“APPROACH TOWARDS HYPOGLYCEMIA DURING HEMODIALYSIS: MOVING FROM REACTIVE TREATMENT TO PROACTIVE PREVENTION”

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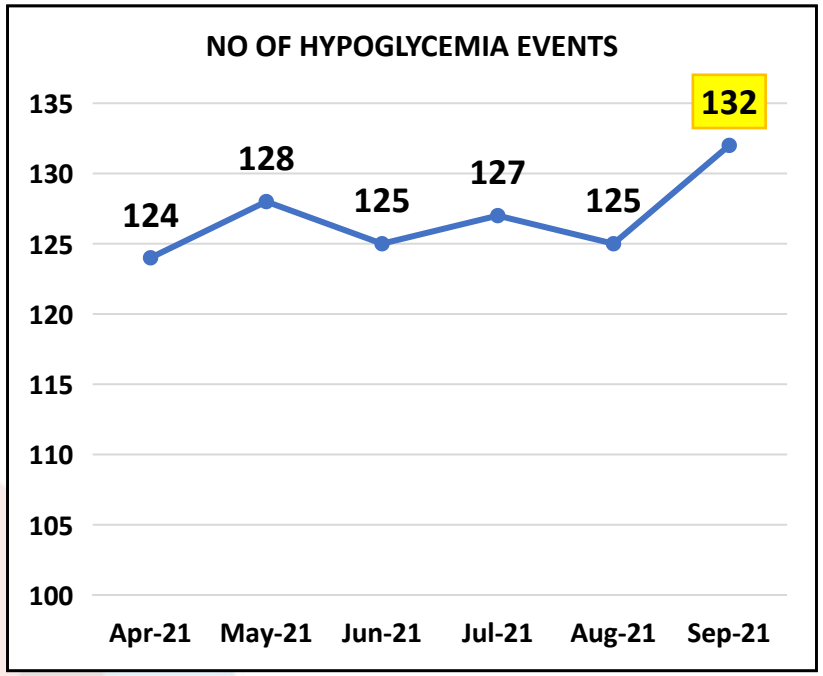
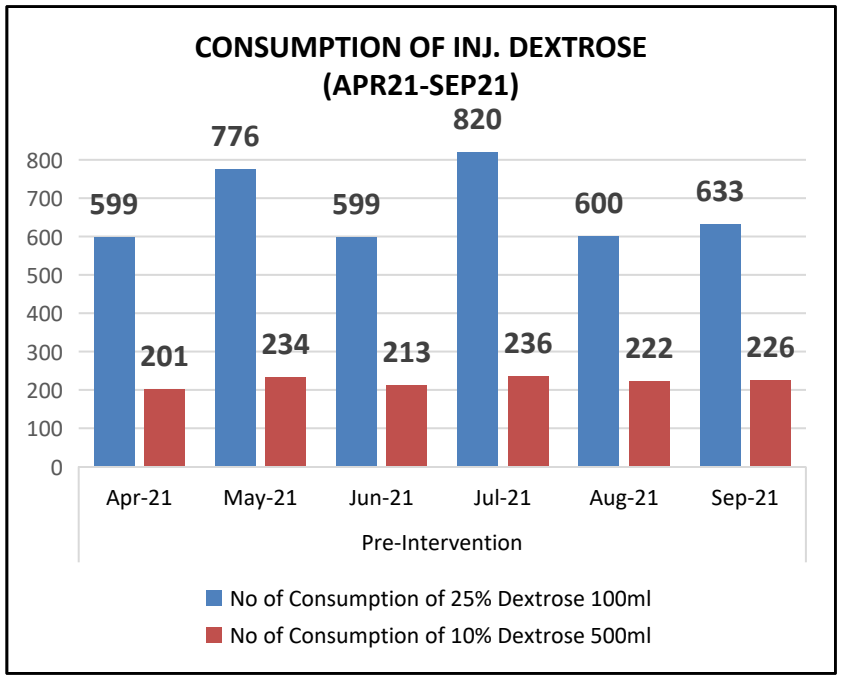
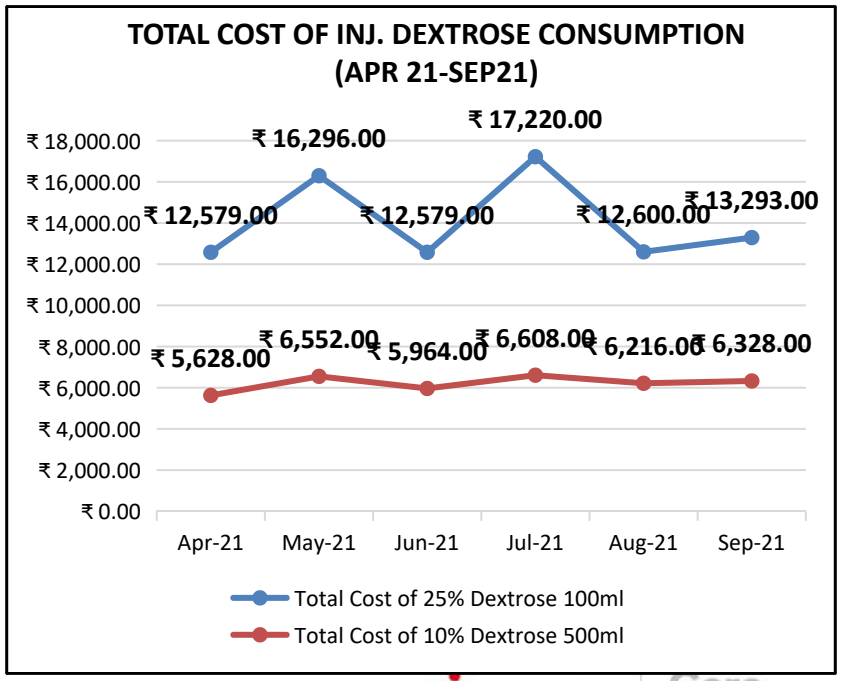
BACKGROUND

