A RANDOMIZED STUDY ON THE EFFECTS OF GLUCOSE ON HUMAN HEALTH AT THE NOBLE INSTITUTE IN THE KURDISTAN REGION OF IRAQ

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ABSTRACT

This research examines the impact of glucose on human health, focusing on its physiological roles, metabolism, and associated disorders. The study is divided into multiple sections, covering the biological importance of glucose, regulatory mechanisms, and health implications such as diabetes. Data were collected from individuals at the Noble Institute, and statistical analyses were conducted to assess glucose levels across different demographics.

Keywords: Glucose metabolism, blood sugar regulation, diabetes, human health, Kurdistan Region, Erbil, physiological homeostasis

Introduction

Glucose, derived from the Greek word for "sweet," is an essential sugar that serves as the primary energy source for the human body. It is absorbed into the bloodstream and utilized by cells for metabolic processes. The regulation of glucose levels is crucial, as imbalances can lead to serious health conditions, including diabetes and cognitive dysfunctions. Maintaining glucose homeostasis involves complex physiological systems, including insulin secretion, gluconeogenesis, and glycogen storage (DerSarkissian, 2022).

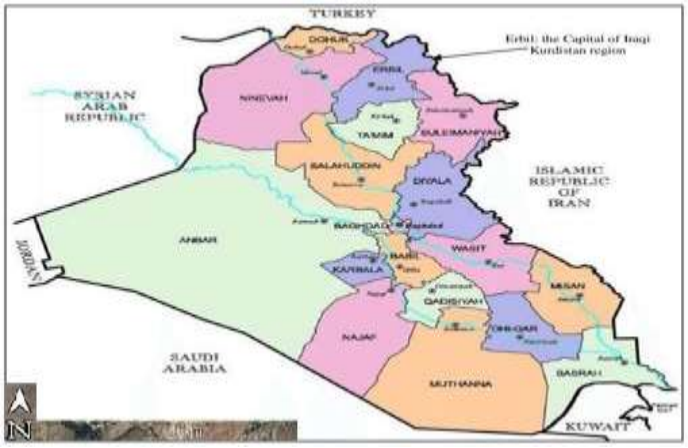
Glucose plays a vital role in cellular respiration, enabling energy production for various biological functions. It is stored in the liver and muscles as glycogen, which is broken down when energy is needed. Hormones such as insulin and glucagon regulate glucose levels, ensuring a balance between storage and utilization. Anomalies in glucose metabolism can result in hyperglycemia or hypoglycemia, each posing significant health risks. Research has shown that uncontrolled glucose levels are linked to an increased risk of cardiovascular diseases, neurodegenerative disorders, and metabolic syndromes (Novak, 2016). Furthermore, glucose metabolism is affected by lifestyle factors, including diet, physical activity, and stress. Studies indicate that individuals with sedentary lifestyles and poor dietary habits are more likely to experience glucose imbalances. Understanding the factors influencing glucose regulation is essential for developing preventive measures and treatment strategies to combat metabolic disorders (Madan & Syed, 2016).

Literature Review

Research indicates that glucose plays a fundamental role in brain function, with disruptions in glucose metabolism linked to neurological disorders (Novak, 2016). Additionally, studies have explored the prevalence of diabetes in different populations, emphasizing the importance of dietary and lifestyle factors in glucose regulation (Madan & Syed, 2016). The human body's control mechanisms, including genetic and nervous system interactions, maintain glucose stability, highlighting the significance of glucose monitoring in healthcare (Yager, 2019).

Several studies have examined the impact of glucose levels on cognitive function and overall well-being. Novak (2016) highlighted that the brain depends heavily on glucose as its primary energy source, with deficiencies leading to cognitive impairment and memory loss. Yager (2019) emphasized the interplay between glucose metabolism and neurophysiological functions, demonstrating that fluctuations in blood sugar levels can directly influence mood, energy levels, and cognitive efficiency. Moreover, Misra et al. (2016) investigated how excess sugar intake contributes to metabolic disorders, reinforcing the need for controlled sugar consumption in maintaining long-term health.

Description of the Study Area The study was conducted in Erbil, a city in northern Iraq's Kurdistan Region, covering approximately 18,170 square kilometers. Erbil is geographically positioned between the Greater and Lesser Zab Rivers, with coordinates extending from 35°27'N to 37°24'N latitude and 43°15'E to 45°14'E longitude (Hussein et al., 2019). The region's population and lifestyle factors provide valuable insights into glucose-related health trends.



[Hussein etl ,2019,2021,2022]

Methodology This study utilized quantitative methods to assess glucose levels in individuals from the Noble Institute. Participants were selected from different departments, including Nursing and Management. Blood glucose levels were measured using electrochemical glucometers, employing glucose oxidase-based test strips for accuracy (Ruff & Adrine, 2017). Data were analyzed statistically to identify trends and correlations between glucose levels and demographic factors.

Results Data from the Nursing and Management departments showed variations in glucose levels based on age and gender. The highest glucose level recorded was 156 mg/dL in a male participant, while the lowest was 74 mg/dL in a female participant. The average glucose levels were 107.53 mg/dL in the Nursing department and 99.7 mg/dL in the Management department.

