

VITAMIN D STATUS AMONG IRAQI CHILDREN AND ADOLESCENT WITH TYPE 1 DIABETES MELLITUS

Mohamed Firas K. Al.Abadi 1. Waleed Khalid Al.Najafi 1

Pediatrician/ C.A.B.P/ MBChB / Children Teaching Hospital / Endocrinology and Diabetes Clinic / Iraq

INTRODUCTION

Type 1 diabetes mellitus is a metabolic disease characterized by hyperglycemia resulting from defect in insulin secretion due to autoimmune destruction of B-cells of the pancreatic islets which leads to absolute insulin deficiency.

Its incidence varies considerably worldwide, being highest in Finland, probably related to genetic, dietary, and environmental factors that might interfere with its pathogenesis.

Both genetic and environmental factors are main agents participating in this autoimmune process.

Patients and Methods

A case control study was performed in Pediatric Endocrinology and Diabetic Clinic at two Teaching Hospital for Children in two governorate in the middle of Iraq, between 2nd of September 2016 to the 30th of October 2017. The aim of the study was to assess the status of vitamin D among children and adolescents with type 1 diabetes attending endocrinology and diabetes clinics.

185 subjects were enrolled in this study. consisted of two groups; 121 cases (48 male and 73 female), aged 5 years to 16 years with type 1 diabetes mellitus for more than one year and without any chronic illness rather than type 1 diabetes mellitus. 64 controls (38 female and 26 male) non diabetic attending the pediatrics clinic for other reasons. Subjects were excluded from the study if they had consumed vitamin D, and or calcium supplementation during last one year.

25(OH) D3 blood level was measured using the ELFA technique (Enzyme Linked Fluorescent Assay) in mini vidas immunoassay analyzer.

Glycosylated Hemoglobin measured by High performance gel chromatography "HPLC BIO-RAD D10".

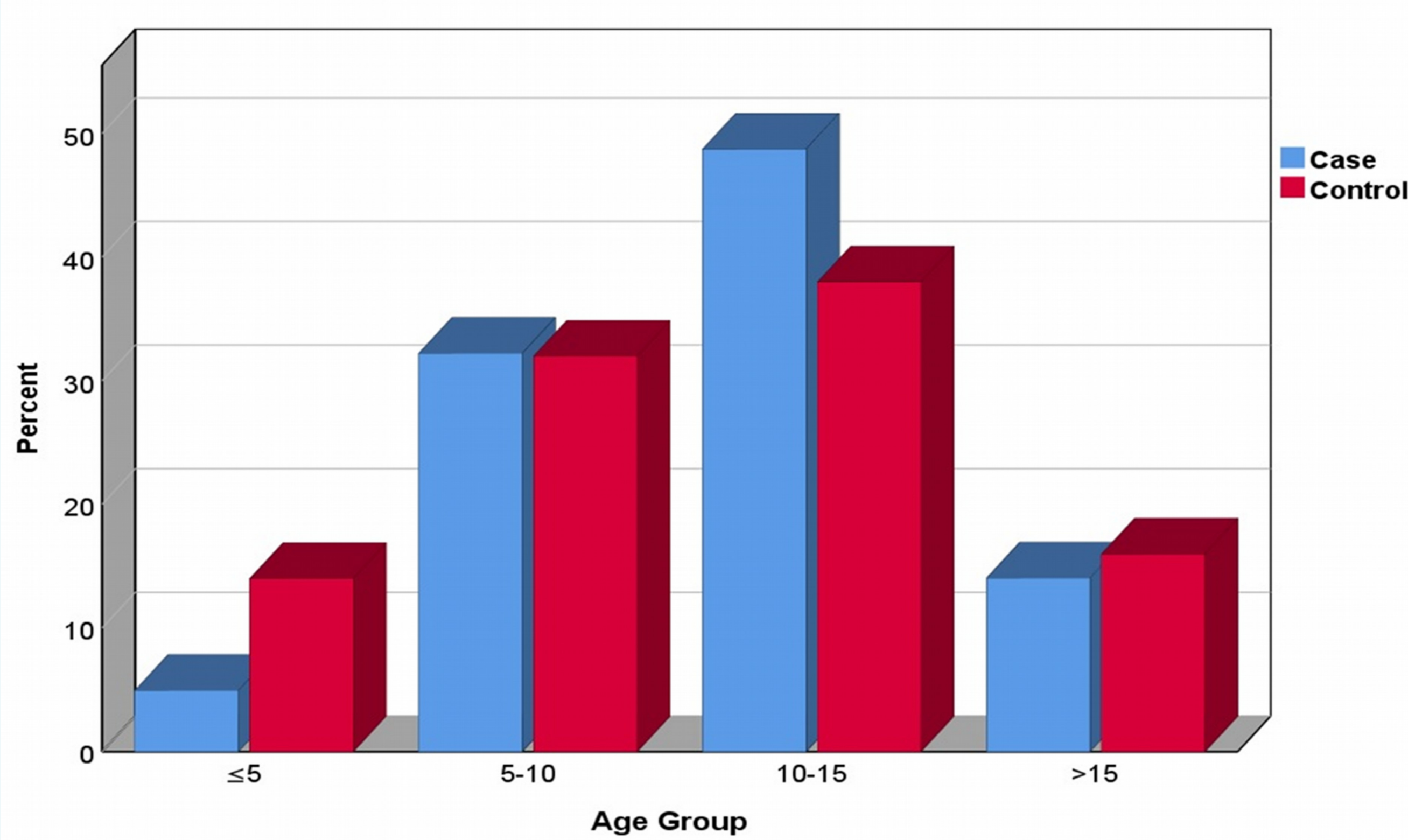
Vitamin D status classified according to American academy of pediatrics recommendations. sufficiency defined as 25(OH)D3 between 21-100 ng/ml technique (Enzyme Linked Fluorescent Assay) in mini vidas immunoassay analyzer.

