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DESCRIPTIVE STUDY GLYCEMIC CONTROL OF A SURGICAL PATIENT

Rabab Jumaah Asghar
Internal medicine
M.B.Ch.B / F.I.C.M.S.
Iraqi Ministry of Health, Kirkuk Health Directorate, Azadi Teaching Hospital, Kirkuk, Iraq.
alialimosa1979@Gmail.com
Basher Kareem Mohammed
M.B.Ch.B.-FIBMS
Iraqi Ministry of Health, Kirkuk Health Department, Kirkuk General Hospital, Kirkuk, Iraq.
bashershamry@yahoo.com
Fadhil Faidhalla Mohialdeen
M.B.Ch.B.-FIBMS
Iraqi Ministry of Health, Kirkuk Health Department, Kirkuk General Hospital, Kirkuk, Iraq.
fadhilmuhialdeen@gmail.com

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Abstract:

One hundred patients were collected, and the samples were divided into 50 patient groups and 50 control groups, and this paper aims to find out how to control blood sugar around surgery.
The statistical analysis program was relied upon in this study for the purpose of analyzing patient data and demographic information, and the Nipro True Results glycemic meter was used in all cases.
For insulin-treated patients, the recommended target blood glucose concentration may be given based on the available data. However, there is some controversy about the target blood glucose concentration in non-ICU patients (including surgery patients).

Keywords: ICU, glycemic, surgical, hyperglycemia.

INTRODUCTION

blood sugar control is especially important for patients undergoing surgery. Because with poor glycemic control, complication and mortality rates during hospital stay are significantly higher according to previous study data [1,2].
Blood glucose levels are associated with in-hospital mortality: compared to good levels, they were increased by a factor of 3.9 for twice the blood glucose levels and by a factor of 1.7 for fair levels [3,4]. In addition, complications were more common in poorly controlled patients: the risk of myocardial infarction, for example, was 2.7 times higher with poorly controlled blood glucose levels than with well-controlled ones [5,6].
This was the result of an analysis of the medical data of 8,727 patients. Blood sugar was checked in the first 60 hours after the operation. Values above 200 mg/dL were considered good, values between 200 and 250 mg/dL were considered average, and values above 250 mg/dL were considered poor.
Then, glycemic control was good in 85 % of patients, fair in 10 %, and poor in about four % of patients [7].

Perioperative period is a complex clinical condition; the doctor must try Maintaining glycemic homeostasis in a patient without insulin secretion or with altered insulin secretion associated with varying degrees of insulin resistance (DM) (type 2)
Perioperative glucose control is essential for a diabetic patient, as surgical stress and anesthesia have unique effects on blood glucose levels, which must be taken into account to maintain an optimal blood glucose level [8,9,10] with the aim of reducing morbidity, mortality, and hospital stay, as well as improving the results of surgery. The importance of glycemic control in patients with diabetes is due to the fact that surgical procedures can lead to various metabolic changes that can alter glucose homeostasis, with consequent hyperglycemia, a risk factor for sepsis in the patient [11,12].
And Metabolic control is essential for diabetic patients who are going to have a surgical event in order to minimize the negative effects that stress will have during the perioperative period. Therefore, it is important that a preoperative assessment be performed by a multidisciplinary team (internist, anesthesiologist, dietitian, and surgeon, among

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others), as well as to assess their hospitalization 24 hours prior to the surgical event [13,14,15].

Glucose control requires the patient to be injected with insulin through an electronic pump that injects the insulin into the vein, which must be connected to the blood glucose monitoring. The medicine in the pump is prepared from 50 ml of liquid containing 49.5 ml of saline and 0.5 ml of Contains 50 units of short-acting insulin

Diabetics are advised to take their usual dose of insulin the day before surgery, regardless of type and amount, and to keep their diet as usual. The timing and dose of insulin on the day of the surgery depends on whether the operation is in the morning or afternoon. Patients who take insulin (Lantus, Levemir, Insulatard, Hhumulin I, Insuman) once a day, either in the morning or in the evening, take their usual dose at the regular time but need to check their blood sugar levels on admission as well as in the preoperative period and then to monitor hypoglycemia. As for patients who need two doses of mixed insulin daily [16,17,18].

