



INFLUENCE OF DIETARY INTAKE AND EATING PATTERNS ON SYMPTOMATIC AND ASYMPTOMATIC REACTIVE HYPOGLYCAEMIC EVENTS POST OESOPHAGECTOMY

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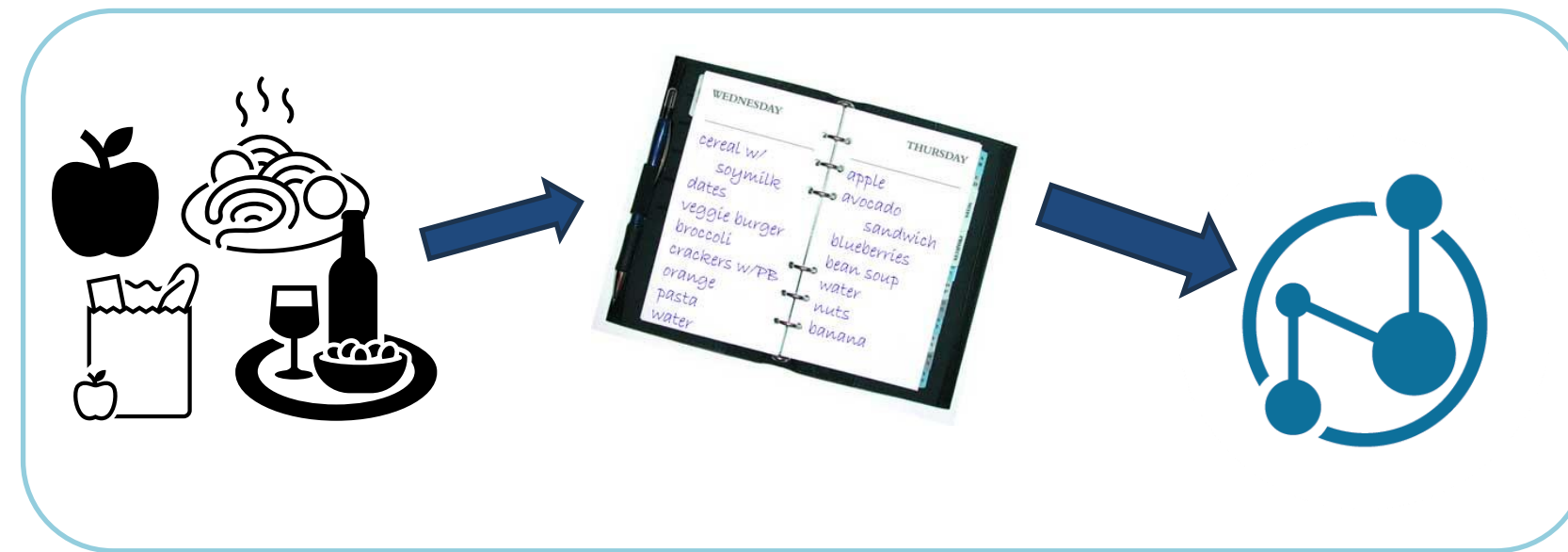
INTRODUCTION

- An oesophagectomy, the curative treatment for oesophageal cancer, involves removing the oesophagus and replacing it by pulling up the stomach.¹ As a result of these anatomical changes, food and nutrients move faster and are absorbed quicker. This is a phenomenon known as 'Dumping syndrome'. Late dumping syndrome occurs 1-3 hours postprandially² and is characterised by neuroglycopenic symptoms like dizziness, faintness, cold sweats, cramps, hunger and sometimes nausea and fatigue.^{3,4} It is termed 'Reactive Hypoglycaemia'.⁵
- This study aimed to investigate the influence of dietary intake and eating patterns on reactive hypoglycaemic events in post-oesophagectomy patients using continuous glucose monitoring and 7-day food diaries.

