabolism Disorders** (137 cases per month on average).
- **Venous Diseases** (55 cases per month on average).

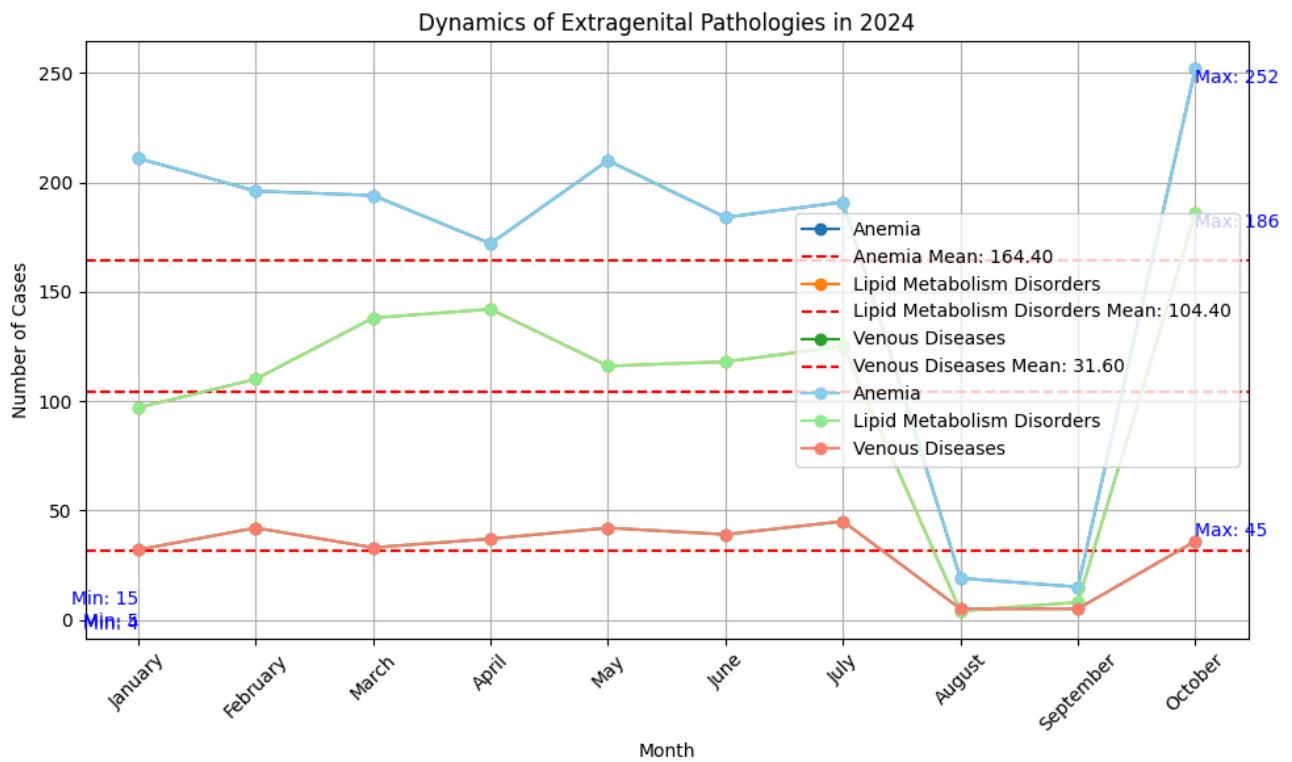


Figure 4: Dynamics of Extragenital Pathologies in 2024

The correlation between anemia and lipid metabolism disorders was found to be strong ($r=0.88$), suggesting a possible relationship between these two pathologies.

2. Food Consumption and Caloric Intake

Analysis of the statistical data on food consumption showed the following:

➤ **Average Consumption (kg per capita per year):**

- Bread and bread products: 10.07 kg (2023).
- Meat and meat products: 1.93 kg (2023).
- Fish and seafood: 0.10 kg (2023).
- Vegetables and fruits: 7.4 kg and 2.79 kg, respectively (2023).

➤ **Average Daily Caloric Intake (kcal):**

The average caloric intake increased slightly over the years, with the following breakdown (2023):

- Total caloric intake: **2304.3 kcal/day**.
- Protein intake: **63.3 g/day**.
- Fat intake: **71.1 g/day**.

3. Regional Differences

Regional differences in caloric intake were observed:

- **Jalal-Abad Region** had the highest caloric intake at **2616.6 kcal/day** (2023).
- **Batken Region** had the lowest caloric intake at **2087.7 kcal/day** (2023).
- **Bishkek** had a caloric intake of **2038.3 kcal/day** (2023), which is below the national average.