1. 25 Bedded Outpatient Dialysis unit with 24x7 access.
2. Average footfall of 75 patients/day with 2000 monthly dialysis is performed.
3. Patients have frequent episodes of hypoglycemia (blood glucose less than 100mg/dl) during dialysis.
4. **The average number of hypoglycaemia events in our dialysis patients was 126 (Apr21-Sep21).**
5. Standard treatment in treating hypoglycemia is administering Inj. Dextrose 25% or 10% during the event.
6. **Two such events of hypoglycemia worsened to Code Blue activation.**
7. Excess Stock holding of Inj. Dextrose found during accreditation. The monthly average quantity consumption of Inj. 25% Dextrose 100ml went up to 671 and 10% Dextrose 500ml was 222 (Apr21-Sep21). Average total cost of Inj. Dextrose 25% and 10% was Rs.20,310/month (Apr21-Sep21).
8. In view of ensuring good patient safety this mandated us to look into the recurrent problem of hypoglycaemia and find possible solutions to prevent it.







AIM AND OBJECTIVES

AIM-To reduce the incidence rate of hypoglycaemia from 6% to <3% among patients undergoing haemodialysis.

OBJECTIVES

- To identify patients who have frequent episodes of hypoglycaemia during haemodialysis.
- To ensure 100% Haemodialysis patients are educated on the importance of diet before coming for Haemodialysis.
- To check the effectiveness of the use of glucose free dialysate vs glucose containing dialysate to prevent hypoglycaemia during Haemodialysis.
- To reduce code blue or RRT activation due to hypoglycaemia during Haemodialysis.

METHODOLOGY

SURVEY CONDUCTED AMONG HEMODIALYSIS PATIENTS

150 Haemodialysis patients were surveyed in the unit.

89 Haemodialysis patients reported with episodes of hypoglycaemia during dialysis.

Out of the 89 patients 46 patients were diabetic and 43 were non-diabetic.

THE THREE GOLDEN PREVENTIVE APPROACH

STEP 1

Education to patients on the importance of eating meal atleast 1-2 hours before coming for scheduled Haemodialysis.

- As per survey results, 20 patients/relatives were identified and educated on the importance to eat meal before coming from home/office for haemodialysis.
- Ensured 100% coverage of health education provided to patient or their relatives.

STEP 2

Modification of insulin doses for patients with frequent hypoglycaemia

- Six patients insulin dose were modified by nephrologist especially the long acting insulin (e.g. Inj. Lantus) taken during night time.

STEP 3

Introduced Glucose containing dialysate solution for patients with frequent episodes of hypoglycaemia.

METHODOLOGY

Research Statement- A study to assess the effect of glucose containing dialysate and glucose free dialysate solution on blood glucose level in patients with frequent hypoglycaemia events during haemodialysis – A comparative study

Objective

- To compare the blood glucose levels pre-dialysis, intra-dialysis and post-dialysis.
- To compare the number of hypoglycemic events between the control and experimental group.