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RESULTS

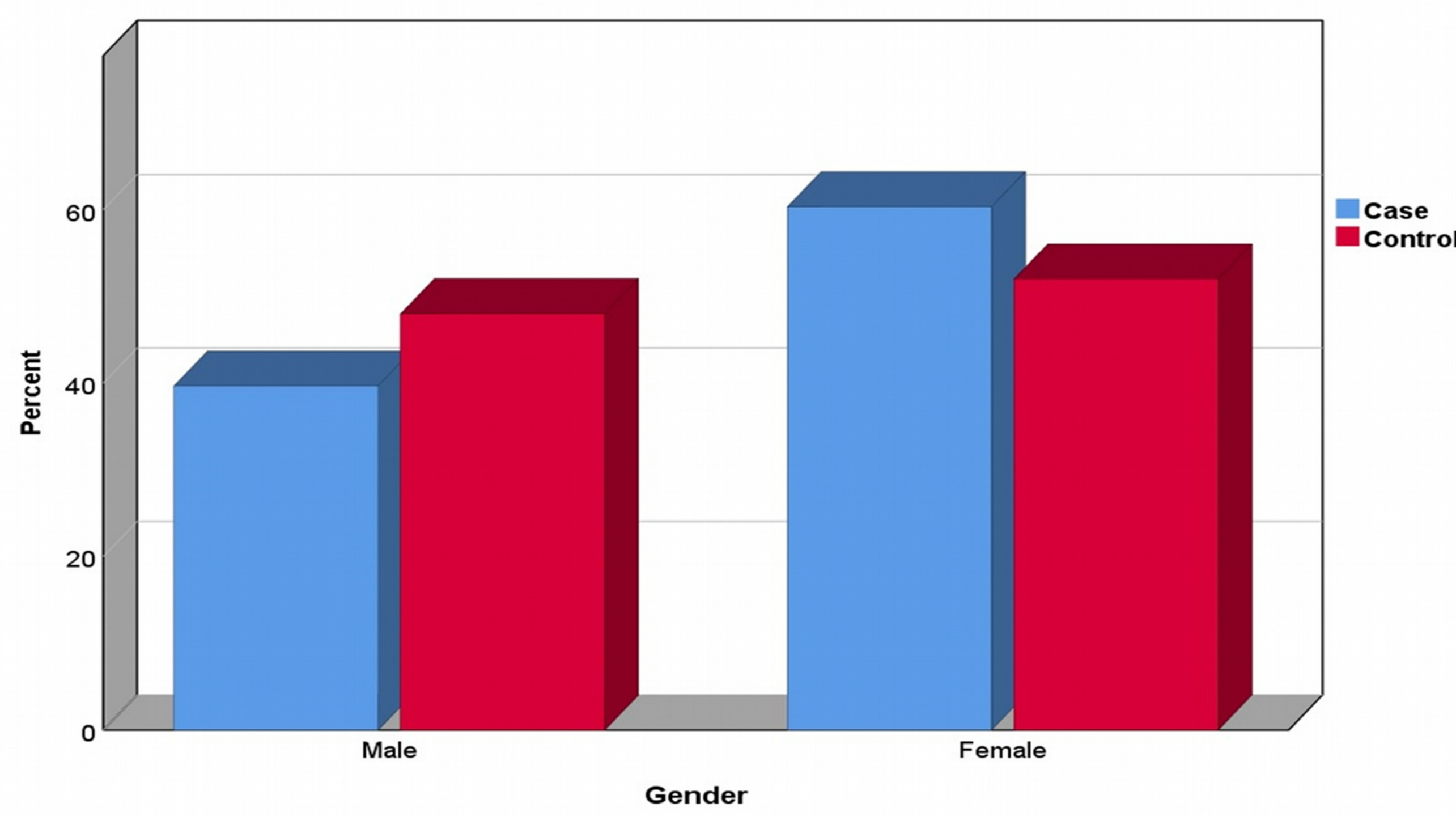
Percent of Age Group by Case Control



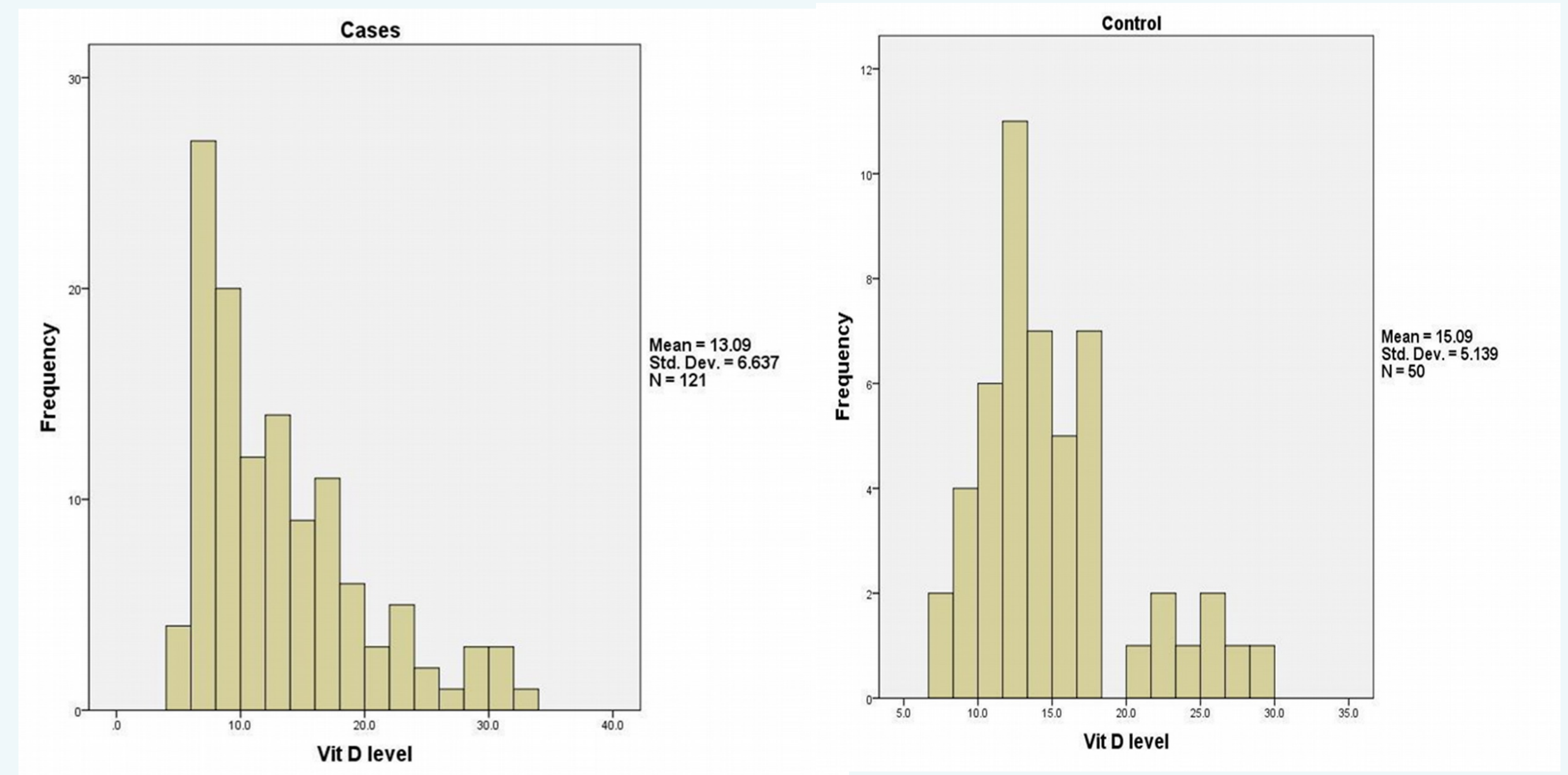
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There is no difference in age between cases (M=11.28, SD=3.26) and the controls (M=10.62, SD=3.80) groups; $t(169)=1.14, p=0.252$.

