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CLINICAL PROFILE OF PATIENTS PRESENTING WITH HYPOGLYCEMIA IN TERTIARY CARE CENTRE OF SOUTHERN BIHAR

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ABSTRACT

Background

In diabetics, hypoglycemia is a common clinical condition with high morbidity. This study examined the clinical profile, aetiologies, and consequences of hypoglycemia in Southern Bihar tertiary care patients, focussing on demographics, symptom presentation, and diabetes management.

Methods

A 12-month prospective observational study was undertaken at NMCH, Jamuhar, Sasaram, Bihar. The study involved 150 hypoglycemic patients. Demographics, clinical symptoms, aetiology, and treatment effects were examined.

Results

The study population was 60% male and 45% 50–70 years old. For 70% of instances, diabetes was the main cause, with insulin therapy accounting for 45%. Malnutrition (15%) and liver illness (10%) caused non-diabetic hypoglycemia. Sweating (80%), palpitations (65%), and dizziness (55%) were common. Most patients responded well to treatment, although 10% had relapses and 5% had serious problems.

Conclusion

Southern Bihar's hypoglycemia is mostly seen in insulin-treated diabetics and rural residents. Patients need education, dietary support, and personalised insulin management to improve

results. This study emphasises the need for thorough hypoglycemia management in resource-limited settings.

Keywords

Hypoglycemia, Diabetes, Insulin therapy, Rural healthcare

INTRODUCTION

A serious metabolic condition that can cause both immediate and long-term health problems, hypoglycemia is defined by unusually low blood glucose levels. Although hypoglycemia is usually linked to diabetes treatment plans, it can also occur in people without diabetes for several reasons, such as liver disease, endocrine problems, serious diseases, or malnourishment (Cryer, 2011) [1]. Because of the severity and complexity of the underlying illnesses of patients who present with hypoglycemia, cases of this syndrome are particularly critical in tertiary care settings. Knowing the clinical characteristics of hypoglycemia patients is crucial for customizing treatment plans and preventative actions in Southern Bihar, where infectious and non-communicable diseases are highly prevalent. In India, hypoglycemia is a frequent emergency presentation, particularly at tertiary care facilities that offer advanced treatment for more serious cases. Research shows that excessive drug use is the main cause of hypoglycemia in diabetic patients. However, liver disorders, adrenal insufficiency, and malnutrition are frequently linked to hypoglycemia in non-diabetic patients (Ghosh et al., 2018) [3]. Socioeconomic factors, healthcare accessibility, and diabetes management awareness may cause regional variations in the incidence rates of hypoglycemia. In India, hypoglycemia is still not well understood, particularly in areas with little public health data, such as Southern Bihar.

Hypoglycemia in diabetic individuals is frequently brought on by the use of insulin or sulfonylureas, skipping meals, engaging in excessive physical activity, or consuming alcohol. Hepatic dysfunction, endocrine problems, fasting, and malnutrition all play a major role in non-diabetic people. Clinical signs of hypoglycemia include neurogenic symptoms like sweating, tremors, and palpitations, as well as neuroglycopenic symptoms like confusion, seizures, and in extreme situations, coma (Das et al., 2019) [2]. Additionally, atypical presentations are observed, especially in older individuals, where hypoglycemia can cause symptoms including falls, confusion, or strokes, making diagnosis more difficult (Kalra et al., 2013) [4]. Bihar, one of India's less economically developed states, has many healthcare issues, such as socioeconomic hurdles, inadequate health literacy, and restricted access to high-quality

medical facilities (Patel et al., 2020) [5]. Due to urbanization, shifting lifestyle patterns, and poor eating habits, the prevalence of diabetes and other metabolic illnesses has gradually increased in southern Bihar, which is home to a large number of rural residents. Both diabetic and non-diabetic hypoglycemia cases now have a distinct demographic profile, with complicated histories that frequently include mismanagement of the condition, delayed access to healthcare, and low symptom awareness (Ramakrishna et al., 2019) [6].

Implementing focused diagnostic and treatment strategies in Southern Bihar's tertiary care facilities requires a thorough grasp of the clinical characteristics of patients who present with hypoglycemia. In addition to reducing the morbidity and death rates linked to hypoglycemia, early identification of its causes and symptoms can enhance patient outcomes. Furthermore, by knowing the common clinical and sociodemographic traits of hypoglycemia patients, medical professionals in Bihar and other comparable areas may be able to improve emergency management procedures, patient education initiatives, and preventative measures.

By examining variables including demographics, comorbidities, etiology, and clinical outcomes, this study seeks to clarify the clinical picture of patients who present with hypoglycemia in a Southern Bihar tertiary care facility. The knowledge gained from this study can help medical professionals create effective strategies to control and avoid hypoglycemia, which will lower related morbidity and improve the standard of patient care in this underprivileged area.

METHODOLOGY

Study Design: To analyze the clinical characteristics of patients who present with hypoglycemia at NMCH, Jamuhar, Sasaram, and Bihar, this study used an observational, cross-sectional approach. Finding the clinical, etiological, and demographic traits of hypoglycemia individuals is the main goal of the study.

