



Research Article

A RETROSPECTIVE STUDY ANALYSIS OF DETECTION OF EARLY WARNING SIGNS OF HYPOGLYCAEMIC EVENTS AT FORTIS HOSPITAL, B.G ROAD, BANGALORE

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Abstract

Hypoglycaemia is characterized by a reduction in plasma glucose concentration to a level that may induce symptoms or signs such as altered mental status and/or sympathetic nervous system stimulation. This condition typically arises from abnormalities in the mechanisms involved in glucose homeostasis. As a part of Nursing practice audit in Bannerghatta road Fortis hospital, Bangalore the nurses keenly monitored and reported Hypoglycaemic events which is a Nursing sensitive quality Indicator (Detecting early signs of Hypoglycaemia). The study done for the period of March 2023 to August 2023 and there were 2607 patients admitted with Diabetes mellitus. 78 Patients were reported with Hypoglycaemic events in six months which inclusive of Level-1 36, level 2-14 and Level 3-28. of Diabetic and Non-diabetic patients. The study reveals that 52 patients were diabetic and 26 were non-diabetic. As per the fish bone analysis it has been found that there are Patient, monitor, process and care related causes which leads to hypoglycaemia. Nurses play a pivotal role in reduction of hypoglycaemic events. They should have an adequate knowledge on Early detection of hypoglycaemia, identify the level of hypoglycaemia and applying relevant intervention. The incidents can be reduced by timely monitoring of blood glucose level, appropriate health education to patient and family regarding adequate food consumption, early detection of hypoglycaemia and appropriate medication management.

Keywords: NPO: Nil per oral, RT feed: Ryles tube feed, DM; Diabetes Melitus, MICU: Medical intensive care unit.

INTRODUCTION

Glucose is the primary metabolic fuel for the brain under physiologic conditions. Unlike other tissues of the body, the brain is very limited in supplying its glucose. Expectedly, the brain requires a steady supply of arterial glucose for adequate metabolic function. Potential complications can arise from an interruption in the glucose supply. As such, protective mechanisms to guard against low serum blood glucose (hypoglycaemia) have evolved in the body. Hypoglycaemia is characterized by a reduction in plasma glucose concentration to a level that may induce symptoms or signs such as altered mental status and/or sympathetic nervous system stimulation. This condition typically arises from abnormalities in the mechanisms involved in glucose homeostasis. The most common cause of hypoglycemia in patients with diabetes is injecting a shot of insulin and skipping a meal or overdosing insulin.

Levels of hypoglycaemia

As per international Hypoglycemia study group (IHSG) source reference -1 the definitions of clinically relevant levels of hypoglycemia are:

LEVEL-1	Glucose alert level $\leq$ 70 mg /dL ( 3.9mmol/L)
LEVEL-2	Glucose alert level $\leq$ 54 mg /dL ( 3mmol/L), indicating serious, clinically important hypoglycemia
LEVEL-3	Severe hypoglycemia associated with severe cognitive impairment requiring assistance for recovery

Causes:

- Drugs-Patients on OHA and insulin therapy
- Critical illness-Hepatic, Renal, Cardiac failure, sepsis
- Hormone deficiency: cortisol, glucagon, and epinephrine
- Non islets tumour
- Endogenous hyperinsulinism

Common symptoms of Hypoglycaemia:

- Fast heartbeat
- Shaking
- Sweating
- Nervousness or anxiety
- Irritability or confusion
- Dizziness
- Hunger

Aims and objectives

Aims of the study

The aim of the study was designed to assess the detection of early warning sign of hypoglycaemic events in preventing and reducing the incidence of Hypoglycemia.

Objectives of the study

1. To detect the early warning sign of hypoglycaemia
2. To identify the process compliance to prevent Hypoglycaemia
3. To identify the specific Nursing interventions for prevention of Hypoglycaemic events