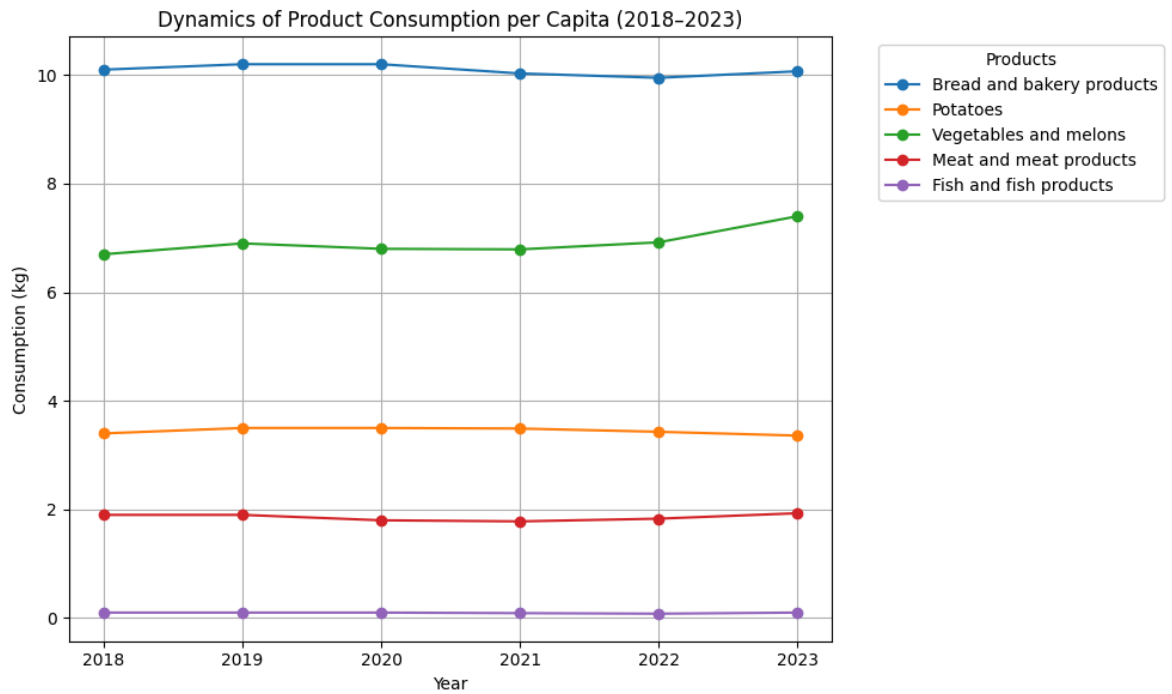


Figure 5: Dynamics of Food Consumption Per Capita (2018–2023)