Approach-Quantitative Quasi Experimental approach.

Setting-Day care Hemodialysis unit.

Sample- Hemodialysis patients having hypoglycemia events.

Sample Size- 44 each in control and experimental group (n-88).

Sampling Technique- Purposive sampling.

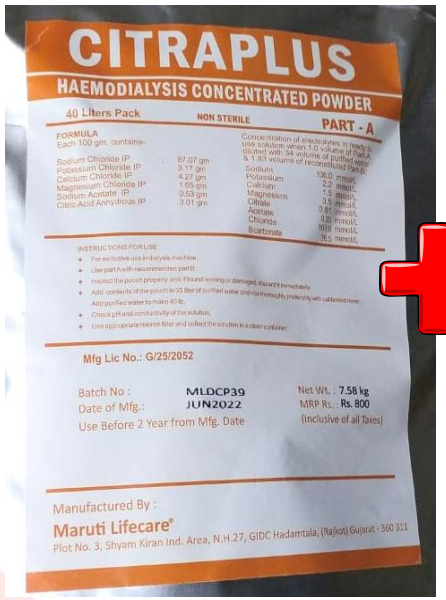
Study Duration- June 2022 to July 2022.

VISUAL IMAGE

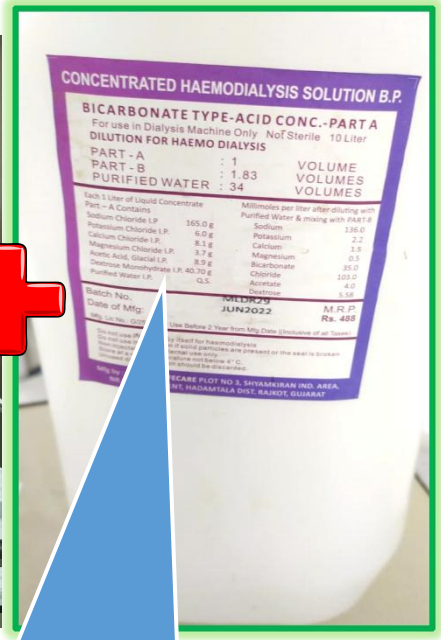
Patients identified with hypoglycaemia events (n-88)

Patients undergoing dialysis with Dextrose free dialysate solution (n-44)

Patients undergoing dialysis with Dextrose containing dialysate solution (n-44)