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**Back ground**

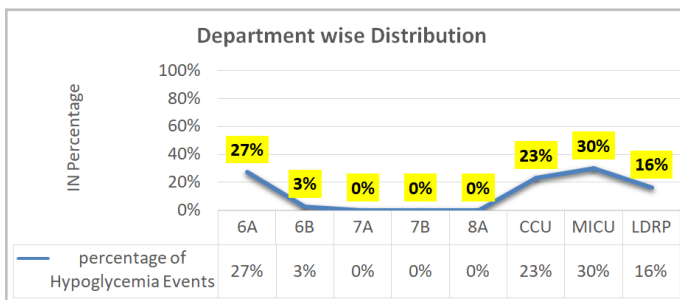
As a part of Nursing practice audit in BG fort is the nurses keenly monitored and reported Hypoglycaemic events which is a Nursing sensitive quality Indicator (Detecting early signs of Hypoglycaemia). The study done for the period of March 2023 to August 2023 and there were 2607 patients admitted with Diabetes mellitus. 78 Patients were reported with Hypoglycaemic events in six months which inclusive of Diabetic and Non- diabetic patients

**Table 1. Level-wise Analysis of Hypoglycemia**

Month//level	Level-1	Level-2	Level-3
March-23	6	3	1
April 23	6	0	3
May -23	12	1	3
June-23	1	3	3
July 23	8	5	7
August-23	3	2	11
Total	36	14	28

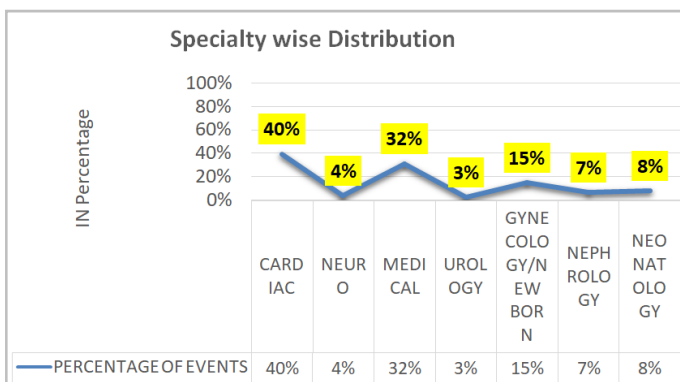
Above table represents the level wise Hypoglycaemia from March 2023 to August 2023. Among 78 hypoglycaemic events 36(46.15%) patients were reported with Level-1 hypoglycemia, 14(18%) patients were reported with Level- 2 hypoglycaemia and 28 (35.89%) patients were reported with level -3 Hypoglycaemia.

**Table 2. Department wise distribution of Hypoglycaemic Events**



Above table represents the department wise distribution of hypoglycaemic events. The highest percentage of hypoglycaemia in MICU (30%) whereas Lowest (0%) in 7<sup>th</sup> and 8<sup>th</sup> Level(wards) .

**Table 3. Speciality wise distribution of Hypoglycaemic Events**

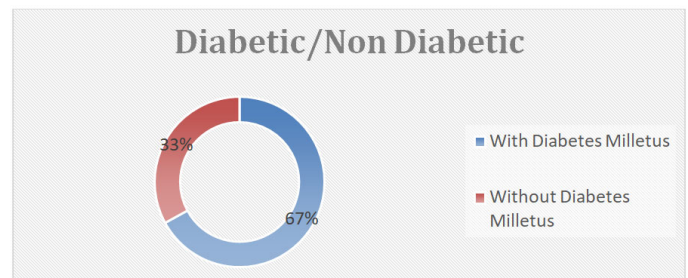


Above table represents the speciality wise distribution of hypoglycaemic events. The highest percentage of hypoglycaemia in cardiac speciality (40%) whereas Lowest in urology (3%).

**Detail analysis of hypoglycaemic events**

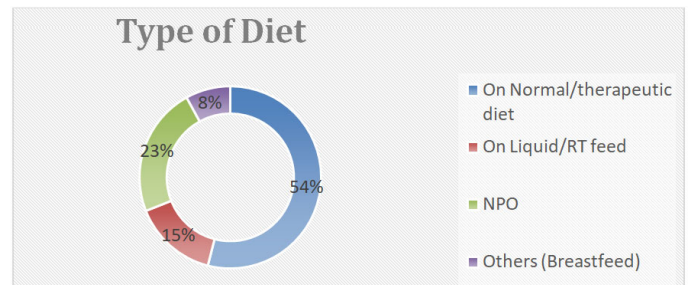
Below graphs represents the detail analysis of the contributory factors of Hypoglycaemia.