MATERIAL AND METHOD

Patient sample

One hundred patients were collected, and the samples were divided into 50 patient groups and 50 control groups. The aim of the research is to find out how to control blood sugar around surgery.

Study design

Data and demographic information about the patients were collected and by relying on the statistical analyzer to analyze the data, where the information about the patients consisting of gender, age, and hyperglycemia was withdrawn.

This study confirmed hyperglycemia as an independent risk factor using a multivariate retrospective regression analysis of a total of 50 patients from a control group who already had hyperglycemia during surgery and diabetes was identified as an independent predictor of variables characterizing postoperative outcome, and In this study, glucose levels were obtained by counting the postoperative day and two days and To control blood sugar, the Nipro True Results glycemic meter was used in all cases.

The meta-study was approved by all patients participating in this study and by the local ethics committee. After detailed information, all patients were prepared for examination with a written declaration of consent.

All patients were over 18 years of age at the time of consent. The exclusion criteria were non-consent to study participation, presence of malignant underlying disease with limited life expectancy <3 months, pregnancy and lactation, untreated drug and/or alcoholism. Patients with cardiogenic shock on admission to the intensive care unit were excluded.

Study period

The study period for collecting patients and the period for data analysis extended for a full year from 22-6-2020 to 4-6-2021

Aim of research

The research aims at glycemic control of a surgical patient.

Statistical analysis

To estimate the sample size for applying the exact MEAN± SD test, the group size was calculated for the approximate chi-square test using a continuity correction

RESULT

Table 1- results of patients according to age and CCI

Statistics

		age patient	CCI
N	Valid	50	50
	Missing	0	0
Mean		55.4200	.96
Median		55.0000	.50
Std. Deviation		6.64889	1.124
Skewness		.113	.710

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Std. Error of Skewness		.337	.337
Kurtosis		-1.283	-.983
Std. Error of Kurtosis		.662	.662
Range		21.00	3
Minimum		45.00	0
Maximum		66.00	3
Percentiles	25	49.0000	.00
	50	55.0000	.50
	75	61.2500	2.00

Figure 1 - frequency according to gender

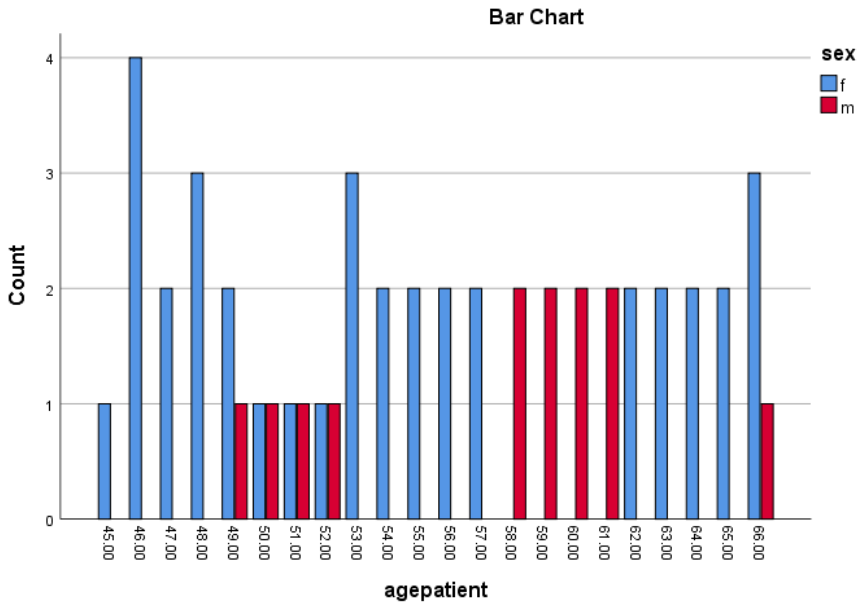

Table 2- classification of CCI according to gender

CCI * sex Crosstabulation

Count

		sex f	m	Total
CCI	0	15	10	25
	1	8	1	9
	2	9	0	9
	3	5	2	7
Total		37	13	50

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Figure 2- diabetes treatment of patient