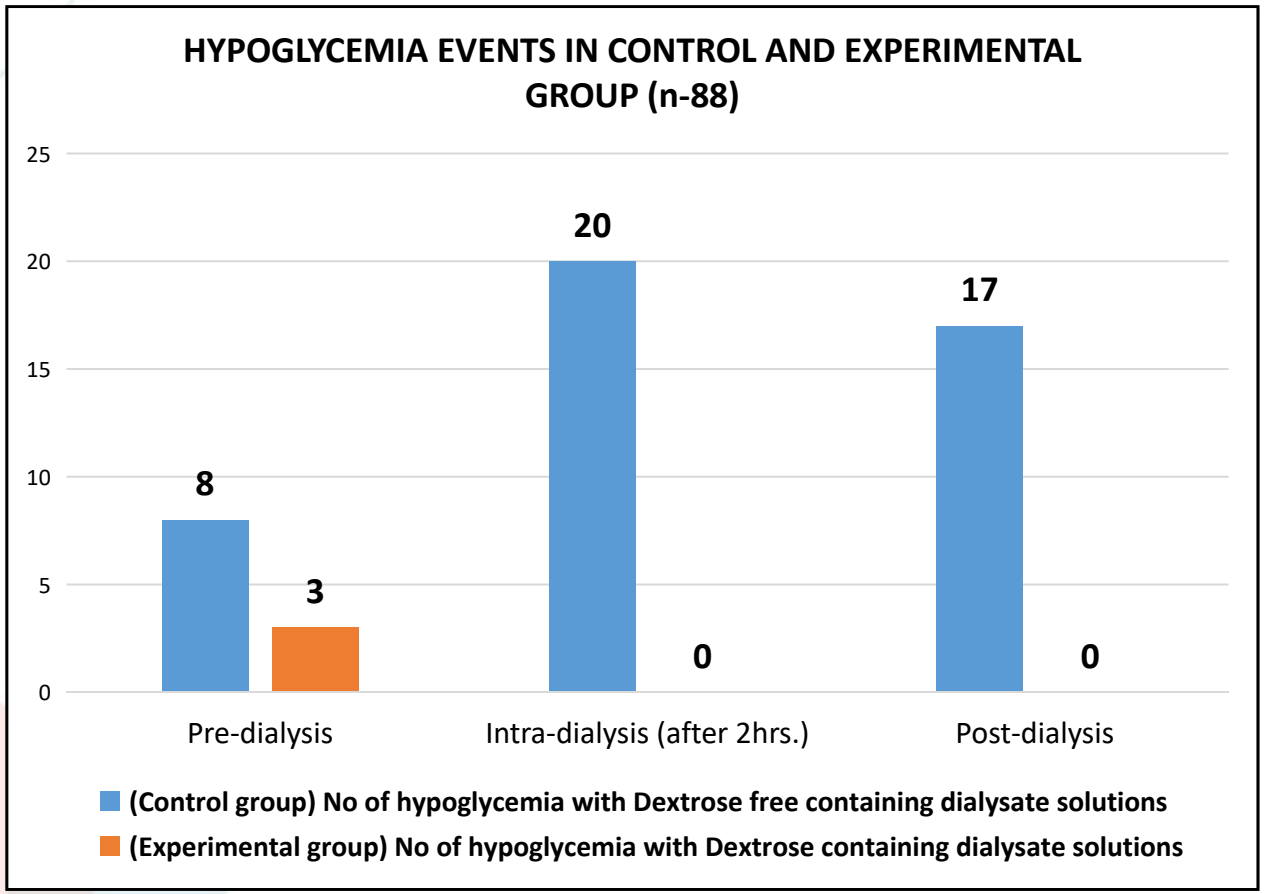
VS

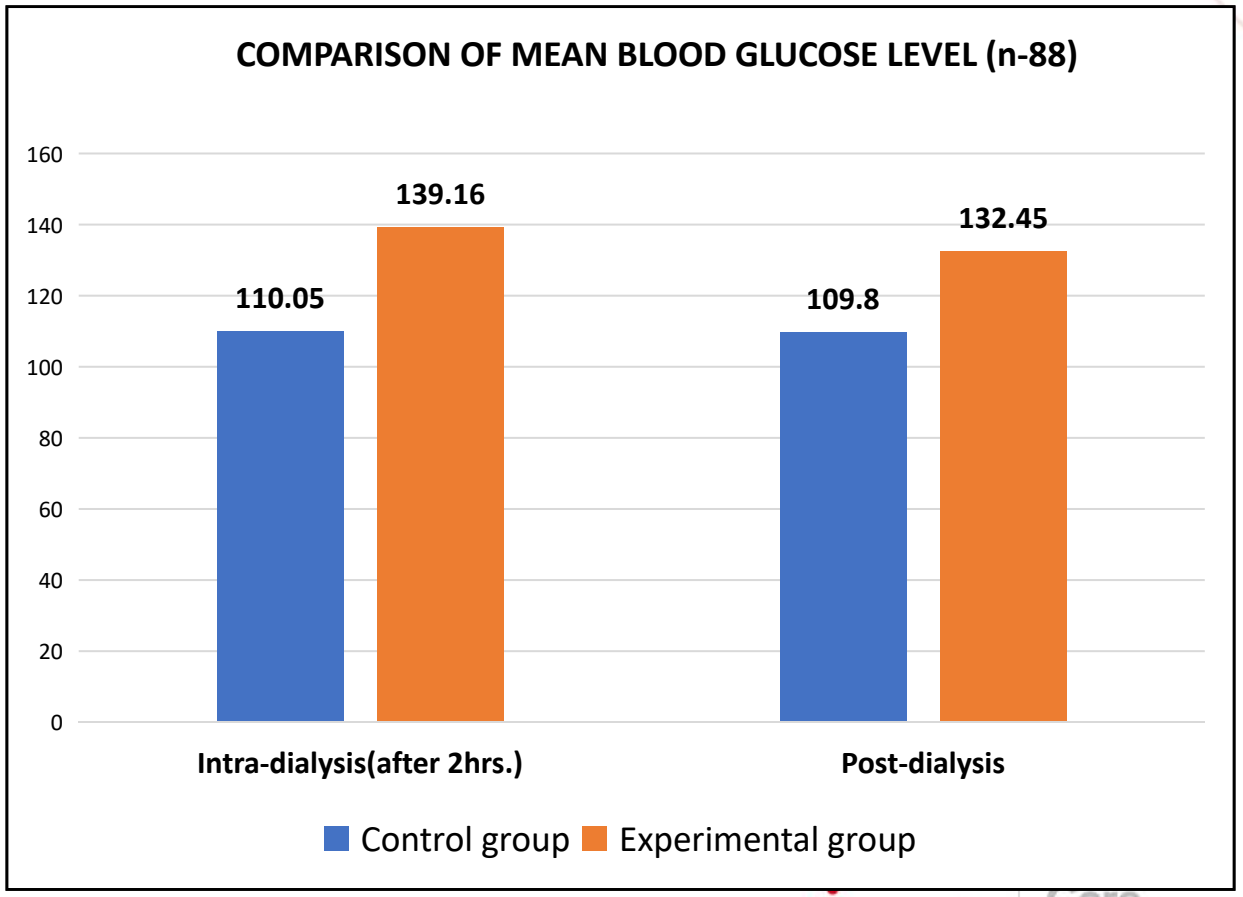


Dextrose content- 5.58mmol/litre

RESULTS OF COMPARISON STUDY

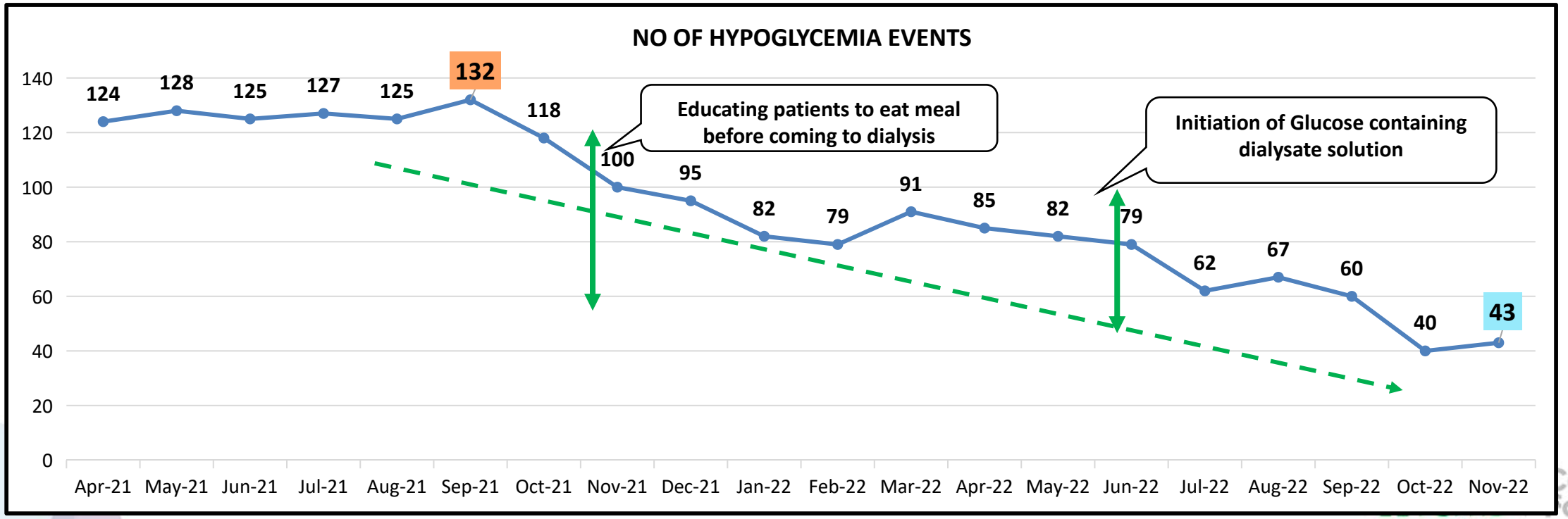
The calculated t-value of blood glucose level during Intra-dialysis (after 2hrs.) is 4.05 and post-dialysis is 3.56 which is greater than table value of 1.98 which shows that the use of glucose containing dialysate solution is effective in reducing the hypoglycaemic events in haemodialysis patients who are prone to hypoglycaemia during dialysis.