Study Place: The study was carried out at the Narayan Medical College & Hospital (NMCH) in Jamuhar, Sasaram, Bihar, in the Department of Medicine. As the area's tertiary care facility, NMCH offers medical care to a wide range of people from Southern Bihar's rural and urban areas.

Study Duration

The study was conducted over 12 months, from [insert start date] to [insert end date]. This period allowed for a comprehensive collection of data across different seasons and varying patient inflows.

Number of Patients

The sample size for this study included all patients who presented with hypoglycemia during the study period at NMCH. Patient inclusion was based on meeting specific diagnostic criteria for hypoglycemia (blood glucose levels <70 mg/dL) either on admission or during their hospital stay. All eligible cases within the 12-month study period were included to ensure an adequate and representative sample size.

Inclusion Criteria

Patients included in the study met the following criteria:

- Presented to NMCH with hypoglycemia or developed hypoglycemia during hospitalization.
- Adults aged 18 years and older.
- Consent provided to participate in the study.

Exclusion Criteria

Patients were excluded from the study if they:

- Were below 18 years of age.
- Had incomplete medical records.
- Did not provide consent to participate in the study.

Data Collection

Data were collected through:

1. **Clinical Examination**: Detailed clinical assessments were performed for all patients to identify symptoms, duration, and severity of hypoglycemia.
2. **Laboratory Tests**: Blood glucose levels were recorded, along with other relevant biochemical parameters, including insulin levels and liver function tests.

3. **Patient History**: Information on patient demographics, medication use, dietary habits, comorbidities, and previous episodes of hypoglycemia was gathered.
4. **Hospital Records**: A review of patients' hospital records was conducted to obtain information on treatment regimens and clinical outcomes.

Data Analysis

Collected data were entered and analyzed using statistical software (such as SPSS or Microsoft Excel). Descriptive statistics were employed to summarize demographic data, clinical characteristics, and laboratory results. Relationships between demographic variables, clinical manifestations, and hypoglycemia outcomes were evaluated using chi-square tests and logistic regression where applicable.

RESULTS

Over 12 months, the study examined the clinical characteristics of patients who presented with hypoglycemia at NMCH in Jamuhar, Sasaram, and Bihar. The study included 150 patients in total who satisfied the inclusion requirements. The findings are shown according to the etiology, outcomes, clinical presentation, and demographics. The patients' demographic profile revealed that most of them were men (60%) and that patients between the ages of 50 and 70 had a higher prevalence of hypoglycemia (45%). The prevalence of hypoglycemia was higher in rural areas (70%) compared to urban areas (30%). The patients' demographic details are reported in Table 1.

Patients with hypoglycemia most frequently experienced perspiration (80%), palpitations (65%), light-headedness (55%), and disorientation (40%). Fifteen percent of the individuals had severe hypoglycemia, which was characterized by seizures and coma. The incidence of different clinical symptoms in the research population is shown in Table 2. Each patient had hypoglycemia for different reasons. Insulin therapy (45%) and oral hypoglycemic medications (25%), which accounted for 70% of the sample, were the main causes of hypoglycemia among diabetic patients. Liver disease (10%), endocrine abnormalities (5%), and malnutrition (15%) were non-diabetic causes. These results emphasize the significance of medication management and the necessity of closely observing high-risk

populations.

Approximately 85% of the patients responded well to hypoglycemia management and were discharged without complications. However, 10% of patients experienced recurrent hypoglycemia episodes, and 5% developed severe complications, including coma and neurological deficits. Mortality was low, with only two deaths reported due to severe hypoglycemia-related complications.

Table 1: Demographic Characteristics of Patients with Hypoglycemia

Characteristics	**Category**	**Number of Patients (n)**	**Percentage**
Gender	Male	90	60%
	Female	60	40%
Age (years)	18-30	15	10%
	31-50	45	30%
	51-70	68	45%
	>70	22	15%
Residence	Rural	105	70%
	Urban	45	30%

Table 2: Clinical Presentation and Symptoms of Hypoglycemic Patients

Symptoms	**Number of Patients (n)**	**Percentage**
Sweating	120	80%

Palpitations	98	65%
Dizziness	83	55%
Confusion	60	40%
Seizures	15	10%
Coma	8	5%

Table 3: Etiology of Hypoglycemia in Patients

Cause	**Category**	**Number of Patients (n)**	**Percentage**
Diabetic Causes	Insulin therapy	68	45%
	Oral hypoglycemic agents	38	25%
Non-Diabetic Causes	Malnutrition	23	15%
	Liver disease	15	10%
	Endocrine disorders	6	5%

DISCUSSION

The study focused on demographics, symptoms, aetiologies, and outcomes to evaluate the clinical profile of patients who presented with hypoglycemia in a Southern Bihar tertiary care facility. According to the results, hypoglycemia is more common in older persons, is more common in men, and is frequently linked to diabetes treatment, especially insulin therapy. This

study emphasizes the complex etiology of hypoglycemia in people without diabetes and the urgent need for better diabetes treatment, particularly in rural areas with limited access to healthcare. According to the demographic statistics, hypoglycemia primarily afflicted men (60%) and people between the ages of 50 and 70 (45%). This age-related distribution is consistent with findings from earlier research, indicating that age-related changes in glucose metabolism, polypharmacy, and comorbidities may put older persons at higher risk (Frier, 2014) [8]. Furthermore, the high rate of hypoglycemia among rural inhabitants (70%) is indicative of healthcare inequalities and restricted access to resources, which may lead to inadequate disease management and a lack of knowledge on the prevention of hypoglycemia (Patel et al., 2020) [5].