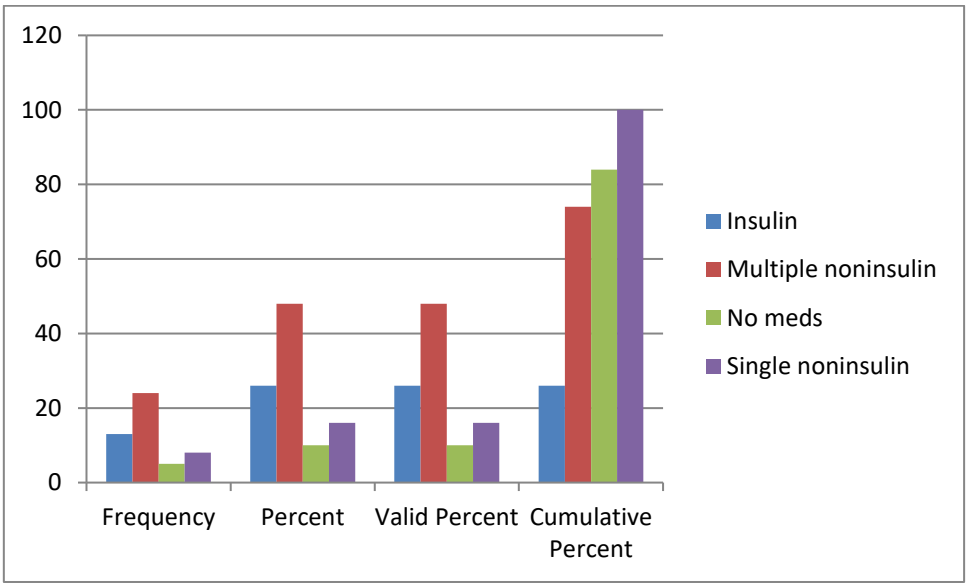

Table 3- result of control according to age and CCI

Statistics

		Age control	CCI CONTROL
N	Valid	50	50
	Missing	1	1
Mean		58.4200	1.42
Median		57.0000	1.00
Std. Deviation		5.78912	.928
Skewness		-.047	.004
Std. Error of Skewness		.337	.337
Kurtosis		-1.177	-.810
Std. Error of Kurtosis		.662	.662
Range		20.00	3
Minimum		47.00	0
Maximum		67.00	3
Percentiles	25	54.0000	1.00
	50	57.0000	1.00
	75	63.5000	2.00

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Figure 3- diabetes treatment of control group

