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Research Article

**A CRITICAL EVALUATION ON IDENTIFICATION OF RISK
FACTORS OF DIABETIC KETOACIDOSIS AND ITS EFFECT
ON PATIENTS****¹Dr Sidra Hanif, ²Dr Muhammad Awais, ³Dr. Qasim Mahmood Ghouri****¹BHU 161 GB Gojra District Toba Tek Singh, ²Medical Officer Rural Health Center Munday,
Chakwal, ³Federal government Polyclinic, Post Graduate Medical Institute, Islamabad.****Article Received:** March 2019**Accepted:** April 2019**Published:** May 2019**Abstract:**

Background: Diabetic ketoacidosis (DKA) is life threatening which affects people with diabetes. It needs early diagnosis and proper management. For the sake of preventive measures, risk factor must be known.

Objective: This study aimed at identification of risk factors of diabetic ketoacidosis and its effect on patients.

Design of study: It was a case-control study.

Duration: Study was done from Feb, 2017 to Jan, 2018.

Patients and Methods: This study was done in medicine department of LGH, Lahore. 100 patients above 13 years of age suffering from diabetes were selected. 50 patients were enrolled as cases having KDA. Age and sex matched control was selected for each case. 50 patients in control group were diabetics. Primary end point was noted. Patients died during ward stay or in emergency room. Alive patients discharged. SPSS version 21 was used for statistical analysis of data.

Results: Maximum diabetic ketoacidosis was observed in 4th decade in patients. 10% patients of DKA died while 90% were discharged alive. 50% cases showed infections, poor following of medication on the part of patients (44%), new diagnosis (16%). These percentages are far greater than that of control group stroke, myocardial infarction, acute pancreatitis, dehydration and trauma were identified as major risk factors.

Conclusion: Newly diagnosed diabetes, infections and improper following of medication increases risk for diabetic ketoacidosis.

Keywords: Diabetic Ketoacidosis, Diabetes Mellitus, Risk factors.

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INTRODUCTION:

Diabetic ketoacidosis is a serious disease represented by high concentration of ketone bodies, excessively acidic body fluids or tissues and high blood glucose levels. Deficiency of insulin and rise in catabolic hormones such as cortisol, growth hormone, glucagon's and catecholamine's causes ketoacidosis [1]. In this situation liver process, the fats in fuels called ketone bodies which cause blood to become acidic [2]. Mostly DKA cases occur in type 1 diabetics. It may appear in known diabetics patients which takes inadequate amount of insulin or stop taking insulin [3]. It may be due to dehydration, acidosis or trauma. Its complication includes sudden respiratory distress syndrome, failure of blood flow, blockage of small blood vessels, accumulation of fluid in brains extracellular space due to trauma, any fungal infection or other metabolic mismanagement [4,5]. There is 2% -5% mortality rate due to KDA in developed world. It has 6% -24% death rate in developing nations. Two hospital based studies have provided the estimation of death rate 7.15% and 15.9% in Pakistan. Prevention, good care and proper management is needed for

diabetic patients. This study has been conducted to know about risk factors which promotes KDA.

PATIENTS AND METHODS:

This study was done in Medicine Department of LGH Lahore. 100 diabetic patients were selected. They were above 13 years of age. Two groups were made in case and control group. 50 patients were included in each group. Patients with diabetic's ketoacidosis were grouped as cases. Age and sex matched control was selected for each case. Only diabetics were included in control group.

Primary end point was noted down:

1: Death of patients during stay in a ward or emergency room.

2: Alive discharged patients.

Data was noted down. There was complete medical examination of patients. Odds ratios for every suspected risk factor were determined. SPSS version 21 was used for statistical analysis of data.