Percent of Gender by Case Control

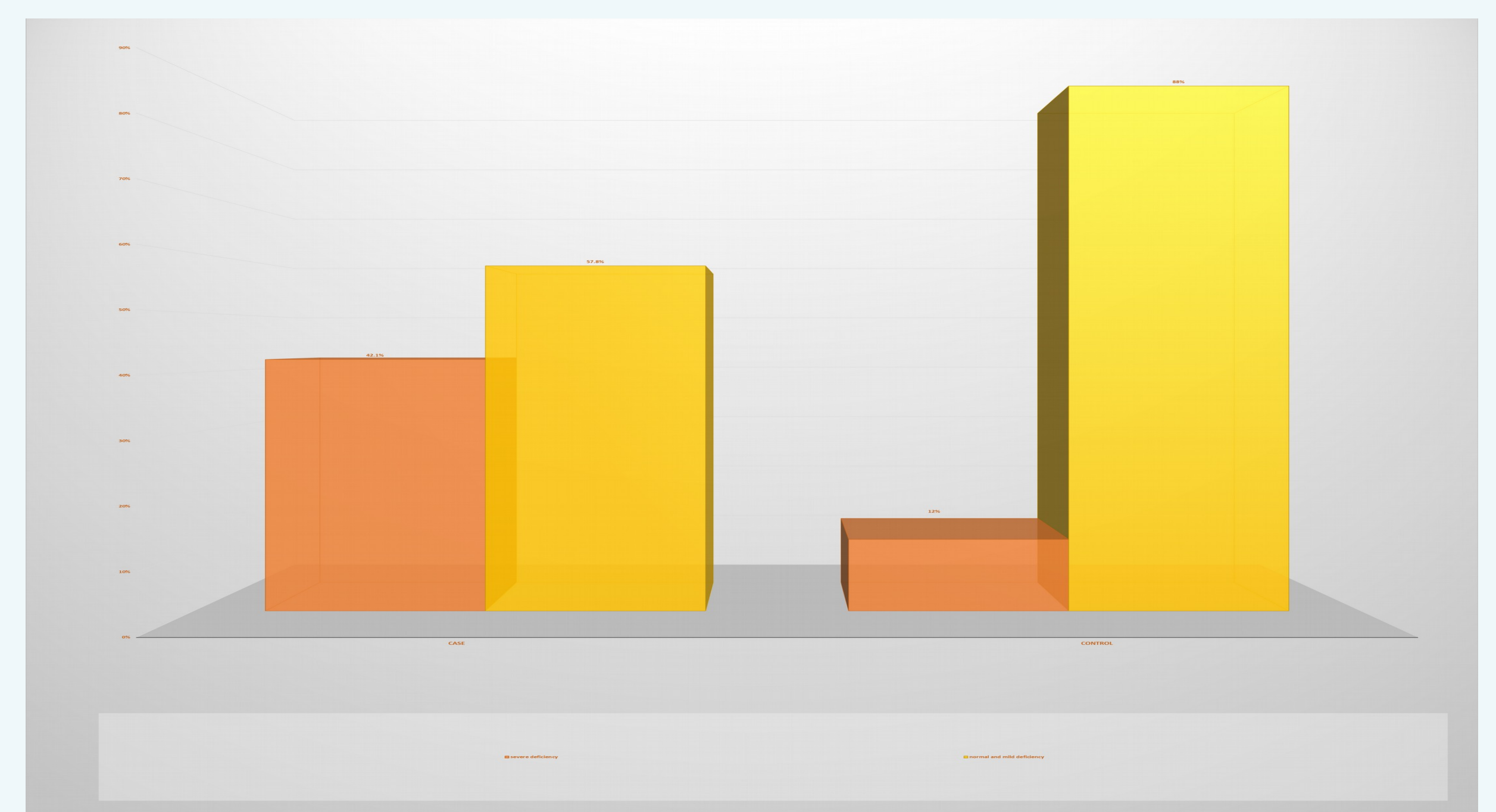


There is no difference in gender between cases and controls $\chi^2(1, N = 185) = 1.007, p = 0.31$



A Shapiro-Wilk's test ($p < .0001$) and a visual inspection of their histograms showed that the vitamin D level was not normally distributed for both diabetic cases and controls. Skewness = 1.123 (SE 0.219) for cases and 1.192 SE (0.336) for controls.

A Mann-Whitney U test indicated that level of vitamin D was significantly lower for diabetic cases (Mdn = 11.4) than for controls (Mdn = 13.8), $U = 2161.5, Z = -2.93, p = .003$.



percent of severe vitamin D deficiency within diabetic cases (42%) is more than control (12%). There is highly significant difference in severe vitamin D deficiency between cases and control $\chi^2(1, N = 185) = 14.4, p = 0.0001$. diabetic cases were over five times more likely to develop vitamin D deficiency, odds ratio (OR= 5.34; 95% CI= 2.11- 13.48), compared to non-diabetic controls.

CONCLUSIONS AND RECOMMENDATIONS

This study highlighted the importance of vitamin D screening for all children and adolescents with type 1 diabetes,

As the prevalence of vitamin D deficiency in type 1 diabetic children is relatively high Therefore, awareness to increase sunlight exposure and vitamin D supplementation for diabetic children is important.

Also the study showed strong negative correlation between HA1c and vitamin-D level.

Further studies are needed to investigate the effect of vitamin D deficiency on glycemic control.

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