**Graph 1.**



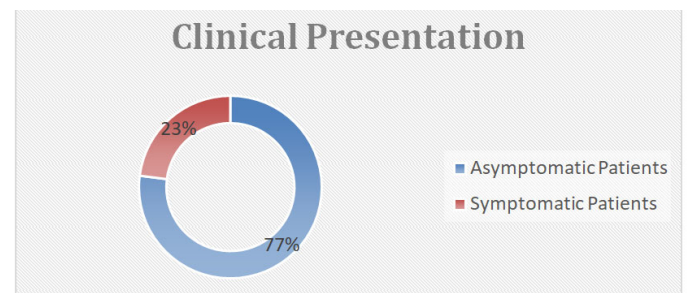
Graph 1- represents 67% (52) of patients with DM and 33% (26) with Non DM.

**Graph 2.**



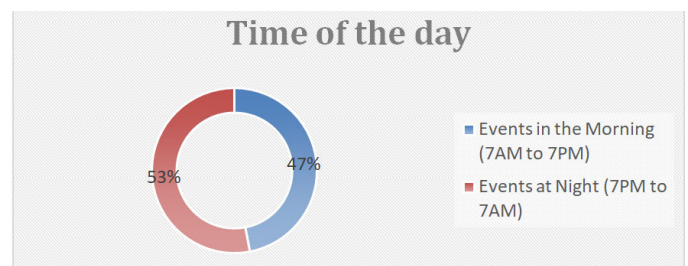
Graph -2 represents 54% of patients with Normal/therapeutic diet, 23% of patients on NPO, 15% with Liquid/RT feed and 8% are neonate on breast feeding.

**Graph 3.**



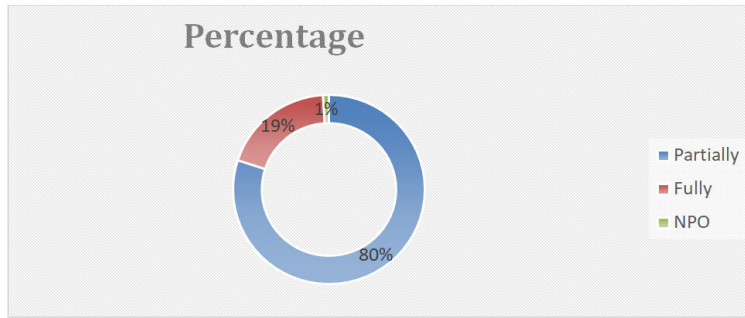
Graph-3 represents 77% of patients had asymptomatic hypoglycaemic events and 23% patients had symptomatic hypoglycaemic events.

**Graph 4.**



Graph 4- represents 47% patients had hypoglycaemic events during day time and 53% of patients had hypoglycaemic events during night time.