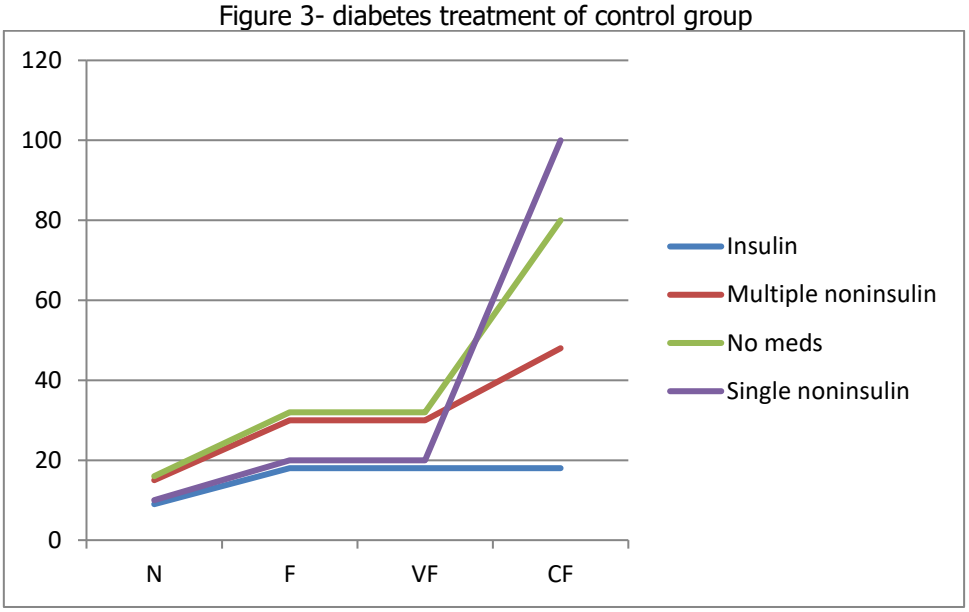
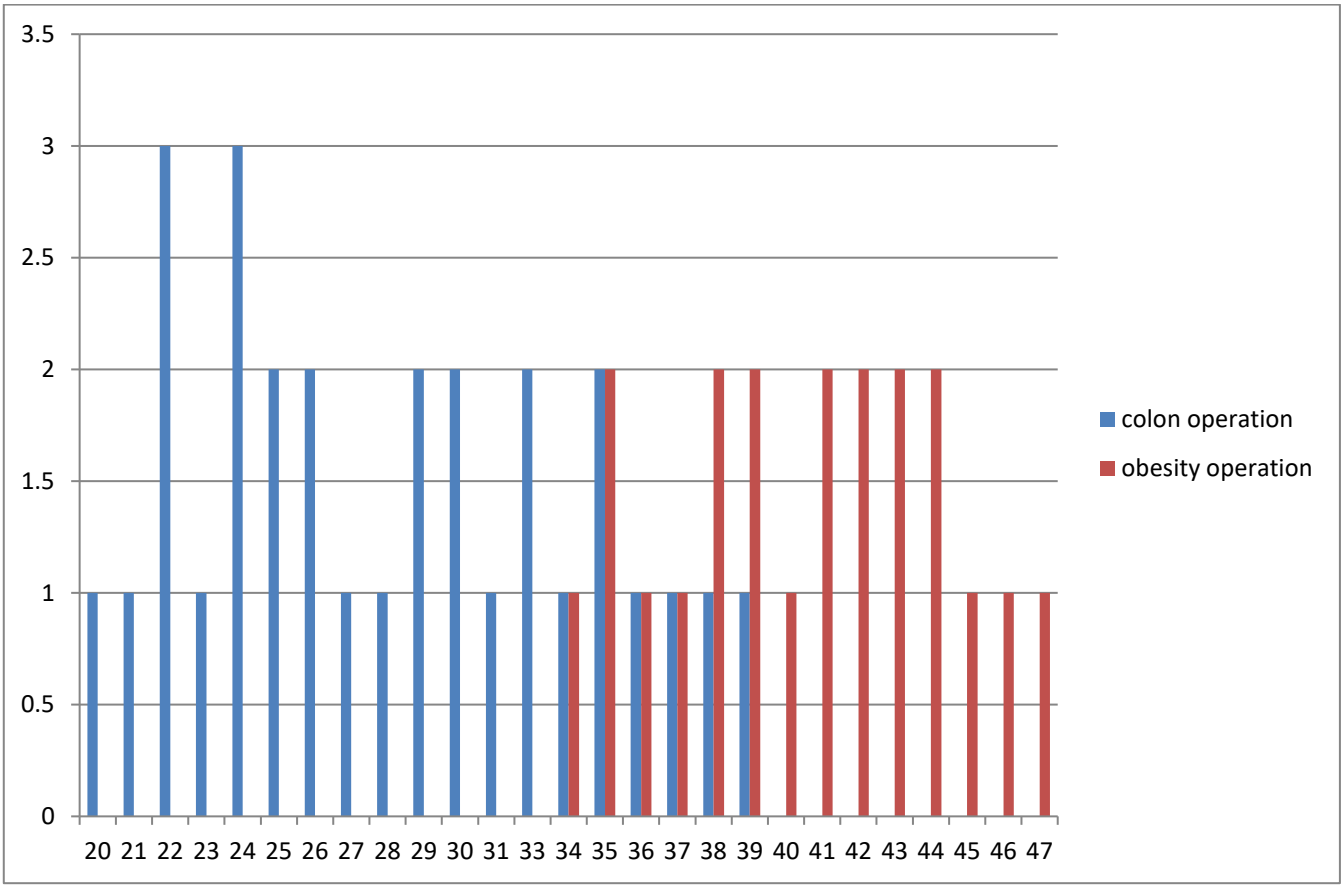