RESULTS:

Table I: Demographic Data

Sex	Daibetic Ketoacidosis cases		Control	
	Male	Female	Male	Female
	27(54%)	23(46%)	27(54%)	23(46%)
Age in Years (mean± 1SD)	43.12±12.6		42.56±12.8	
Type I Diabetes	32(64%)		24(48%)	
Type II Diabetes	10(20%)		26(52%)	
Newly diagnosed diabetes	8(16%)		2(4%)	

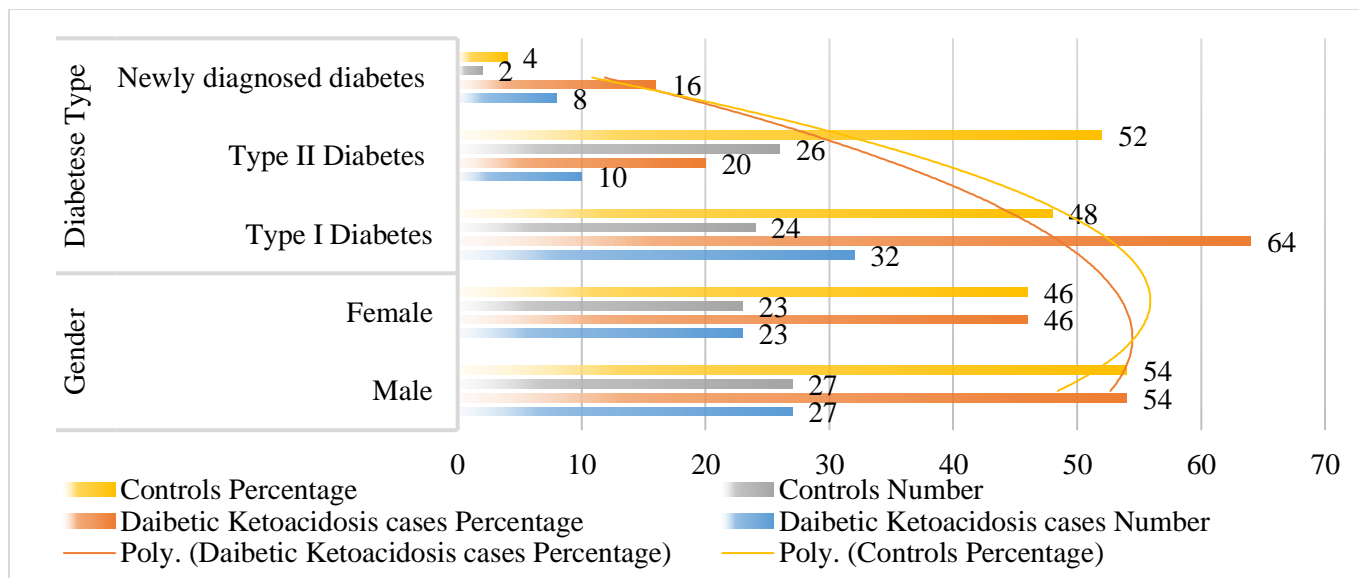
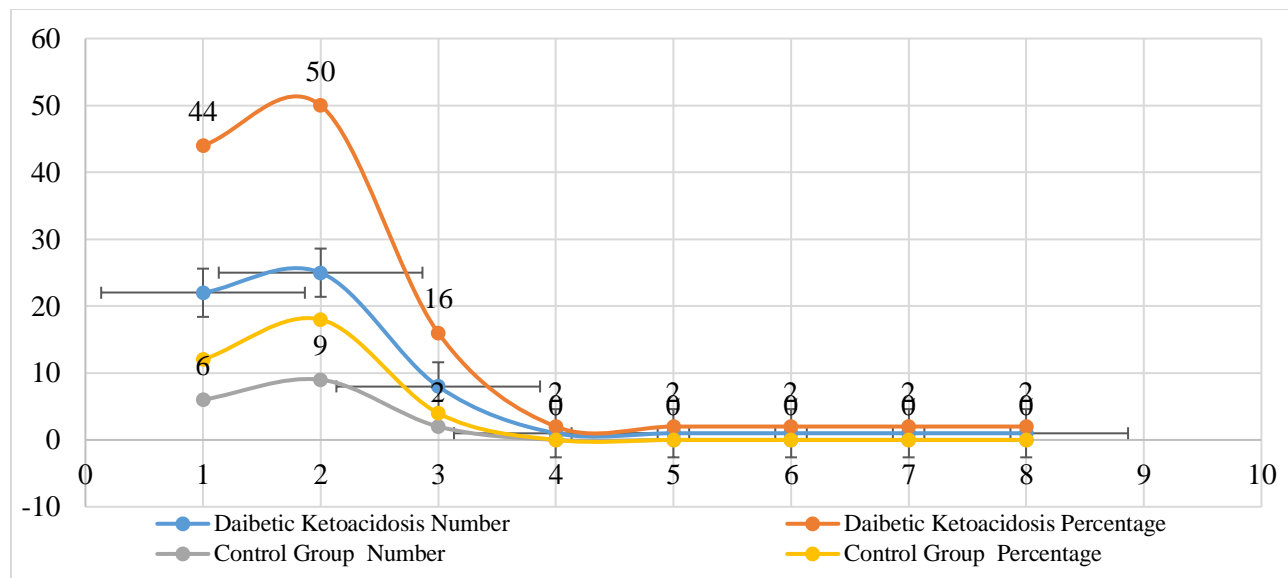


