

The Correlation between HbA1c and Blood Glucose Levels within the Emirati Population

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Abstract:

Aims

To define the relationship between HbA1c and blood glucose levels in Emirati patients using previously collected patient data.

Methods

HbA1c and corresponding blood glucose values were extracted from an existing patient database and were analysed using linear regression analysis on SPSS. The data of 29,521 Emirati patients (Age: 46.7 ± 14.97 , BMI: 30.5 ± 6.3 , Male: 40.6%, Female: 59.4%) over 18 years of age was used. 50.2% of patients had type 2 diabetes, 11.4% had no diabetes and 2.4% had type 1 diabetes. The patients were grouped into HbA1c groups rounded up to nearest 1%. Corresponding blood glucose levels were calculated and liner regression and correlation analysis were performed (SPSS20).

Results

Linear regression analysis resulted in the following relationship of blood glucose (mmol/l) = $(0.305 \times \text{HbA1c}) - 4.28$, $r = 0.702$ and correlation analysis resulted in an $R^2 = 0.96$.

HbA1c (%)	Expected Blood Glucose (mmol/l)	Expected Blood Glucose (mg/dl)
6	5.6	101.6
7	8.9	160.7
8	12.2	219.8
9	15.5	278.8
10	18.8	337.9
11	22.0	397.0
12	25.3	456.1

Conclusion

We have defined for the first time the relationship between HbA1c and blood glucose levels within a large Emirati population. The regression formula differs from those in other populations and its use is likely to give a better reflection of patient's mean blood glucose from their HbA1c values.