figure 4- results BMI according to Cross tabulation (type of operation)



World Bulletin of Public Health (WBPH)
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Figure 5- Descriptives results of patients to classify BMI depend on type of operation

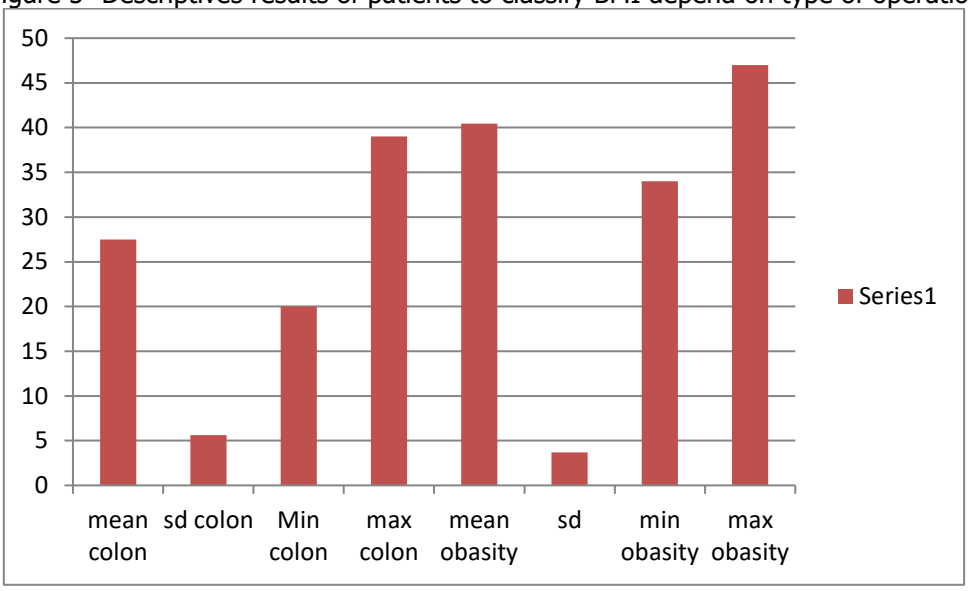

Figure 6 – demographic result of study

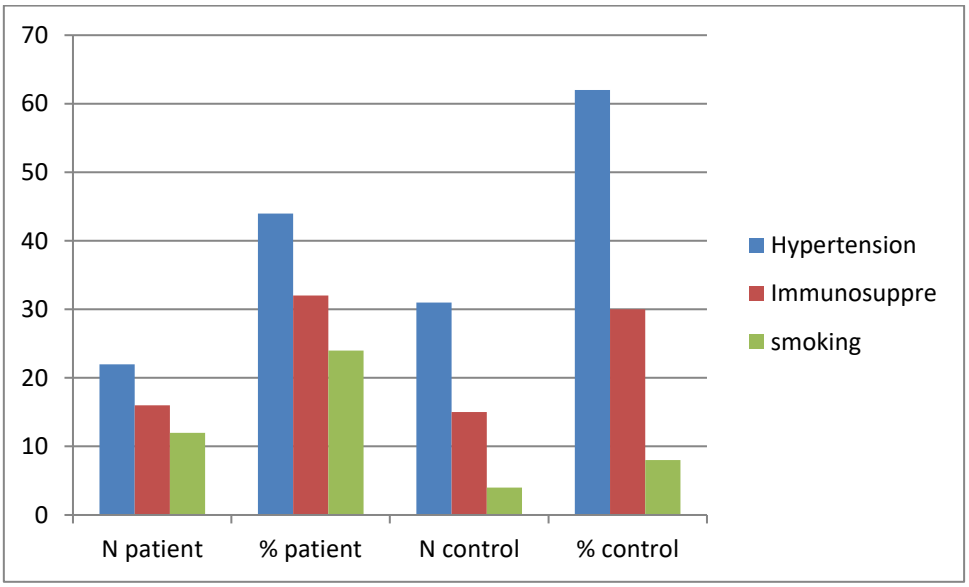

Table 4- perioperative hyperglycaemia

Statistics			
		WITH DM	WITHOUT DM
N	Valid	50	50
	Missing	3	3
Mean		213.4000	184.8800