Table 1(Nursing department)

N	Age	Gender	Result
1	21	female	114
2	21	female	138
3	20	female	104
4	18	female	96
5	23	female	138

6	**21**	male	147
7	22	male	106
8	19	male	101
9	19	male	132
10	23	male	103

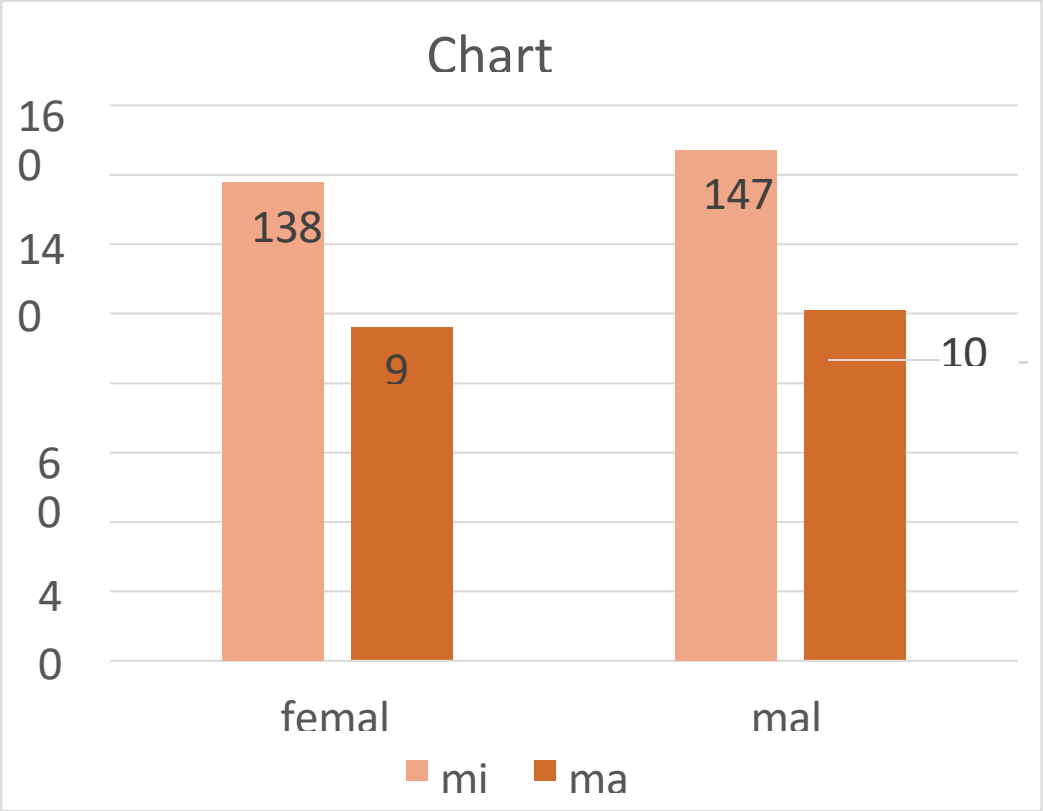


Figure 1: Nursing dep

Table2 (Management department)

No	Age	Gender	Result
1	19	female	89
2	20	female	86

3	21	female	95
4	23	female	74
5	20	female	105
6	26	male	92
7	25	male	91
8	26	male	114
9	25	male	156
10	20	male	95

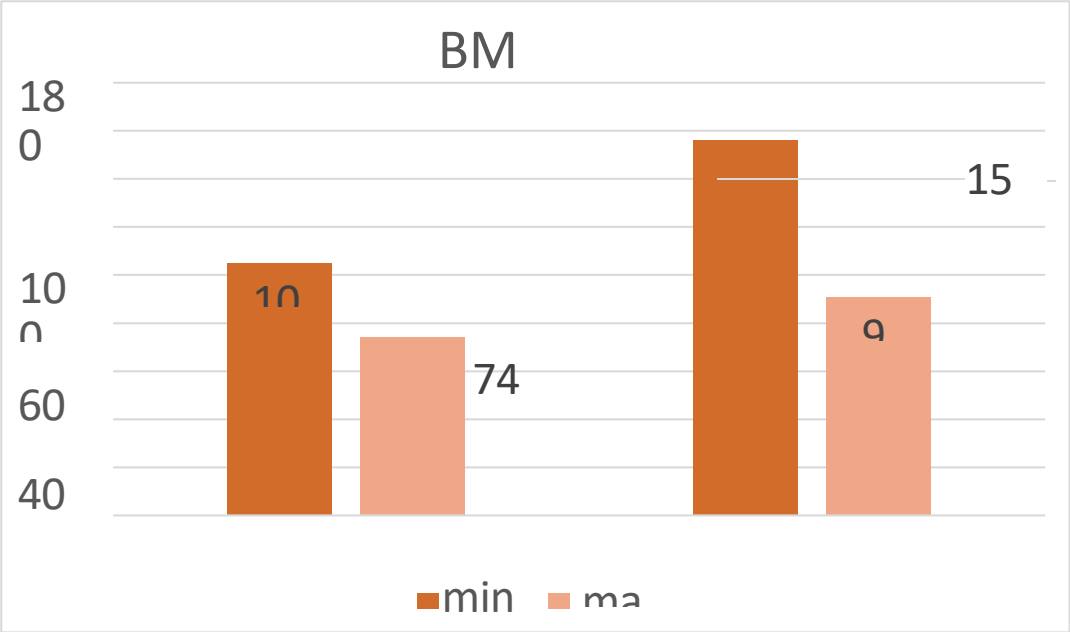


Figure 2: Management dep

Discussion

The results indicate that glucose levels vary significantly based on gender and department, with Nursing students displaying higher glucose levels on average. This trend may be attributed to dietary habits, stress levels, or physical activity. The findings align with previous studies that suggest lifestyle and

work-related stress influence glucose metabolism (Misra et al., 2016). Addressing these factors through education and preventive measures could enhance glucose regulation and overall health.

Conclusion

This study highlights the crucial role of glucose in human health and the importance of monitoring blood sugar levels. The findings suggest that specific populations, such as Nursing students, may be at a higher risk of glucose imbalances, emphasizing the need for targeted health interventions. Future research should explore the long-term implications of glucose variations and their association with chronic conditions.

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