Graph 5. Consumption of food

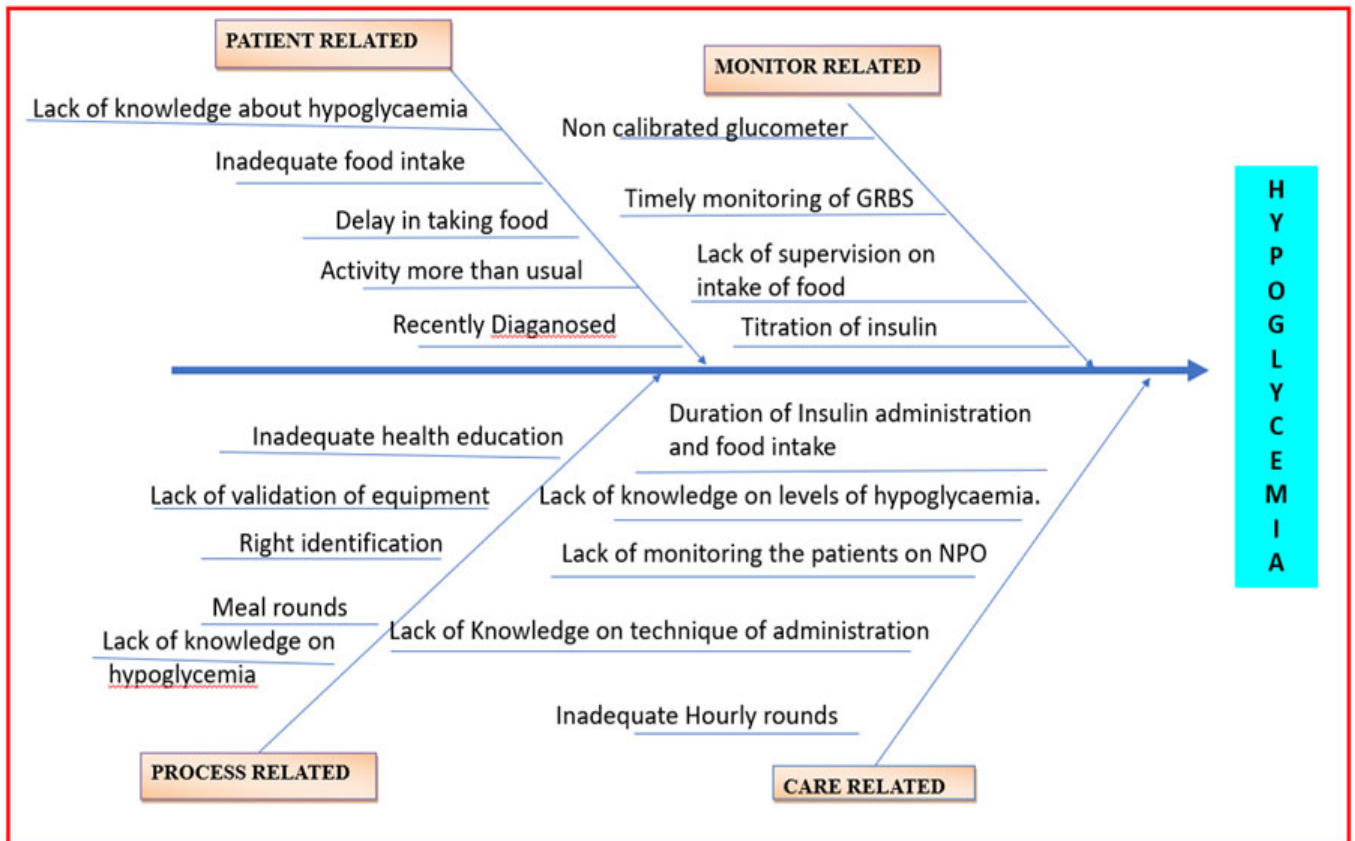


Graph 5- represents 80% of patients had partial consumption of food, 19% of patients consumed complete food and 1% patients were with NPO.

**Overall analysis points and plan of action**

Sl.No	Analysis pointers	Plan of Action
1	Cardiac patients contribute more towards hypoglycemic events	<ul style="list-style-type: none"> <li>➤ Strengthen the meal rounds.</li> <li>➤ Close monitor and Ensure that the patients have consumed adequate diet</li> <li>➤ If patients are not taking adequate diet escalate to the doctors for further management.</li> <li>➤ Health education on hypoglycemia and consequences to patient and family.</li> </ul>
2	ICU patients (CCU+MICU) have shown maximum contribution towards a hypoglycemic event	<ul style="list-style-type: none"> <li>➤ Close monitor the food consumption.</li> <li>➤ Ensure timely and adequate feeds</li> <li>➤ Adjust the dosage of insulin on the basis of GRBS readings with doctors consultation.</li> <li>➤ Health education on hypoglycemia and consequences to patient and family.</li> </ul>

## FISH BONE ANALYSIS ON HYPOGLYCEMIA



## DISCUSSION

The retrospective study done for the period of March 2023 to August 2023 and found that 78 Patients were reported with Hypoglycaemic event which inclusive of Level-1 36, level 2-14 and Level 3-28. The study reveals that 52 patients were diabetic and 26 were non -diabetic. As per the fish bone analysis it has been found that there are Patient , monitor, process and care related causes which leads to hypoglycaemia.

## Conclusion

Hypoglycaemia is commonly affecting the diabetic and Non-diabetic patients and it is preventable. The incidents can be reduced by timely monitoring of blood glucose level, appropriate health education to patient and family regarding adequate food consumption, early detection of hypoglycaemia and appropriate medication management.

Nurses play a pivotal role in reduction of hypoglycemic events. They should have an adequate knowledge on Early detection of hypoglycaemia, identify the level of hypoglycaemia and applying relevant intervention.

## REFERENCES

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