Median		235.0000	149.0000
Std. Deviation		86.69910	70.39325

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Skewness		-.207	.839
Std. Error of Skewness		.337	.337
Kurtosis		-1.262	-.594
Std. Error of Kurtosis		.662	.662
Range		275.00	275.00
Minimum		80.00	80.00
Maximum		355.00	355.00
Percentiles	25	133.0000	138.7500
	50	235.0000	149.0000
	75	288.0000	242.5000

Figure 6- p-plot perioperative hyperglycaemia of patient

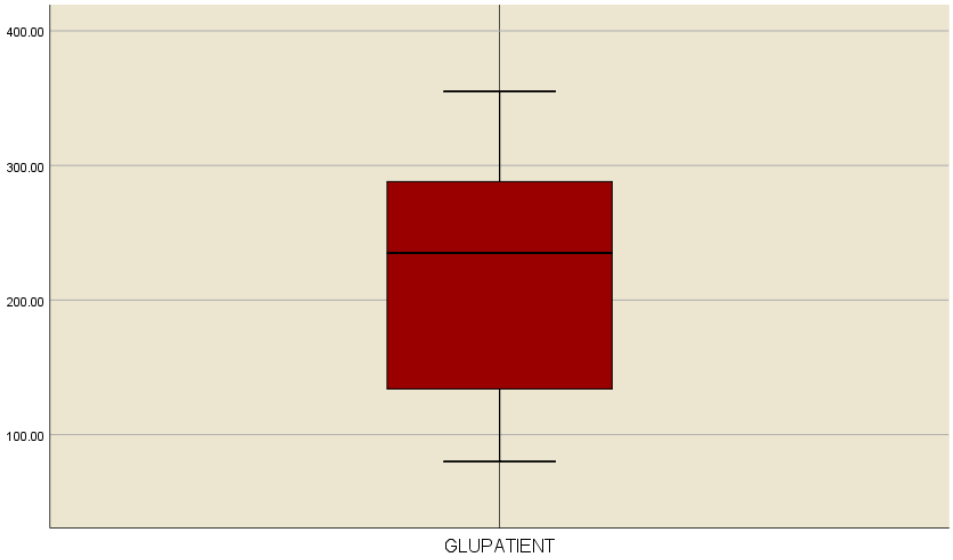
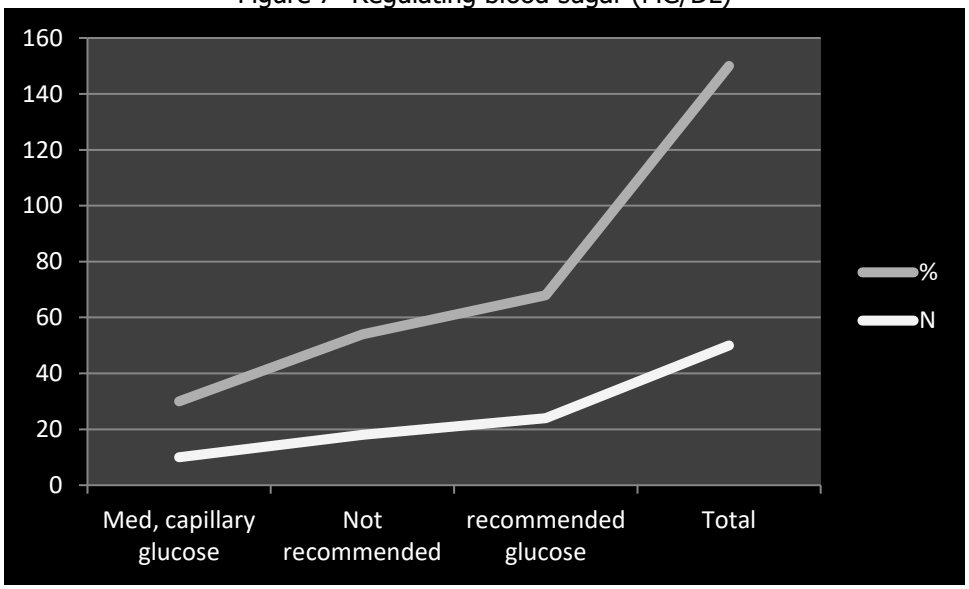