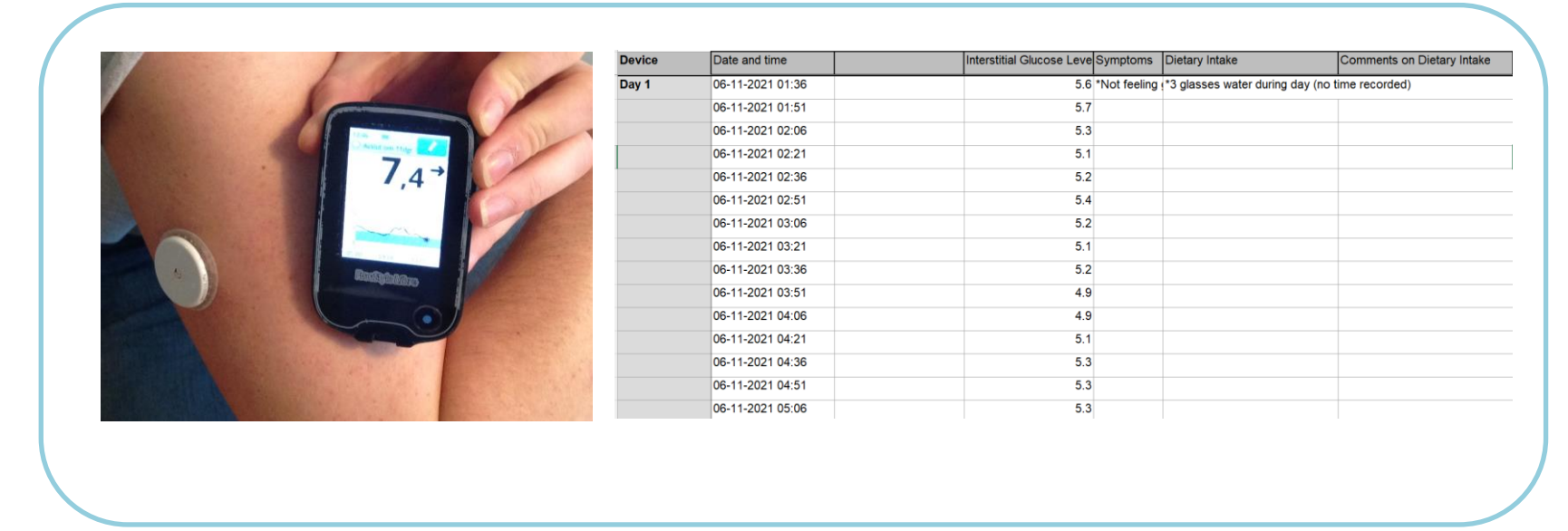
METHODS



Participants were recruited from St.James' Hospital and 32 post-oesophagectomy (28 men and 4 women) patients were included in this study with a mean age of 66.83.

