

THE ROLE OF TEACHING PROPER INSULIN INJECTION TECHNIQUES IN MAINTAINING GLYCEMIC CONTROL

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Abstract: Insulin therapy is an integral part of therapy for many patients with diabetes mellitus (DM). All patients with type 1 diabetes (DM1) are on insulin therapy for life, in Uzbekistan up to 20% of patients with type 2 diabetes (DM2) use insulin to maintain glycemic control. Insulin analogues are widely prescribed, which have a number of advantages over traditional forms of insulin, and their administration schemes are being improved every year. However, not all patients with DIABETES achieve effective glycemic control. Thus, according to a study conducted in the Buxara region, less than 20% of patients with DM2 on insulin therapy have target HbA1c values. It is known that the education of patients with diabetes plays an important role in the management of diabetes. In turn, an important component of the training is explaining the correct technique of insulin injections.

Insulin has been the most effective treatment in controlling hyperglycemia among patients with diabetes for over the past 90 years. It is given subcutaneously, either through an insulin pump or via multiple daily insulin injection devices. All proper insulin administration techniques should be applied to achieve the desired outcomes from insulin therapy. Several studies showed that the greatest benefit from insulin treatment is achieved by correcting insulin injection techniques.³

Keywords: diabetes mellitus, glycemic control, technique of insulin injections, basal insulin, prandial insulin, HbA1c, pregnant, bruising.

The purpose of research: to study the effect of learning the correct injection technique on glycemic control in DM patients compared with the control group.

Materials and methods: a post-marketing, open-label, controlled, comparative clinical trial with an active follow-up period of 6 months. The study included patients with DM1 and DM2, aged 16 to 65 years, who received multiple injections of insulin using a pen, prescribed for at least 3 months. prior to inclusion, those who have signed informed consent, have no skin infection at the injection sites, and are not pregnant. 116 patients were divided into 3 groups: structured injection technique training and provision of 4 mm needles (group 1) - 43 people, injection technique training (group 2) - 35 patients, control (group 3) - 38 people. 3 clinical visits and 4 telephone contacts were conducted. The analysis was performed using the statistical program SPSS, 19.

Results: baseline characteristics for groups 1, 2, and 3: average age 51,3±13,3, 53±12,6, 54,3±13; duration of SD 9,8±7, 8,8±7, 8,3±5,4, BMI 30,4±7,6, 32,6±6,5, 31,9±7,5; HbA1c 8,7±1,5, 8.5±1.7, 8.9±2.1. The decrease in HbA1c in group 1 was 1% (-1.3:-0.6) p less than 0.0001, in group 2 - 1% (-1,4: -0,7) p less than 0.0001, in the group 3 - 0,2% (-1,2:1,6), p=0.7. The dose of basal and prandial insulin increased in all observation groups: in group 1 by 3.4 (0.6:1.26) and 3.3 (1:5.6), in group 2 by 3.4 units (1.9:4.8) p less than 0.0001 and 3 (1.4:4.5), in group 3 by 3.2(0.8:4.5) and 3.5(0.7:5.1). The proportion of patients with HbA1c less than 9% decreased from 39.3% to 9.3% in group 1, from 34.2% to 8.6% in group 2, and there was no improvement in group 3. In group 1, all patients used the needle once. In group 2, the frequency of needle reuse (2-5 times one needle) decreased from 34% to 17%, the use of 6 or more times - from 66% to 0. There were no changes in the frequency of needle reuse in group 3.

Conclusions: training in proper insulin injection techniques improved glycemic control (HbA1c levels decreased by 1% in groups 1 and 2). The use of short 4 mm needles led to a reduction in the pain of insulin injections, bruising, and needle reuse. It is recommended to keep the insulin needle under the skin for

at least 10 seconds after the injection. This technique prevents insulin leakage and guarantees patients taking a full dose.^{[1](#)}