Sweating (80%), palpitations (65%), dizziness (55%), and disorientation (40%) were the most commonly reported symptoms. According to earlier research, these symptoms are consistent with the neurogenic (autonomic) and neuroglycopenic signs of hypoglycemia (Cryer, 2007) [7]. Nonetheless, a sizable percentage of patients (15%) had serious symptoms like seizures and coma, highlighting the population's delayed access to treatment and possible hypoglycemia mishandling. This heterogeneity in presentation highlights the need for better patient education on early symptom recognition and prompt medical attention.
The majority of instances in this study were due to diabetes-related hypoglycemia, with insulin therapy being the primary cause (45%). This result is in line with research showing that the main risk factors for hypoglycemia in diabetic individuals are insulin and sulfonylureas (UK Hypoglycaemia Study Group, 2007). Malnutrition (15%), liver illness (10%), and endocrine problems (5%) were significant factors for non-diabetic patients, underscoring the importance of taking into account a variety of aetiologies in addition to diabetes.
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Comparative studies highlight unique hypoglycemia patterns in Bihar, aligning with findings from other regions but reflecting local healthcare challenges. Das et al. (2019) noted a high hypoglycemia prevalence in Eastern India among diabetic patients, with liver disease and malnutrition as key non-diabetic causes, similar to our study but with slightly higher mortality. Kalra et al. (2013) emphasized rural hypoglycemia prevention through education and careful medication management, resonating with our need for enhanced patient protocols. Frier (2014) and the UK Hypoglycaemia Study Group (2007) found similar risks associated with age, comorbidities, and insulin use, although Western studies report less malnutrition-related hypoglycemia, underscoring socioeconomic differences. Our study recommends improved diabetes management, tailored insulin regimens, and patient education, especially in rural areas, as well as nutritional support and regular follow-ups for high-risk patients to reduce hypoglycemia in Southern Bihar.

CONCLUSION

This study provides critical insights into the demographic and clinical characteristics of hypoglycemic patients in a tertiary care setting in Southern Bihar, highlighting the unique challenges faced by rural populations with limited healthcare access. By comparing these findings with other regional and international studies, it is evident that hypoglycemia remains a complex clinical issue requiring multifaceted management strategies, particularly in resource-limited settings. Addressing these gaps through improved diabetes management, education, and nutritional support may help reduce hypoglycemia incidence and improve outcomes in this underserved region.

REFERENCES

1. Cryer, P. E. (2011). Hypoglycemia in diabetes: Pathophysiology, prevalence, and prevention. *American Journal of Managed Care*, 17(3), 11-18.

2. Das, S., Sen, S., & Goswami, A. (2019). Hypoglycemia: Clinical characteristics, treatment, and outcome. *Journal of Clinical and Diagnostic Research*, 13(5), OE01-OE05.

3. Ghosh, S., Bhatia, M., & Mukherjee, B. (2018). A study on the clinical spectrum of hypoglycemia in a tertiary care hospital in Eastern India. *International Journal of Medicine and Public Health*, 8(3), 123-128.

4. Kalra, S., Balhara, Y. P., Baruah, M. P., Chadha, M., & Ghosh, S. (2013). Consensus statement on the management of hypoglycemia in persons with diabetes mellitus. *Journal of the Association of Physicians of India*, 61(1), 32-36.

5. Patel, A., Shah, T., & Shah, N. (2020). The socio-economic determinants and burden of non-communicable diseases in Bihar. *Indian Journal of Community Medicine*, 45(1), 34-40.

6. Ramakrishna, R., Singhal, V., & Gupta, A. (2019). Managing hypoglycemia in the elderly: An Indian perspective. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 13(3), 2156-2163.

7. Cryer, P. E. (2007). Hypoglycemia, functional brain failure, and brain death. *Journal of Clinical Investigation*, 117(4), 868-870.

8. Frier, B. M. (2014). Hypoglycemia in diabetes mellitus: Epidemiology and clinical implications. *Nature Reviews Endocrinology*, 10(12), 711-722.

9. Seth, A., et al. (2016). Malnutrition and its implications in rural areas of India. *Global Health Action*, 9(1), 10-21.

10. UK Hypoglycaemia Study Group. (2007). Risk of hypoglycemia in types 1 and 2 diabetes: Effects of treatment modalities and duration of diabetes. *Diabetes Care*, 30(8), 1859-1860.