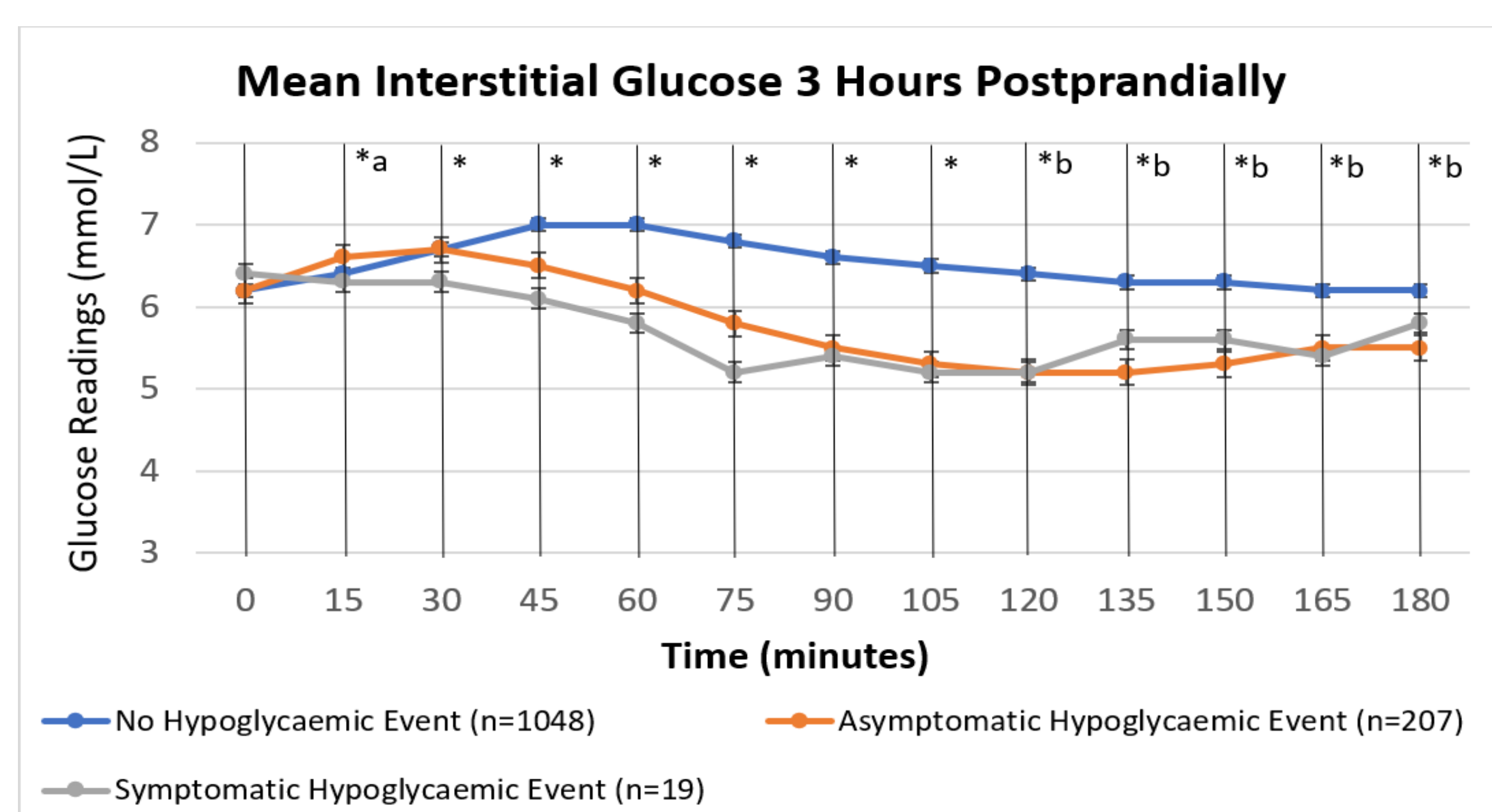


Participants recorded 7-day food diaries which were analysed using 'Nutritics' to calculate the nutritional content of each meal. Specific eating patterns were identified from these food diaries