Table II: Risk Factors for Diabetic Ketoacidosis

	Daibetic Ketoacidosis	Control Group	RatioOdds	95 % CI	P Value
Poor Compliance	22 (44%)	6 (12%)	5.762	(2.079 - 15.970)	P<0.001*
Infections	25 (50%)	9 (18%)	4.556	(1.834- 11.316)	P<0.001*
Recent onset DM	8 (16%)	2 (4%)	4.571	0.919-22.7	P<0.06*
Trauma	1 (2%)	0	0.503	(0.000 -4.3	P=0.780*
Dehydration	1 (2%)	0	0.503	(0.000-4.3	P=0.780*
Myocardial infarction	1 (2%)	0	0.503	(0.000 -4.3	P=0.780*
Acute pancreatitis	1 (2%)	0	0.503	(0.000-4.3	P=0.780*
Stroke	1 (2%)	0	0.503	(0.000-4.3	P=0.780*



Characteristics of the cases:

There were 46% females and 54% males. Mean age was 43.12% years. In 4th decade of life, maximum DKA incidence was found. Eight patients were not previously diabetics. Type 1 diabetics were 32 patients while 10 were type 2 diabetics. Mean diabetics duration was 18 years with 35 years' maximum duration. Infection in 25 patients, new onset diabetics in 8 and poor following of medicines were major risk factors.

Among 10 cases, more than one risk factors were determined. Dehydration 2% sudden pancreatic 2%, stroke 2% myocardial infarction 2% and trauma 2% were identified.

Characteristics of controls:

Age and sex matched control was selected for each case. There were 24 patients of type 1 diabetes and 26 of type 2 diabetes. For KDA, risk factors among control were poor treatment compliance in 6, infections in 9 and 2 patients were newly diabetics.

DISCUSSION:

DKA may occur in diabetics type 1 or type 2 but it is more frequent in type 1 diabetics where destruction of beta cells of pancreas occurs within patients [11]. Infections, trauma or dehydration may be the predictive features of DKA in type 2 diabetes [12]. Zafar N et al reported non-compliance (11.4%) and infection (45.5%) [8]. Naveed D et al reported non-compliance (26.19%) infection (50%), co-morbid states (21.43%) and newly KDA (2.38%) [9] Seyoum B et al reported non-compliance (59.1%), medical illness (3.5%), infections (16.1%) and newly

diagnosed diabetes (23%) [13]. 70% infections were reported as risk factor by Lin SF et al in KDA patients [14]. Non-compliance (54%) and infections (28%) were reported by Ahmad F et al [15]. Infection were also reported as major risk factor by Bashir T et al [16]. Illiteracy, lack of awareness, misleading concepts are major cause of disastrous effects which occur after neglecting minor trauma and infections [17,18]. Improper dosage knowledge and administration of insulin, poverty, and unavailability of pure insulin are major causes of poor compliance [19,20]. In the current study, death rate was 10%. Ahmad et al, Naveed D et al, Mahmood K et al and Zafar S et al reported 15% 7.15%, 11.9% and 5% death rate respectively. Death ate due to DKA ranges between 2%- 5% in west. The death rate ranging from 6-24% in developing countries.

CONCLUSION:

Newly diagnosed diabetes, infections and improper following of medication increases risk for diabetic ketoacidosis. If not properly, managed, disastrous effect would occur leading to high mortality rate.

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