Figure 7- Regulating blood sugar (MG/DL)



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DISCUSSION

The research discusses a descriptive study to control blood sugar in surgery, where 100 patients were collected, consisting of 50 patients' group and 50 people in the control group.

Statistical data and demographic information on patients, we find that mean and SD to age of group patients is (55.42 ± 6.64)

body mass index was analyzed according to the type of operation, which was divided into two operations, the first is obesity and the second is colon, where the body mass index was classified depending on the type of operation that was performed on the patient.

The mean (41±0.3) for obesity, but for colon patients, it was less, and mean ±Sd for BMI was (28.56±0.56).

In another study of patients in a surgical intensive care unit, van den Berghe describes an increased risk of infection by about 60%.

Hypoglycaemia (defined as blood glucose levels below 2.2 mmol/L [40 mg/dL]; however, no clinically unfavorable consequences for such episodes have been reported.

The problem of hypoglycemia is in studies Intervention to analyze the effects of intensive insulin therapy is well documented. In a large, randomized, multicenter study, intensive insulin therapy was used in patients with severe sepsis.

The study in the study group with intensive insulin therapy was terminated prematurely. It was more difficult to decrease hypoglycemic episodes (values less than 2.2 mmol/L [40 mg/dL] in a study corresponding to intensive insulin therapy (target value 4-7 mmol/L [72-126 mg/dL]) in patients After surgery, no such hypoglycemic events occurred in any way even if these results were for specific patient populations for intensive insulin therapy. The tolerance of the higher target value range in insulin therapy an upper limit value of 8.0 mmol/L (144 mg/dL) instead of 6.1 mmol/L (110 mg/dl)

CONCLUSION

For patients requiring intensive care or mechanical ventilation after surgery, such as plasma glucose >10.0 mmol/L, it is safe to control blood glucose in the range of 7.8-10.0 mmol/L by continuous intravenous infusion of insulin. Overall blood glucose control goals after medium and minor surgery are fasting blood sugar <7.8 mmol/L and random blood sugar <10.0 mmol/L. In patients who have had good glycemic control in the past, more stringent glycemic control may be considered, and attention should be paid to preventing hypoglycemia.

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