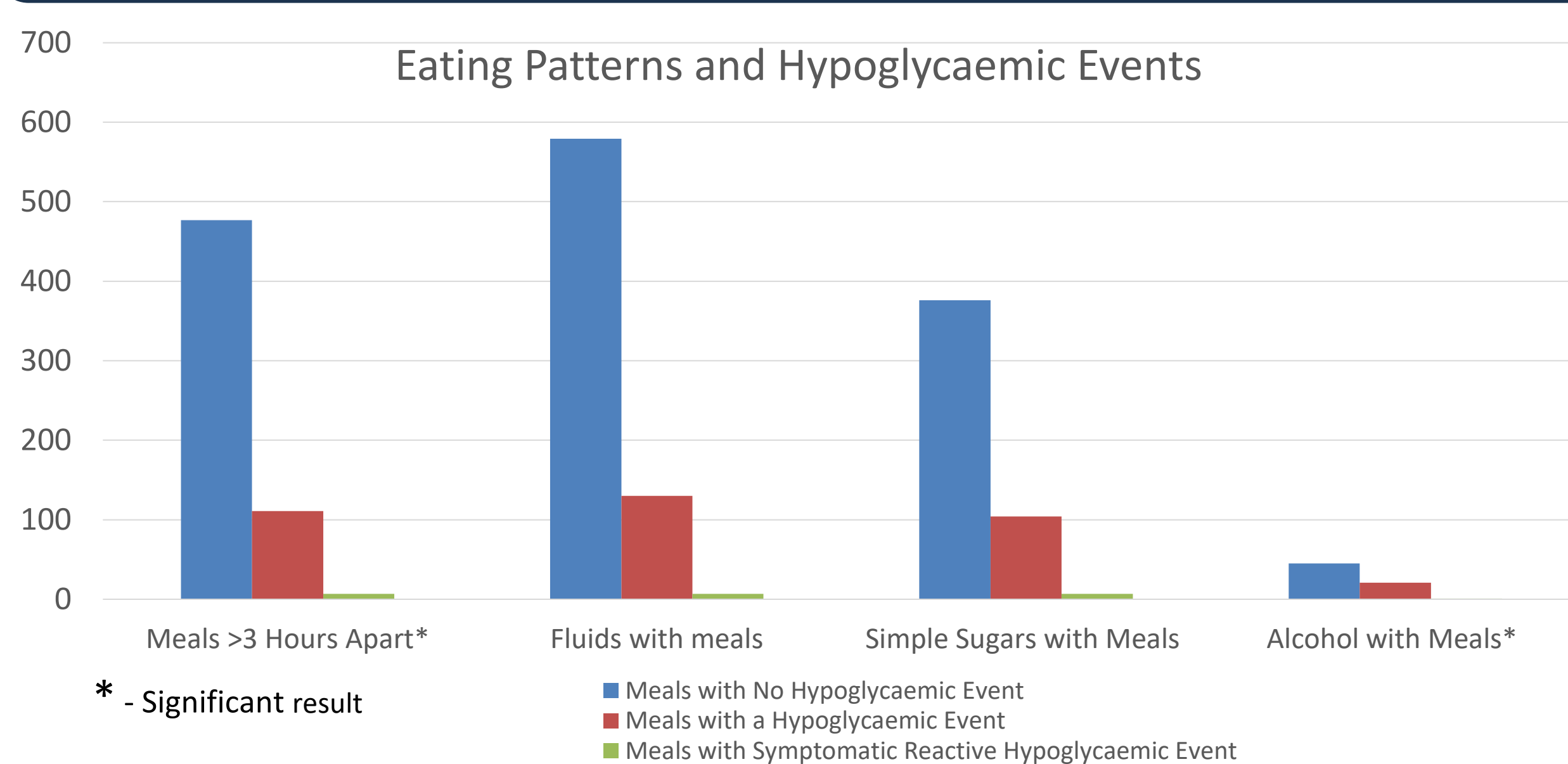


Blood glucose levels were recorded alongside each meal from these food diaries every 15 minutes for 7 days using continuous glucose monitoring. This data was collated and analysed using SPSS

RESULTS



Above demonstrates the trends in glucose readings 0-180 minutes post-prandially for meals depending on if and what type of RH event occurred. It is evident that glucose readings after meals not followed by an RH event had a slight increase but no decline in glucose. Symptomatic RH events typically had lower glucose readings than meals followed by asymptomatic RH events



Above is a bar chart representing each eating pattern assessed and the number of meals associated with that eating pattern that were not followed by an RH event, followed by an asymptomatic RH event, and followed by a symptomatic RH event. Eating meals greater than 3 hours apart and having alcohol with meals were both significantly associated with the incidence of an RH event.

Table 1. Nutritional content of meals with and without a reactive hypoglycaemic event

Table 4a			
Variable	No Hypoglycaemic Event (n=1,050)	Reactive Hypoglycaemic Event (n=226)	p Value
Energy (kcal)	302 (± 241.23)	323 (± 216.04)	0.237
Carbohydrates (g)	31.7 (± 23.64)	35.3 (± 22.57)	0.036
% of energy	47.63 (± 24.70)	49.32 (± 26.87)	0.365
Protein (g)	13.03 (± 19.98)	13.25 (± 15.58)	0.871
% of energy	16.03 (± 11.89)	14.46 (± 10.38)	0.071
Lipids (g)	12.8 (± 12.8)	13.1 (± 12.25)	0.710
% of energy	35.75 (± 24.03)	32.56 (± 17.58)	0.064
Fibre (g)	3.15 (± 4.99)	4.11 (± 4.13)	0.020
% of energy	4.25 (± 7.45)	5.13 (± 11.22)	0.152
Sugar (g)	10.96 (± 11.59)	12.65 (± 11.63)	0.048
% of energy	21.30 (± 26.15)	21.99 (± 24.29)	0.717

Table 4b			
Variable	Asymptomatic RH [†] Event (n=207)	Symptomatic RH [†] Event (n=19)	p Value
Energy (kcal)	321 (± 214.83)	257 (± 240.5)	0.219
Carbohydrate (g)	35.27 (± 22.52)	30.18 (± 21.97)	0.345
% of energy	49.02 (± 22.13)	53.23 (± 18.41)	0.421
Protein (g)	13.34 (± 15.67)	9.08 (± 10.59)	0.247
% of energy	14.37 (± 10.39)	13.12 (± 10.04)	0.614
Lipid (g)	12.79 (± 11.87)	10.47 (± 14.4)	0.422
% of energy	31.66 (± 17.9)	30.4 (± 15.69)	0.766
Fibre (g)	4.2 (± 8.09)	3.02 (± 4.17)	0.531
% of energy	5.45 (± 11.49)	3.55 (± 2.89)	0.474
Sugar (g)	12.62 (± 11.45)	11.51 (± 10.19)	0.683
% of energy	22.75 (± 24.50)	28.79 (± 23.7)	0.302

The table above shows the mean nutritional composition of meals depending on what type of RH event occurred, if any. The bolded results show that a higher carbohydrate, fibre, and sugar content in meals was significantly associated with RH event incidence however no association was seen between the nutritional content of meals and symptomatic events occurring.

CONCLUSION

- RH events are common post-oesophagectomy and are mainly asymptomatic. This may be as a result of impaired awareness of hypoglycaemia and thus, patients are at risk of untreated missed hypoglycaemic events and in turn at risk of the negative consequences associated with recurrent hypoglycaemia.
- Nutritional composition of meals and eating behaviours can significantly impact the incidence of RH in post-oesophagectomy patients especially the carbohydrate content of meals, having infrequent meals and having alcohol with meals.
- Ongoing dietetic education is needed for post-oesophagectomy patients to avoid RH. Dietitians should consider the use of continuous glucose monitoring to aid in the identification and management of reactive hypoglycaemia in this patient cohort

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