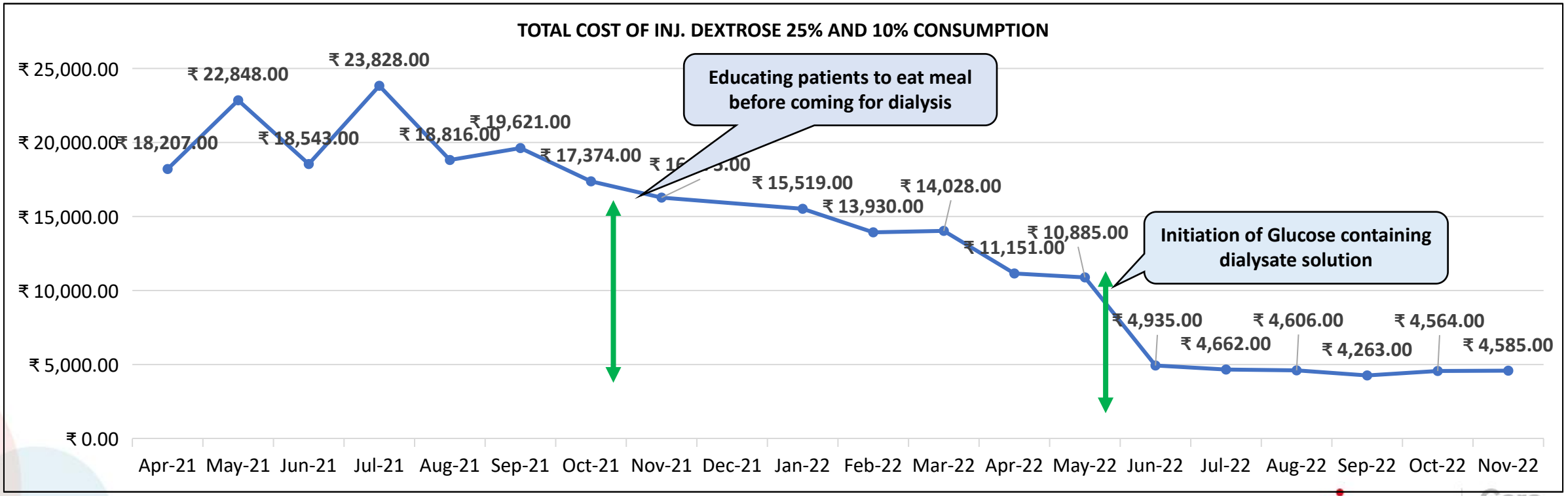
OVERALL RESULTS

- Number of hypoglycaemia events reduced from **Sep 21- 6.63% (132) to Nov 22-2.18% (43).**
- The use of Glucose containing dialysate solution proved to be effective in reducing the hypoglycaemic events during Haemodialysis.
- Monthly cost of Inj. Dextrose reduced from Rs. 18,207 (Apr-21) to Rs.4585 (Nov-22)-**Saved Rs 14,000/month on hospital consumption.**
- Monthly cost of utilising dialysate solutions (Part A & B) before and after introduction of glucose containing dialysate remained same. (Pre-Rs. 2,40000 and Post-Rs. 2,12,008).
- **Zero incidences of Code blue/RRT activated due to hypoglycaemia.**
- **No. of Hypoglycemia detected is also a clinical practice outcome indicator and a part of dashboard.**
- 100% satisfaction amongst patients, nurses and technicians.



OVERALL RESULTS

Consumption of Inj. Dextrose	PRE-INTERVENTION						INTERVENTION											POST-INTERVENTION		
	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Quantity of Inj. 25% Dextrose 100ml consumption	599	776	599	820	600	633	526	603	450	471	426	572	415	381	235	222	214	203	212	213
Quantity of Inj. 10% Dextrose 500ml consumption	201	234	213	236	222	226	226	200	222	201	178	72	87	103	0	0	4	0	4	4



CONCLUSIONS

- Hypoglycaemic events can be exceptionally serious, even life-threatening, and can make glycaemic control of dialysis patients challenging.
- **The approach to hypoglycaemia in this project reflects a paradigm shift from reactive treatment to proactive prevention of hypoglycaemia. Moving from reactive treatment to prevention represents a cultural change with an opportunity for improved patient care.**
- The project gives an insight that simple approach of educating patients on eating meals before coming for dialysis and introducing glucose-containing dialysate for patients prone for hypoglycaemia helped in reducing overall hypoglycaemic events in the haemodialysis unit.
- **This proactive prevention approach towards hypoglycaemia during haemodialysis can be adopted by any Dialysis unit for patient safety.**

“Happy Patient with Zero hypoglycemic event”

THANK YOU