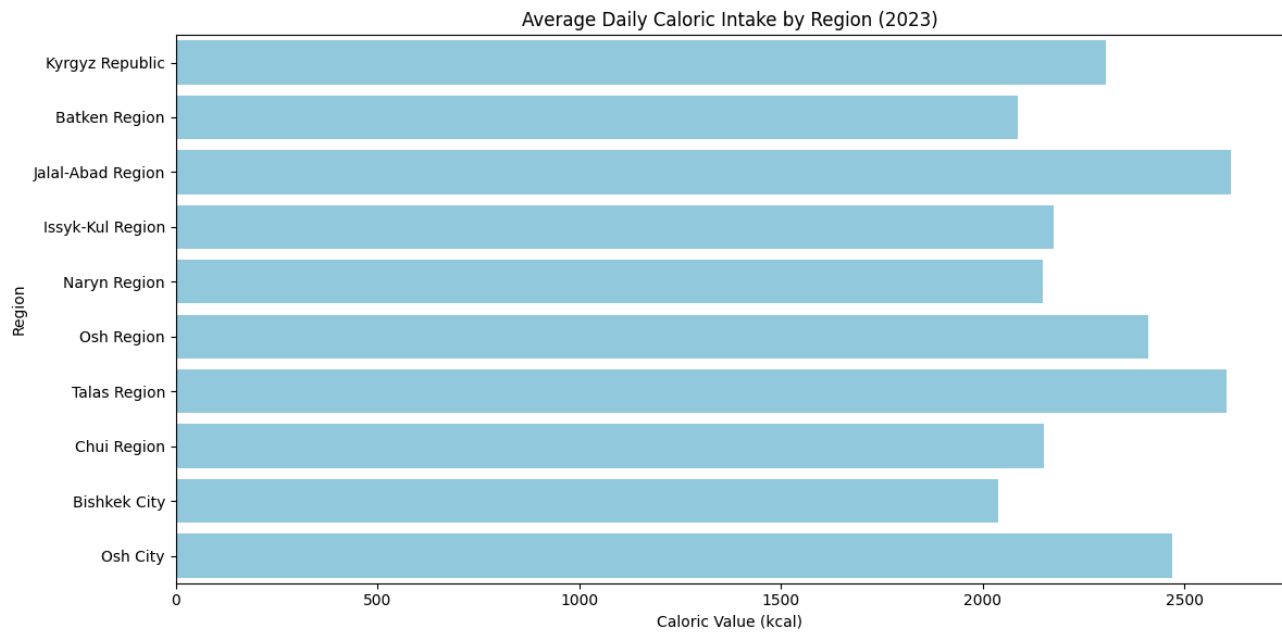


Figure 6: Average Caloric Intake by Region in 2023

4. Proteins and Fats by Region

In terms of protein and fat consumption, the following differences were observed:

Jalal-Abad had the highest protein consumption at **70.3 g/day** (2023).

Batken Region had the lowest protein consumption at **53.5 g/day** (2023).

Talas Region had the highest fat consumption at **79.9 g/day** (2023).

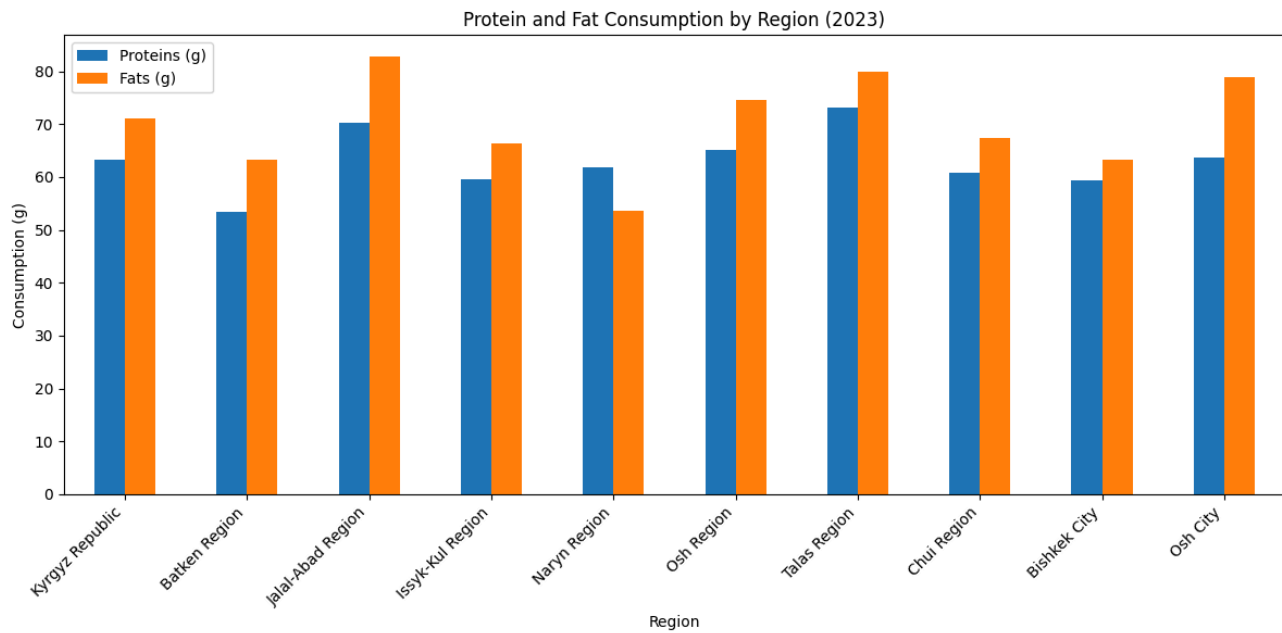


Figure 7: Protein and Fat Consumption by Region (2023)

5. Regression Analysis

The linear regression analysis revealed that:

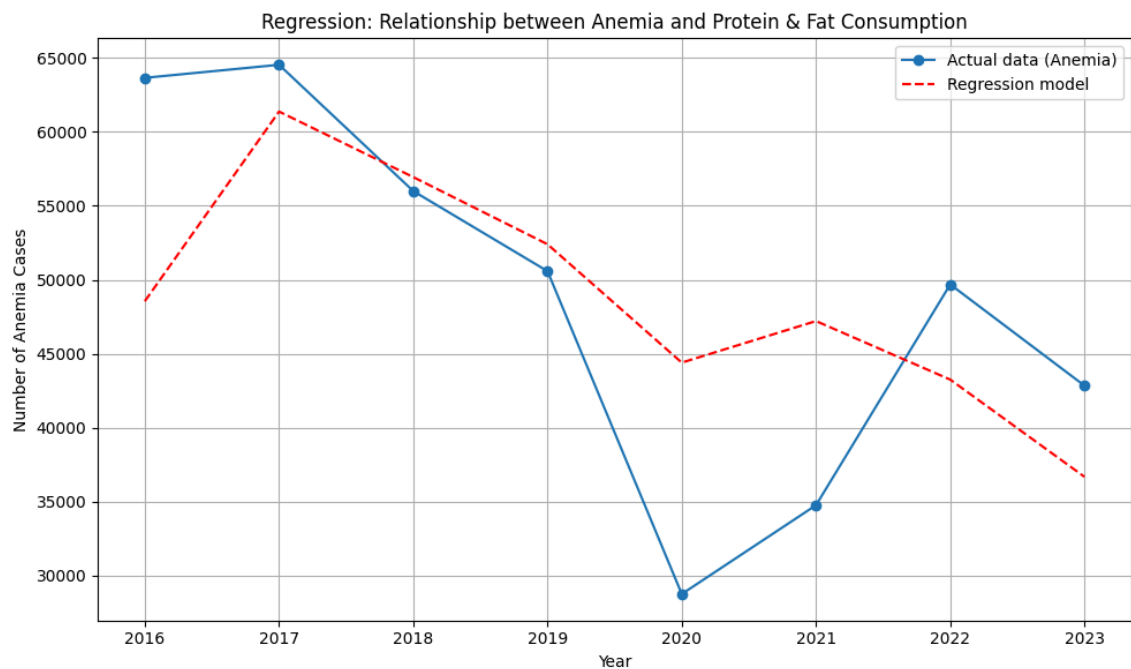
- The model explaining the relationship between anemia and nutrient intake (proteins and fats) was not statistically significant.
- The **R-squared value** of 0.377 indicates that the model explains only **37.7%** of the variation in anemia cases.
- **F-statistic (1.514)** and the **p-value (0.306)** for the overall model suggest that the model does not significantly explain the variation in anemia cases, as the p-value is greater than 0.05.

For the individual variables:

- **Protein consumption** (coefficient = -3266.62, $p = 0.591$): The analysis suggests that increasing protein intake by 1 gram would decrease anemia cases by approximately 3,266 cases. However, the high p-value (0.591) indicates that this relationship is **not statistically significant**.
- **Fat consumption** (coefficient = -967.23, $p = 0.744$): Similarly, increasing fat intake by 1 gram would reduce anemia cases by 967 cases, but again, the p-value (0.744) shows that this relationship is **not statistically significant**.

These results indicate that **protein and fat consumption do not significantly influence the prevalence of anemia** in the dataset. Thus, increasing protein and fat intake is **not a strong predictor** for reducing anemia cases based on the current model.

Further analysis with additional factors, such as iron intake or other dietary and environmental factors, may be needed to better understand the causes of anemia.



Discussion

1. Causes of Anemia:

The high prevalence of anemia can be attributed to insufficient consumption of iron-rich foods (meat, fish, vegetables) and low dietary diversity. The national average of 1.93 kg of meat per capita per year is far below the recommended intake for pregnant women, leading to iron deficiency anemia. Additionally, regions with lower caloric intake, such as Batken, exhibit higher rates of anemia.

2. Causes of Lipid Metabolism Disorders:

The high consumption of carbohydrates (bread, sugar) and fats (especially from animal sources) without adequate physical activity contributes to lipid metabolism disorders. The consumption of **71.1 g of fats per day** in 2023 exceeds recommended levels, particularly in urban areas.

3. Regional Disparities:

The data reveal that urban areas, such as Bishkek, have relatively low caloric intake compared to rural regions. The higher fat and protein intake in Jalal-Abad and Talas regions may be associated with more diverse diets, which could explain lower anemia rates in these areas.

4. Limitations of the Study:

- The study lacks detailed data on individual dietary habits and lifestyle factors.
- Genetic factors contributing to anemia and lipid metabolism disorders were not considered.
- Seasonal variations in food availability were not analyzed.

Conclusion

1. Prevalence of Extragenital Pathologies:

Anemia and lipid metabolism disorders are the most prevalent pathologies among parturients in Kyrgyzstan. The study identifies poor dietary habits, particularly insufficient protein and fat intake, as the main contributors to these conditions.

2. Recommendations:

- Increase the availability of iron-rich foods and promote balanced diets among pregnant women.
- Implement public health campaigns to educate the population on the importance of nutrition during pregnancy.
- Conduct regular screenings for anemia and lipid metabolism disorders to prevent complications during pregnancy.

3. Suggestions for Future Research:

Future research should focus on collecting more detailed data on individual dietary habits, physical activity, and socio-economic conditions. Additionally, genetic studies on anemia prevalence could provide valuable insights into the causes of these pathologies.

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